CN093D



Product Catalog

Laboratory Analytical Instruments

KYOTO ELECTRONICS
MANUFACTURING CO.,LTD.

About Us

KEM is a trusted brand for analytical instruments worldwide.
For over 60 years, KEM has been working together with customers from academia and industry to create tailored measurement solutions with novel and improved applications.



Many of the glass components used in KEM analyzers are hand-crafted by our glass artisans to ensure the highest reliability. Thanks to their expertise we are able to deliver high quality analyzers that unite cutting-edge technology with superior glass components created by recipients of awards such as the illustrious *Gendai no Meikō* craftsman award.



Quality management is of paramount importance to KEM, being one of the first Japanese companies to adopt ISO 9000 series' systems and receive ISO 9002 certification.
KEM continues to adhere to the strictest quality management practices to develop and produce products that foster strong bonds of trust with our customers.



Kyoto Electronics Manufacturing Co., Ltd. has:

- 3 factories (also housing the company HQ and R&D offices) in Kyoto, Japan (ISO 9001 accredited)
- 1 laboratory for density meter and refractometer calibration and density and refractive index liquid standard production, in Kyoto, Japan (ISO 17025 and ISO 17034 accredited)
- 6 sales and service branches across Japan
- 50+ distributors in over 40 countries

Creating measurement solutions to enhance your work & benefit the world

Since KEM's founding in 1961, we have focused on providing innovative solutions for various measurement scenarios, developing and manufacturing analyzers with common and niche applications.

Today, KEM analyzers such as the 'Karl Fischer Moisture Titrator', 'Potentiometric Titrator', 'Density/Specific Gravity Meter', 'EMS Viscometer', and 'Gas Volume Analyzer' are widely used for research and quality assurance in industrial and academic institutes worldwide, and our environmental monitoring systems have extensive adoption in Japanese waste incineration plants.

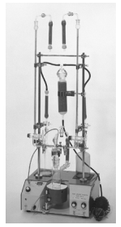
KEM has continually contributed to heat stress prevention through creating WBGT meters that can monitor the thermal environment in sporting, educational, industrial, and other settings.

In addition to being a trusted analytical instruments maker, KEM is also a producer of liquid standards. In 2002 KEM received JCSS certification as a density testing and liquid standard production laboratory fulfilling ISO/IEC 17025 requirements for the competence of testing and calibration laboratories, the first in Japan. In 2011 KEM's calibration laboratory also achieved JCSS certification as a refractive index testing and liquid standard production laboratory.

A brief history of KEM

1961
Company establishment.

1962
Released our first Karl Fischer Moisture Titrator, the 'MK-S'.



1967
Released the AT-05 Potentiometric Titrator.



1974
President Nagahiko Kishimoto received an award from the Japanese Minister of International Trade and Industry for meritorious deeds in the field of measurement.

1978
Released our first Density Meter, the 'DA-101B'.



1993
Released our first WBGT Meter, the WBGT-101 to aid the prevention of heat stress-related illness.

1996
Received a commendation from the Japan Association of Athletics Federations for supplying WBGT meters to the Atlanta Olympics.

1998
KEM certified for ISO9001.

2002
Released the world's first Portable Brix Meter.

KEM accredited as an ISO 17025 & ISO 17034-compliant density meter calibration and density standard liquid production laboratory.

2011
KEM accredited as an ISO 17025 & ISO 17034-compliant refractometer calibration and refractive index standard liquid production laboratory.

2012
EMS viscometer receives the SRJ Technical Development Award.
KEM Karl Fischer moisture titrators were recognized as a heritage of analytical and scientific instrumentation.

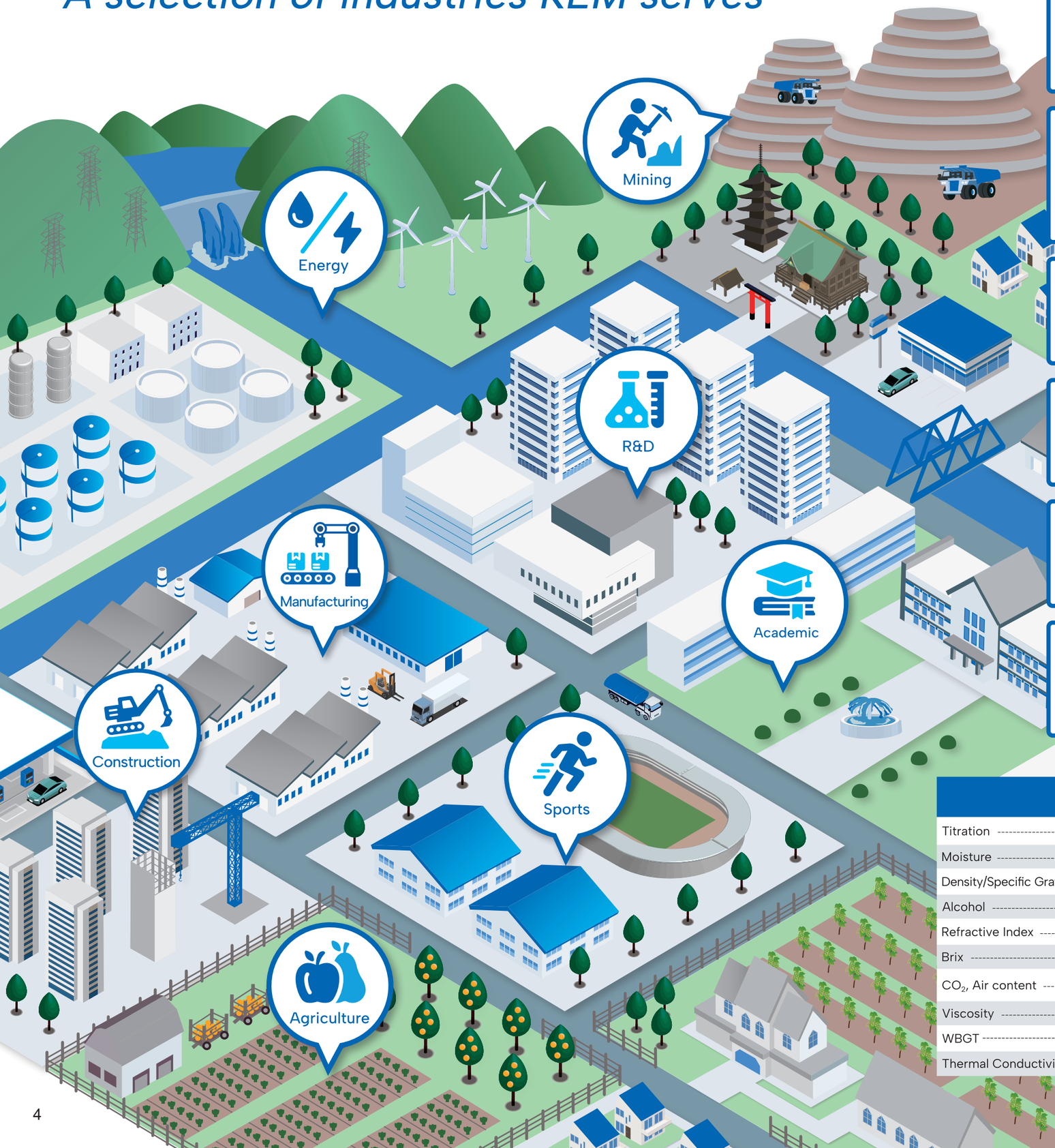
2013
Released the EMS viscometer, developed in collaboration with the Institute of Industrial Science, The University of Tokyo.

2021
Released our latest line of density/specific gravity meters, the 'DA-800' series.

2023
Released our latest line of WBGT meters, the 'WBGT-300' series, to the global market.

1960 1970 1980 1990 2000 2010 2020

A selection of industries KEM serves



Manufacturing

KEM's applications for the manufacturing sector are wide-spanning with measurement solutions for chemical, food, beverage, alcohol, fats & oil, drug, cosmetic, semiconductor, metal plating and many other products. From the analysis of basic ingredients through to the finished product they are made from, KEM's instruments support your craft by making QA at all stages of production easy through accurate, reliable measurement. KEM proudly contributes to the heightening of product quality and optimization of the manufacturing process for all industries.

R&D/Academic

KEM's instruments are widely applied in the analysis of chemical and physical properties in academic and other research settings. KEM's EMS viscometer in particular provides many solutions for research. For example, it can measure samples down to 90µL in volume, useful to labs conducting the R&D of new materials where sample material is scarce. Lab staff that analyze the viscosity of biological samples such as blood can take advantage of the EMS' disposable sample tubes for non-contact measurement. KEM's products improve measurement precision for better sample property characterization.

Energy

Potentiometric titration, moisture analysis, densitometry and refractometry are especially important for the energy sector, indispensable in the quality assurance and stringent adherence to standard production processes for oil, gas, and other energy sources.

Agriculture

KEM's portable Brix Meter can be used for the accurate measurement of produce sugar content on the farm. This allows you to gauge the optimal time to harvest your produce to ensure its high quality. With high precision and efficiency-enhancing measurement solutions for farmers, KEM contributes to the provision of outstanding agricultural products.

Mining

Karl Fischer moisture titrators are used in mining to analyze the content of water present through adhesion, as chemical reaction products, *etc.* in clay, iron ore, manganese, and other inorganics, for quality assurance purposes and to comply with standards and regulations.

Sports & Construction

Wet Bulb Globe Temperature (WBGT) is routinely analyzed using our WBGT Meter at construction sites, sporting facilities, and other places where heat and humidity levels pose health risks to workers, athletes, and others. WBGT data is used to inform you of the suitable level of activity/exertion allowable in a given environment so as to not compromise the health and comfort of people.

	Petroleum	Energy	Chemical	Food	Beverage	Pharmaceutical	Cosmetic & Fragrance	Materials
Titration ---------- p.6	●	●	●	●	●	●	●	●
Moisture ---------- p.8	●	●	●	●	●	●	●	●
Density/Specific Gravity -- p.10	●	●	●	●	●	●	●	●
Alcohol ---------- p.11				●	●	●	●	
Refractive Index ---------- p.12	●		●	●	●	●	●	●
Brix ---------- p.13				●	●	●		
CO_2, Air content ---------- p.14					●			
Viscosity ---------- p.15	●		●	●		●	●	●
WBGT ---------- p.16	●	●	●	●	●	●	●	●
Thermal Conductivity ---- p.17			●	●		●	●	●

Titration

Titration describes the process of quantifying a target substance in a sample by assessing its chemical reaction with a reagent (the 'titrant') of known concentration. Titrant is gradually added to the sample until the 'equivalence point' is reached, the point where all of the target substance has reacted with the titrant. The amount of titrant required for this is used to quantify the target. Manual titration involves the visual confirmation of a color change as titrant is slowly added to an indicator-containing sample via a glass burette. Potentiometric titration automates titrant addition, the endpoint detection and the calculation of the target's concentration.

Automatic titrators are used in QA and R&D for the precise concentration measurement of target chemical components of samples. For QA, automatic titrators help companies maintain product quality, provide traceability, and adhere to industry standards and regulations. In product R&D, they help in optimizing component chemicals, adjusting recipes and processes, assessing product performance, stability, and preservability, and confirming adherence to industry standards and regulations.

Automatic Potentiometric Titrator
AT-710 Series

The AT-710 Automatic Potentiometric Titrator determines the concentration of target chemical components in liquids and solids.
It has easy operation, fast measuring speeds, and achieves high precision results.
You can change titration type (*i.e.* acid-base, redox, photometric *etc.*) by swapping out the titrator's electrode and preamplifier.



A large touchscreen display that is easy to read and use



- The 8.4-inch large color TFT-LCD touch panel makes it a pleasure to operate and provides a graphing visual to monitor results in real time.
- The MCU-710 can be used to operate the titrator remotely via Bluetooth® (AT-710M model)*
  *Requires purchase of a Bluetooth® dongle

Cost effective & compact burette design



- The AT-710 unit neatly houses 2 burettes, saving bench space.
- 5, 10, and 20mL burettes convenient when working with 2 reagents.
- The optional Auto Dispenser has a 50mL burette, useful when working with 1 reagent and wishing to dispense solvents.

Instrument functions, expandability, and accessories enhance measurement efficiency

- Improved security thanks to user group authorization settings (AT-710M/S).
- Monitoring temperature during titration ensures safe measurement (AT-710M/S).
- Two separate signals such as pH/transmittance(abs), pH/conductivity, or pH/temperature can be logged simultaneously (AT-710M/S).
- Automatic recording and recognition of titrant and electrode calibration results when using the IC chip-loaded optional smart burette and smart electrode cable products.
- Up to 4 KEM titrators can be connected for multiple simultaneous titration operations (requires an AT-710M).



	Flagship model AT-710M	Middle range model AT-710S	Entry model AT-710B
Detection Range	1) Potentiometric: -2000mV to +2000mV 2) pH: -20.000 to +20.000pH 3) Temperature: 0°C to 100°C		
Burette Specifications	50mL (Auto dispenser): Precision ±0.5mL 20mL (standard): Precision ±0.02mL / Repeatability: ±0.01mL 10mL: Precision ±0.015mL / Repeatability: ±0.005mL 5mL: Precision ±0.01mL / Repeatability: ±0.003mL 1mL*: Precision ±0.005mL / Repeatability: ±0.001mL (*for use with the optional Automatic Piston Burette (APB) only)		
Titration Types	Potentiometric (acid-base, redox, precipitation), Photometric, Polarization, Conductivity		
Operation	Touch Panel		Titration unit keypad. Optional 'AT-Win' software allows control via PC.

Multiple Sample Changer

Samplers that can be connected with AT-710 series titrators for the automated, sequential measurement of multiple samples. Please select from the following models to suit your sample measurement needs.
By combining a titrator with a multiple sample changer, you can increase efficiency and reduce running costs.
Automation brings multiple benefits such as labor cost reduction, minimization of human error, and increased efficiency, ensuring smoother operations.

01 Improved Measurement Efficiency

Sample pretreatment and measurement, as well as the cleaning of electrodes, nozzles, *etc.* can be conducted continuously and efficiently.

Compared to using a standalone titrator, incorporating a sample changer into your workflow reduces the need for human intervention, resulting in even less human error and a reduced requirement for remeasurements.

02 High Reproducibility & Consistency

Human error is further reduced when compared to using a standalone titrator.

Workflow automation ensures high consistency in sample measurement conditions, resulting in high reproducibility.

03 Reduction of Running Costs

Once samples are prepared and set into the changer, the majority of the remaining measurement process is handled automatically, reducing labor costs.

Automation lightens the burdens of workers, allowing them more time to focus on other tasks.

CHA-600

A set of comprehensive cleaning routines and options paired with the ability to use numerous cleaning agents makes our changer lineup cater to virtually all industries.

	CHA-600 (12 samples)	CHA-600 (18 samples)
Stirring Device	Built-in magnetic stirrer at titration position Option: Pre-treatment stirrer (assembled at factory before shipment)	
Cleaning Method	Standard: Shower rinsing Option: Dip rinsing, sequential rinsing with 2 different cleansers	
Compatibility	AT-710M, AT-710S, AT-710B + AT-Win	



CHA-700

This sampler is suitable for water-soluble samples.
This sampler comes in 6 and 11 sample varieties.
This sampler is a perfect fit for food and beverage samples.
Different sample components can be assayed in sequence (*e.g.* beaker 1. salt content >> beaker 2. acidity) using this sampler.



CHA-740/760

This sampler is suitable for the measurement of a large number of samples, coming in 24 and 47 sample varieties.
Automatic, sequential cleaning using up to 3 different cleansers can be performed.

*Sales of the CHA-740 and CHA-760 are limited to China, Taiwan, and the ASEAN region, and orders will only be accepted following a meeting with KEM or a KEM distributor to discuss required specifications.



Applications



Gas & Petroleum Oils



Energy



Plastics & Rubber



Paints & Adhesives



Pharmaceuticals



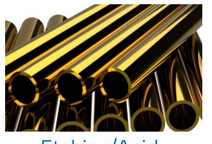
Cosmetics



Fats & Edible Oils



Food & Beverages



Etching/Acid Cleaning Solutions



Materials

Moisture Measurement

In 1935, the German chemist Karl Fischer developed a very accurate and reliable method for measuring water content over a large measurement range, a method that still serves as the gold standard today.

Karl Fischer moisture titrators provide precision water analysis of samples containing relatively high moisture content down to those with trace levels, playing an important role in QA and R&D. Moisture content has a large influence on the quality of many products, with its precise measurement being vital in assuring consistency and maintaining quality.

In R&D, moisture titrators help you evaluate the influence moisture has on the performance and stability of products and their raw materials. Furthermore, many industry standards and regulations for moisture analysis acknowledge and/or require digital KF titration methodology for compliance.

Since its launch in 1962, KEM's Karl Fischer Moisture Titrator line has gone through 60 year's worth of refinements to become the instrument it is today, a champion of precision and user-friendliness that has been lovingly adopted by a large number of users.

Volumetric Karl Fischer Moisture Titrator
MKV-710 Series



MKV-710 series instruments have a wide measurement range, suitable for samples with a moisture concentration from 1ppm to 100%.
KEM's innovative endpoint detection technology utilizing liquid resistance compensation provides high accuracy and ease of endpoint attainment.

	Flagship model MKV-710M	Middle range model MKV-710S	Entry model MKV-710B	DI support model MKV-710D
Measurement Range	Water: 0.1mg to 500mg (depends on KF reagent factor) Concentration: 1ppm to 100%			
Burette	Capacity: 10mL / Dispence precision: ±0.015mL / Repeatability: ±0.005mL			
Other Features	Control unit provides wireless operation of the titration unit via Bluetooth®	Same high measurement performance*1 of the MKV-710M at a cheaper price.	Titration unit keypad	Compliance to FDA 21 CFR Part 11

*1 Equivalent measurement performance with the sole exception of multi-instrument expansion capability (perfect for single instrument users looking to save money)

Coulometric Karl Fischer Moisture Titrator
MKC-710 Series



Moisture detection with incredible sensitivity allowing the measurement of trace moisture as low as 1µg. Using KEM's innovative technology, electrolysis speeds of up to 2.6mg H_2O/min are achievable, shortening preliminary titration and measurement times. Users of the 'Titration Cell Unit' option (12-03635) are able to replace the ceramic diaphragm. This is especially useful for users who regularly measure samples such as oil.

	Flagship model MKC-710M	Middle range model MKC-710S	Entry model MKC-710B	DI support model MKC-710D
Measurement Range	Water: 1µg to 300mg (depends on reagent) / Bromine: 8µg to 300mg*1			
Measurement Cell	1-Component or 2-Component			
Precision	RSD ≤ 0.3% (n=10) *When assessed under KEM standard measurement conditions and using KEM standard liquids			
Other Features	Control unit provides wireless operation of the titration unit via Bluetooth®	Same high measurement performance*2 of the MKC-710M at a cheaper price.	Titration unit keypad	Compliance to FDA 21 CFR Part 11

*1 Amount of bromine that reacts with and adds to unsaturated bonds of hydrocarbons (for Bromine Index/Number tests)
*2 Equivalent measurement performance with the sole exception of multi-instrument expansion capability (perfect for single instrument users looking to save money)

Hybrid Karl Fischer Moisture Titrator®
MKH-710 Series



The Hybrid Karl Fischer Moisture Titrator® is capable of both coulometric and volumetric analysis using the same titration unit and cell. This one-of-a-kind hybrid product analyzes samples for water from trace levels to larger amounts, achieving highly precise results in a short time with high flexibility in sampling volume.

	Flagship model MKH-710M	Expansion unit model MKH-710/2nd*1
Coulometric Titration	Measurement range: Water: 1µg to 300mg (depends on reagent) / Bromine: 8µg to 300mg*2 Precision: RSD ≤ 0.3% (when measuring 1mg of H2O; n=10)	
Volumetric Titration	Measurement range: Water: 100µg to 500mg (depends on KF reagent factor) Concentration: 1ppm to 100% Burette: Capacity: 10mL / Dispence precision: ±0.015mL / Repeatability: ±0.005mL	
Hybrid Titration	Measurement range: Water: 1µg to 500mg Precision: RSD ≤ 0.3% (when measuring 10mg of H2O; Karl Fischer reagent factor 3mg/mL; n=10)	

*1 MKH-710/2nd can not be used as a standalone unit
*2 Amount of bromine that reacts with and adds to unsaturated bonds of hydrocarbons (for Bromine Index/Number tests)

Evaporators & Sample Changer

Evaporator range for use with MKV-710/MKC-710/MKH-710 series moisture titrators*1 . The evaporation method is suited to solid samples and samples that contain unwanted suspended solids or other substances that interfere with the functionality of the water extracting solvent and/or the electrolyte.



	ADP-611 (CE)	ADP-513	ADP-344	ADP-512	ADP-512S	CHK-501
Application/ Sample Types	solid or powder samples such as plastic pellets	Petroleum products such as lubricants	Confectionery (hard and soft)	Iron ores	Ores, metallic powder, ceramics, other types of solids and powders	Sequential measurement for powder samples
Heating Temperature Range	50 to 300°C	Room temperature to 200°C	Room temperature to 60°C	High temp. furnance: 50 to 1000°C Low temp. furnance: 50 to 130°C	50 to 1000°C	Room temperature to 300°C

*1 The ADP-344 is for use with MKV & MKH models. The CHK-501 is for use with MKC & MKH models.
* A nitrogen gas supply and regulator capable of providing 50kPa of pressure are required when using the ADP series evaporators and CHK-501 shown above. Please note that nitrogen gas and regulators are not provided with the products.

Karl Fischer Reagent & Water Standards
KEMAQUA



KEM offers an extensive lineup of Karl Fischer reagents catering to a large number of sample types. The range includes 3 volumetric method titrants, 5 extracting solvents, 3 coulometry catholytes, and 4 coulometry anolytes. Additionally offered are a range of pure water and solid-containing water standards to test the proper working order of moisture titrators and evaporators.

* SDS documents can be viewed and downloaded from KEM's website: https://www.kem.kyoto/en/sds/

Applications


Gas & Petroleum Oils


Energy


Chemicals


Plastics & Rubber


Paint & Adhesives


Pharmaceuticals


Cosmetics


Fats & Edible Oils


Foods


Materials

Measurement of Density, SG, Alcohol, Brix

KEM's Density/Specific Gravity meters are natural oscillation pitch-type ('oscillation-type' for short) densitometers, so named for the oscillating tube it uses to determine sample density. KEM's density meters are used for measuring the density or specific gravity of liquids, and are highly acclaimed for their short measurement time, high precision, and ability to measure small volumes.

Oscillation-type density/specific gravity meters are widely acknowledged for their precise measurement capabilities, being used in many fields. For example, they are often applied in the analysis of raw materials and finished products in quality assurance. In the reseach and development of new materials and products, they are used to measure the density and specific gravity as part of evaluating physical characteristics to understand functionality and establish quality parameters.

Density/Specific Gravity Meter
DA-800 Series



The DA-800 series is the 6th generation line of KEM's flagship density meters. With almost 50 years of densitometer engineering and development experience, KEM has achieved exceptionally high measurement precision and repeatability with the DA-800 series. The instruments feature remote operation, low volume handling, robust temperature control, exceptional cleaning capabilities, and comprehensive Data Integrity support functions.

Cleaning protocols using up to 3 different cleansers can be set for efficient cleaning

We provide 4 types of pump unit to assist in cleaning and sampling for DA-800 series instruments. The semiautomatic cleaning unit provides automatic, sequential cell cleaning using up to 3 different cleansers, perfect for users wishing for not only convenience, but also improved consistency in cleaning.



	Flagship model DA-860	Middle range model DA-850	Entry model DA-840
Measurement Range	0 to 3 g/cm^3		
Measurement Temperature Range*1	0 to 100°C		
Accuracy of Density*2	0.000003 g/cm^3	0.00001 g/cm^3	0.00005 g/cm^3
Accuracy of Temperature	±0.02°C	±0.03°C	±0.05°C
Repeatability*2	0.000001 g/cm^3	0.000005 g/cm^3	0.00005 g/cm^3
Reproducibility*2	0.000002 g/cm^3	0.000005 g/cm^3	0.00005 g/cm^3

*1 The above accuracy is guaranteed in the temperature range of 0 to 90°C with all models.
*2 Tests conducted in accordance with ISO 5725 under KEM's standard test conditions.

Auto Sampler
AS-8030



The AS-8030 auto sampler connects with DA-800 series instruments for the continuous measurement of up to 30 samples. This sampler integrates with the density meter to achieve a sleek design that saves bench space.
Up to 3 cleansers can be set for automatic, sequential cleaning of the cell and lines while the inbuilt high volume air pump provides speedy drying times.
Its pressurized measurement function helps eliminate bubbles generated during the sampling of substances such as gasoline.

Alcohol Meter
ALM-155

Wineries | **Beer breweries** | **Distilleries** | **Oenological labs** | **Vinegar productions**

The ALM-155 Digital Alcohol Meter is a compact and high-performance bench top density meter that uses an oscillating capillary tube for the analysis of beer, wine, distilled spirits and liqueur. Results can be visualized as Alcohol Content, Specific Gravity, Density, Brix, Babo, and Baume.
The ALM-155 measures with high sensitivity, attaining results to the nearest 0.01% for alcohol content. What's more, it employs a Peltier thermostat system that stably fixes the measurement temperature to exactly 20°C and 60°F.

Measurement Range	Alcohol content: 0.00 to 100.00 vol% Density: 0.69937 to 1.24887 g/cm^3 Specific Gravity (20/20): 0.70000 to 1.25000
Repeatability	Alcohol content: (SD) 0.05 vol% Density: (SD) 0.00005 g/cm^3 Specific Gravity: (SD) 0.00005
Alcohol Table	OIML (vol%/wt%)/HMCE (At 20°C)/ G225 (At 20°C)/AOAC/NIST (At 60°F)



Portable Density/Specific Gravity Meter
DA-130N

Coming in at a mere 360g, this light in weight density meter provides a fatigue-free measurement experience on the go. The display shows density, temperature compensated density, specific gravity, temperature compensated specific gravity, Brix, alcohol concentration, sulfuric acid concentration, API degree, Baume degree, Plato and Proof.



Measurement Range	0 to 2 g/cm^3
Precision	±0.001 g/cm^3
Temperature Range	0 to 40°C

Density/Specific Gravity Meter
DA-100

The DA-100 is an affordable density/specific gravity meter with a built-in thermostat for stable temperature control. It measures density and specific gravity quickly and accurately.



Measurement Range	0 to 3 g/cm^3
Measurement Temperature Range	15 to 40°C
Precision of Density	±0.001 g/cm^3
Precision of Temperature	±0.5°C

Density Standards



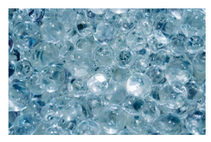
KEM's calibration and standard production laboratory is accredited as an ISO/IEC: 17025:2017 and ISO 17034:2016*1 compliant laboratory by International Accreditation Japan (IAJapan) as a producer of density reference standard materials under the Japan Calibration Service System (JCSS).

*1 ISO/IEC 17025:2017: General requirements for the competence of testing and calibration laboratories
ISO 17034:2016: General requirements for the competence of reference material producers
* SDS documents can be viewed and downloaded from KEM's website: https://www.kem.kyoto/en/sds/

Applications


Gas & Petroleum Oils


Energy


Chemical Products


Food & Beverages


Alcoholic Beverages


Fats & Edible Oils


Flavors & Fragrances

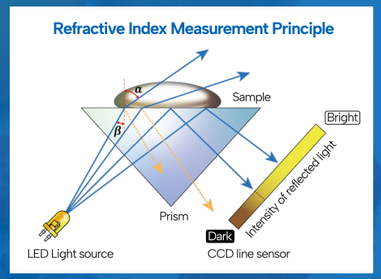

Pharmaceuticals


Cosmetics


Etching/Acid Cleaning Solutions

Measurement of Refractive Index, Brix

The direction of a beam of light changes as it passes through mediums of differing refractive index (RI). Snell's law states that the ratio of the angle of incidence (β) and angle of refraction (α) is equal to the ratio of the RI of the two media. When α surpasses the critical angle (90°), total internal reflection occurs. The diagram of the internal structure of our refractometers shown to the right, shows the location of the light source, the prism (nD=1.768), and the CCD line sensor. The intensity of light reflected by the sample is detected along the CCD line sensor, generating CCD address data used to determine the critical angle and refractive index.



Digital refractometers and brix meters measure the RI of liquid samples. Using RI data, they can calculate sample purity, component solid concentration, *etc*. to ensure consistent quality of products and their ingredients, and to comply with industry standards and regulations.
In R&D, they are used to measure the RI of experimental chemicals, pharmaceuticals, *etc*. to help characterize and develop their properties.

Refractometer
RA-600 Series

A high precision refractometer with inbuilt temperature stability functions. With a low profile of 192 x 281mm (under A4 size) it saves you bench space, catering to installation in labs with limited space.



CE

Equipped to measure volatile samples



The Sample Cover with Anti-Volatilization Device prevents sample liquids from evaporating and protects the LCD from splashes. Featuring an easy-to-use sample stage at the front and a flat design for the cell, this device ensures straightforward cleaning of the sample stage after measurements.

Image of Critical Angle helps to verify result reliability

An image of the Abbe measurement scale can be viewed on the right side of the display. It provides a visual indication of the detection point of the refractive index. Samples that scatter light such as colloidal substances may result in a less defined light/dark border, and the visual representation of detection variability can inform you of result reliability.



Fresh olive oil
(The border line is clear)



Used olive oil
(The border line is unclear)

Combine with the Multiple Sample Changer for continuous measurement





The continuous measurement of up to 30 samples is achievable when combined with the CHD-502N Multiple Sample Changer. Its sample-returning system transfers measured samples back to their vials postmeasurement so they can be reused, perfect for expensive samples such as flavours and fragrances.

	RA-620	RA-600
Measurement Range	nD: 1.32000 to 1.58000, Brix: 0.00 to 100.00%	nD: 1.3200 to 1.7000, Brix: 0.00 to 100.00%
Accuracy[*1]	nD: ±0.00002, Brix: ±0.014% (0 to 85.0%)[*2]	nD: ±0.0001[*3], Brix: ±0.1%
Repeatability[*4]	nD: ±0.00001, Brix : 0.01%	nD: ±0.0001, Brix : 0.1%
Temperature Control[*5]	5 to 75°C	Standard: 5 to 75°C, Option: 5 to 100°C

*1 Tested under KEM standard measurement conditions.
*2 Calculated from measurement accuracy of refractive index: nD 0.00002 = Brix 0.014%.
*3 This level of accuracy is not guaranteed when the set temperature is above 75°C.
*4 Tested under KEM standard measurement conditions. Subject to sample properties.
*5 To avoid condensation, the set temperature must not be more than 12°C below that of the room of measurement.

Applications


Fruits


Vegetables


Beverage


Food


Fats & Edible Oils


Petroleum products


Chemicals


Pharmaceuticals


Flavors & Fragrances


Metal Plating & Cleaning Solutions

Portable Brix Meter
BX-1

The Portable Brix Meter BX-1 is a convenient refractometer that enables you to determine the Brix of food, beverage and other samples virtually anywhere! From Low Brix% sugar-free coffee to fruit juice and high concentration syrup, the BX-1 is your one stop solution for virtually all food and drink samples!

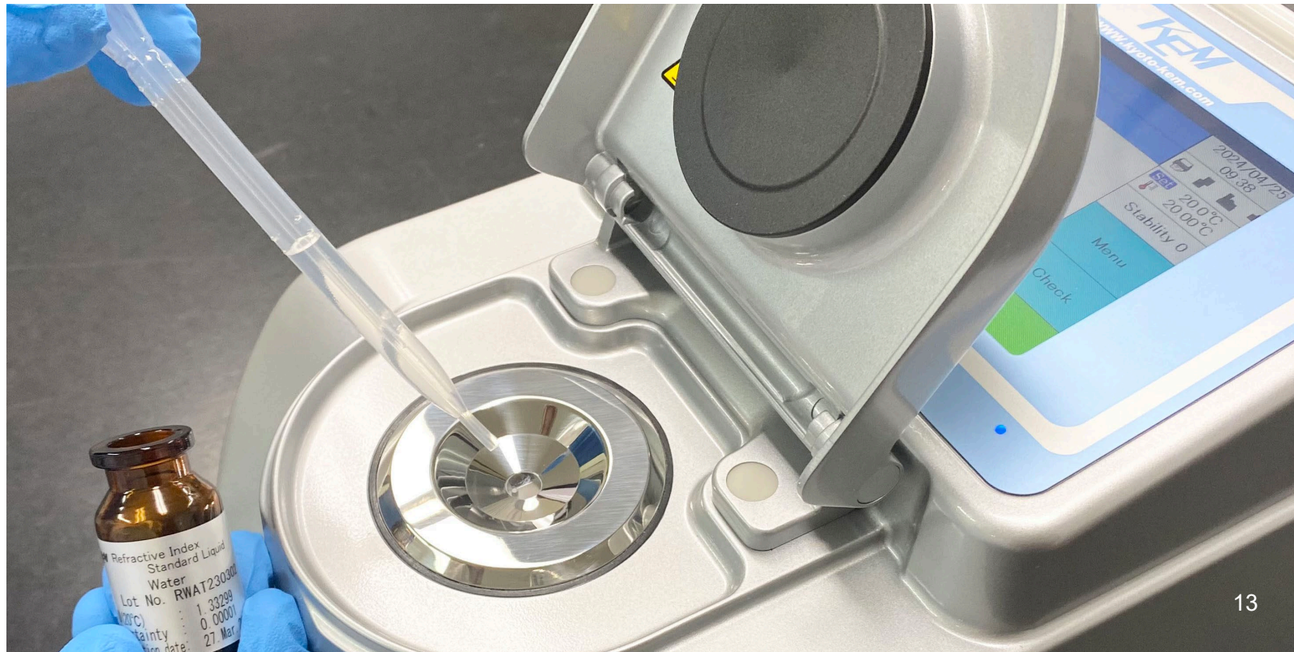
Measurement Parameter	Brix%
Measurement Range	0.0 to 85.0%
Precision	±0.2%



CE

Refractive Index Standards

Refractive index standards are used to confirm the measurement accuracy and quality of digital refractometers, important in ensuring their continual precision and reliability. KEM's liquid standard production laboratory fulfils ISO/IEC 17025 requirements for the competence of testing and calibration laboratories and successfully operates a quality management system in accordance with ISO 17034.



Measurement of Beverage Product Total Gas, Air Content, & Pressure

Gas Volume Analyzer
GVA-710

The GVA-710 automatically determines the gas volume/internal gas pressure and air content of carbonated beverages, as well as the inner pressure of both carbonated and non-carbonated drink containers; all crucial factors to know for product quality and packaging management.
After the user sets the sample container, the instrument will automatically perform the piercing, snifting, and shaking, before chaperoning the sample's gas to the absorbent vessel where carbon dioxide is selectively absorbed and dissolved.

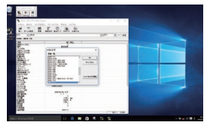


Fully automatic measurement



Full automation eliminates many problems of manual measurement such as result discrepancies between users, and safety issues such as physical fatigue and absorbent chemical exposure.

Output results to external printer or PC



Measurement results can be output to not only an external printer but also a connected PC using dedicated software.

Compatible with a variety of container types



Plastic Bottles



Cans



Glass Bottles

The instrument is compatible with cans and glass or PET bottles, 160mL–2.0L in volume.
It is also compatible with a variety of lid structures and varieties.

*corked containers are not measurable.

Measurement Range	1) Pressure: 0.010 to 0.500MPa 2) Temperature: 0 to 50°C 3) Residual gas volume: 0 to 30mL 4) Oxygen concentration*1: 0 to 21vol%
Precision	1) Pressure: ±0.001MPa 2) Temperature: ±0.05°C 3) Residual gas volume: ±2% (in case the volume is 5mL to 30mL) ±0.1mL (in case the volume is 0mL to 5mL) *When measuring standard gas 4) Oxygen concentration*1: ± 0.2vol%
Measurement Time*2	Gas volume/internal gas pressure: Approx. 90 seconds for one sample Residual gas volume: Approx. 5 to 12 minutes for one sample
Compatible Drink Containers	Steel cans, aluminum cans, PET bottles, and glass bottles Capacity: Approx. 160 mL to 2.0L Size: height 85mm to 315mm, diameter 53 mm to 110 mm
Storable Data	500 measurement results (most recent data), 20 methods
Supplied Air Pressure*3	0.6 to 0.7 MPa

*1 Oxygen concentration can be measured if the measured gas volume is over 8mL.
The optional 'Oxygen Concentration Measurement Unit' is required
*2 Measurement time depends on sample type and measurement conditions
*3 The instrument requires a supply of air at a pressure of between 0.6 and 0.7MPa to perform measurements.
An air supply is not supplied with this product. Please source an air compressor, a tube (L=2m, OD=6mm x ID=4mm), and a joint.

Viscosity Measurement

EMS Viscometer
EMS-1000S

The EMS-1000S is a revolutionary viscometer that employs unique spinning probe technology to create new viscometry possibilities. Its intuitive software makes measurement and data visualization a breeze, and because sample matter is contained within sample tubes, the risk of cross-contamination and the need for cleaning are both eliminated. A range of probes are available, each optimized for specific sample viscosity measurement ranges and corrosivity. With improved and novel applications, the instrument is seeing continual adoption, especially for R&D purposes.

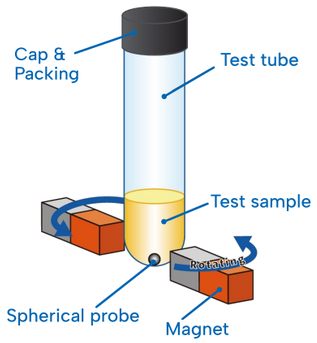


A viscometer that accomplishes precise measurement of sealed samples at world-leading low volumes



KEM's EMS-1000S measures viscosity by quantifying the rotational dynamics of a sample-immersed spinning spherical probe inside a tube. The use of autoclavable, hermetically sealable glass tubes prevents gas escape, moisture infiltration, and both sample and instrument contamination. Standard tubes allow the measurement of volumes down to 300µL, or even 90µL with optional tubes! The instrument has a wide measurement range, achieving high accuracy and repeatability even at super-low viscosities. It provides convenient measurement modes for determining the concentration, temperature and shear rate dependence of viscosity, and its heating/cooling system quickly and stably controls sample temperature to between 0 and 200°C.

Schematic diagram



Measurement Range	0.1 to 1,000mPa・s（Aluminium alloy probes (Option); Diameter: 1.5mm） 0.1 to 100,000mPa•s (Aluminium probes (Standard); Diameter: 2mm) 10 to 1,000,000mPa•s (Aluminium probes (Option); Diameter: 4.7mm) 100 to 100,000mPa•s（Titanium probes (Option); Diameter: 5mm）
Repeatability	RSD ≤ 3%（as tested under KEM's standard test conditions）
Precision	±10%（as tested under KEM's standard test conditions）
Minimum Sample Amount	90µL（when using optional small tube + 1.5mm alloy probes） 300µL (when using standard tube with 1.5mm (Option) and 2mm probes) 700µL (when using standard tube with optional 4.7mm or 5mm Ti probes)
Temperature	Range: 0 to 200°C (when using optional small tube: 0 to 50°C) Stability: ±0.1°C
Motor Rotation Speed	Range: 500 to 1,000rpm / Stability: ±3%

* Measurement requires a PC to be connected

Applications



Polymers



Inks & Paints



Biological samples



New materials



Food

Thermal Analysis

WBGT Meter ～For assessing the risk of heat stress～
WBGT-300 Series

The 'WBGT' is a useful index used to predict heat stress risk. WBGT stands for "Wet Bulb Globe Temperature", an index for predicting heat exchange between the human body and the environment to understand the risk of heat stress. The index is calculated based on the relative humidity, air temperature and radiant temperature of the environment and can be ascertained in both indoor and outdoor settings.

The WBGT index is widely applied in heat stress risk assessment, with its standards for measurement being outlined by bodies such as the ISO and JIS. WBGT data is used to set safe physical activity limits and plan rehydration and rest frequency. Consider adopting a WBGT Meter today to help prevent the occurrence of heat stress-induced illness.



CE

Standards

The WBGT index is widely applied in heat stress risk assessment, with its standards for measurement being outlined by bodies such as the ISO and JIS.

ISO 7243
Ergonomics of the thermal environment

JIS B 7922
Electronic wet-bulb globe temperature (WBGT) index meter
CLASS 1.5 PERFORMANCE

		WBGT-301	WBGT-302
Intended Use		Sports, Schools, events	Workplace OH&S
Measuement Range	WBGT	0.0ºC to 50.0ºC	
	Ambient Temperature	0.0ºC to 50.0ºC	
	Relative Humidity	10.0% to 90.0%RH	
	Globe Temperature	0.0ºC to 60.0ºC	0.0ºC to 80.0ºC
Precision*1	WBGT	±1.5ºC (15ºC to 40ºC)	
	Ambient Temperature	±0.6ºC (20ºC to 50ºC)	
	Relative Humidity	±3.0% (30% to 90%RH)	
	Globe Temperature	±0.6ºC (20ºC to 60ºC)	

*1 Precision assessments conducted under natural wind drafts (0.3 to 3m/sec)

Acceptable Physical Work Intensity By WBGT*1

Category	Example Physical Activities By Intensity Level (Categories 0-4)	WBGT ºC	
		Heat acclimated*2	Not heat acclimated
0: At Rest	At rest, sitting in comfort	≤ 33	≤ 32
1: Low Metabolic Rate	Light manual labour (*e.g.* writing, typing, drawing, sewing, bookkeeping, *etc.*); labour using arms and hands (*e.g.* use of small pliers, physical inspection, assembly, sorting light materials, *etc.*); labour using arms and legs (*e.g.* operating a vehicle under normal conditions, footswitch and pedal operation, *etc.*). Drilling small articles while standing; milling machine operation (small articles); coil wrapping (including for small armatures); machine operation requiring light physical force; walking at or below 2.5km/h on level ground.	≤ 30	≤ 29
2: Medium Metabolic Rate	Continuous hand and arm movement (*e.g.* hammering, filling ground, *etc.*); arm and leg movement (*e.g.* driving a truck off-road, operation of a tractor or construction vehicle, *etc.*), use of arms and torso (*e.g.* pneumatic hammer operation, tractor assembly, plastering, intermittent moderate lifting work, weeding, harvesting produce, *etc.*); pushing and pulling a wheelbarrow or other cart type with a light load; smithing/forging; walking between 2.5-5.5km/h on level ground.	≤ 28	≤ 26
3: High Metabolic Rate	Use of arms and torso with high intensity (*e.g.* carrying heavy objects, using a heavy hammer, shoveling, sawing, planing or chiseling hard wood, mowing, digging, *etc.*); walking between 5.5-7.0km/h on level ground. Pushing and pulling a wheelbarrow or other cart type with a heavy load, grinding metal, and stacking concrete blocks.	≤ 26	≤ 23
4: Very High Metabolic Rate	Working at a very high intensity (*e.g.* swinging an axe, shoveling heavy loads/digging hard ground, climbing stairs); running on level ground at 7km/h or faster.	≤ 25	≤ 20

Adapted from "Table 1-1: Outline of basic measures for preventing heatstroke in the workplace" published by the Ministry of Health, Labour and Welfare (Japan) and "Table of WBGT Heat Stress Index Reference Values" appearing in Appendix A of JIS (Japan Industry Standards) Z 8504, inserting concrete examples of physical activities in place of metabolic rate data.

*1 This table intends to provide a reference for the maximum allowable WBGT for different work intensities to prevent heat stress. It is not a guarantee of safety, so always consult your physician and workplace health and safety officer to best understand individual risks in your work environment.
*2 "Heat Acclimated" refers to persons that within one week prior to assessment were deemed to be acclimated to working in an equivalent or harsher thermal environment to that used in the test.

Heat Stress Prevention Guidelines For Exercise

WBGT ºC		
31	Cancel All Exercise	Outside special circumstances, all exercise and sporting activities should be canceled, especially those involving children.
28	Strong Caution (cease strenuous exercise)	The risk of heat stress is high, so refrain from activities that easily raise body temperature such as strenuous exercise and endurance training. Rest and replenish fluids and electrolytes every 10-20 minutes. Persons with higher sensitivity to the heat*1 are to lighten or cease activities.
25	Moderate Caution (take periodic rests)	Heat stress risk increases in this range, so be assertive in taking periodic rests and replenishing fluids and electrolytes. For strenuous exercise, rest every 30 minutes.
21	Low Caution (proactively replenish fluids)	Death due to heat stress becomes possible from approximately WBGT 21ºC. Stay mindful of indicators of heat stroke and replenish fluids and electrolytes.
	Safe Conditions (replenish fluids when needed)	Under normal conditions, the risk of heat stress is low, but make sure to replenish fluids and electrolytes. Heat stress can still occur in participants of non-professional 'Public' marathons, so exercise caution.

Adapted from content appearing on the official Japanese Sports Association website

*1 Persons who are obese, have a below-average tolerance of typical outdoor heat, and/or have low physical endurance

Applications


Working Kitchens


Factories


Construction Sites


Schools


Sporting Events


Concerts & Large Events


Care Establishments


Farms


Warehouses

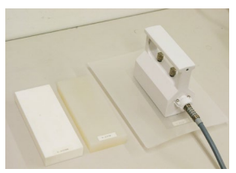

Ships

Quick Thermal Conductivity Meter
QTM-700 Series



CE

QTM-700 series instruments measure thermal conductivity by the transient hot wire method.
Simply place the instrument's sensor on the top of a sample for 1 minute to attain thermal conductivity data that is highly reproducible thanks to its ease of operation. 3 types of probe are available to cater to a large variety of sample materials.



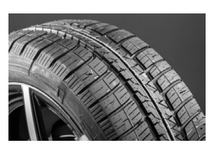
	QTM-710	QTM-700
Measurement Range	0.03 to 12W/(mK)	
Measurement Temperature	5 to 35ºC *For PD-11N & PD-13N	
Precision*1	±5% reading value per reference plate*2 (room temp. only)	
Repeatability*1	3% (at the measurement of reference plate)	
Sheet Type Sample	Measurable	Unmeasurable

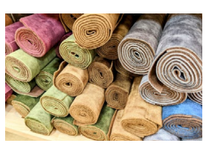
*1 Precision and repeatability of Thin film measurement depends on the state of the sample
*2 Reference plate (Quartz glass / Silicone rubber / Polyethylene foam)

Applications


Thermal insulating material of fiber or foamed plastics


Plastics, Glass, Wood


Tire


Sheet,Leather


Ceramics, High heat insulation material

Standard List

Potentiometric Titrator
AT-710 Series

ASTM

D94	Standard Test Methods for Saponification Number of Petroleum Products
D511	Standard Test Methods for Calcium and Magnesium In Water
D512	Standard Test Methods for Chloride Ion In Water
D664	Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration
D974	Standard Test Method for Acid and Base Number by Color-Indicator Titration
D1067	Standard Test Methods for Acidity or Alkalinity of Water
D1121	Standard Test Method for Reserve Alkalinity of Engine Coolants and Antirusts
D1126	Standard Test Method for Hardness in Water
D1159	Standard Test Method for Bromine Numbers of Petroleum Distillates and Commercial Aliphatic Olefins by Electrometric Titration
D1179	Standard Test Methods for Fluoride Ion in Water
D1252	Standard Test Methods for Chemical Oxygen Demand (Dichromate Oxygen Demand) of Water
D2036	Standard Test Methods for Cyanides in Water
D2710	Standard Test Method for Bromine Index of Petroleum Hydrocarbons by Electrometric Titration
D2896	Standard Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration
D3227	Standard Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosine, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
D3242	Standard Test Method for Acidity in Aviation Turbine Fuel
D3339	Standard Test Method for Acid Number of Petroleum Products by Semi-Micro Color Indicator Titration
D3703	Standard Test Method for Hydroperoxide Number of Aviarion Turbine Fuels, Gasoline and Diesel Fuels
D4739	Standard Test Method for Base Number Determination by Potentiometric Hydrochloric Acid Titration
D4929	Standard Test Method for Determination of Organic Chloride Content in Crude Oil
D5558	Standard Test Method for Determination of the Saponification Value of Fats and Oils
D5776	Standard Test Method for Bromine Index of Aromatic Hydrocarbons by Electrometric Titration
D5806	Standard Test Method for Disinfectant Quaternary Ammonium Salts by Potentiometric Titration
D6470	Standard Test Method for Salt in Crude Oils (Potentiometric Method)
D7318	Standard Test Method for Existent Inorganic Sulfate in Ethanol by Potentiometric Titration
D7795	Standard Test Method for Acidity in Ethanol and Ethanol Blends by Titration
D8192	Standard Test Method for Hardness in Colored and Colorless Water
E291	Standard Test Methods for Chemical Analysis of Caustic Soda and Caustic Potash (Sodium Hydroxide and Potassium Hydroxide)
E776	Standard Test Method for Determination of Forms of Chlorine in Refuse-Derived Fuel
E1899	Standard Test Method for Hydroxyl Groups Using Reaction with p-Toluenesulfonyl Isocyanate (TSI) and Potentiometric Titration with Tetrabutylammonium Hydroxide

IEC

60754-1	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the halogen acid gas content
62021-1	Insulating liquids - Determination of acidity - Part 1: Automatic potentiometric titration

IP

177	Determination of weak and strong acid number - Potentiometric titration method
182	Determination of inorganic acidity of petroleum products - Colour indicator titration method
272	Determination of mercaptan sulfur and hydrogen sulfide content of Liquefied Petroleum Gasses (LPG) - Electrometric titration method

ISO

14896	Plastics -- Polyurethane raw materials -- Determination of isocyanate content
2271	Surface active agents -- Detergents -- Determination of anionic-active matter by manual or mechanical direct two-phase titration procedure
3001	Plastics -- Epoxy compounds -- Determination of epoxy equivalent
3771	Petroleum products -- Determination of base number -- Perchloric acid potentiometric titration method
3839	Petroleum products. Determination of bromine number of distillates and aliphatic olefins. Electrometric method
3961	Animal and vegetable fats and oils. Determination of iodine value
6058	Water quality -- Determination of calcium content -- EDTA titrimetric method
6059	Water quality -- Determination of the sum of calcium and magnesium -- EDTA titrimetric method
6353-1	Reagents for chemical analysis -- Part 1: General test methods
6353-2	Reagents for chemical analysis -- Part 2: Specifications -- First series
6353-3	Reagents for chemical analysis -- Part 3: Specifications -- Second series
6619	Petroleum products and lubricants -- Neutralization number -- Potentiometric titration method
750	Fruit and vegetable products -- Determination of titratable acidity
7781	Styrene-butadiene rubber, raw -- Determination of soap and organic-acid content
8655	Piston-operated volumetric apparatus -- Part 1: Terminology, general requirements and user recommendations

JIS

C2101	Testing methods of electrical insulating oils
K0113	General rules for methods of potentiometric, amperometric, coulometric, and Karl Fischer titrations
K1200-2	Sodium hydroxide for industrial use -- Part 2: Determination of total alkalinity, sodium hydroxide and sodium carbonate
K1557-1	Plastics -- Polyols for use in the production of polyurethane -- Part 1: Determination of hydroxyl number
K2247-2	Diesel engines -- NOx reduction agent AUS 32 -- Part 2: Test methods
K2276	Petroleum products -- Testing methods for aviation fuels
K2501	Petroleum products and lublicants -- Determination of neutralization number
K2605	Petroleum distillates and commercial aliphatic olefins -- Determination of bromine number -- Electrometric method
K6237	Styrene-butadiene rubber, raw -- Determination of soap and organic-acid content
K6910	Testing methods for phenolic resins

UOP

163	Hydrogen Sulfide and Mercaptan Sulfur in Liquid Hydrocarbons by Potentiometric Titration
209	ALKALINITY, SULFIDE AND MERCAPTIDE ANALYSES OF USED REFINERY CAUSTIC SOLUTIONS
212	HYDROGEN SULFIDE, MERCAPTAN SULFUR, AND CARBONYL SULFIDE IN HYDROCARBON GASES BY POTENTIOMETRIC TITRATION
269	NITROGEN BASES IN HYDROCARBONS BY POTENTIOMETRIC TITRATION
304	BROMINE NUMBER AND BROMINE INDEX OF HYDROCARBONS BY POTENTIOMETRIC TITRATION
405	HYDROGEN CHLORIDE IN GAS STREAMS BY POTENTIOMETRIC TITRATION
565	ACID NUMBER AND NAPHTHENIC ACIDS BY TITRATION
588	TOTAL, INORGANIC AND ORGANIC CHLORIDE IN HYDROCARBONS BY POTENTIOMETRIC TITRATION

*The list of example applications shown above is not exhaustive.

Karl Fischer Moisture Titrator
MKV-710, MKC-710, MKH-710 Series

ASTM

D1123	Standard Test Methods for Water in Engine Coolant Concentrate by the Karl Fischer Reagent Method
D1364	Standard Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)
D1533	Standard Test Method for Water in Insulating Liquids by Coulometric Karl Fischer Titration
D3401	Standard Test Methods for Water in Halogenated Organic Solvents and Their Admixtures
D4377	Standard Test Method for Water in Crude Oils by Potentiometric Karl Fischer Titration
D4672	Standard Test Method for Polyurethane Raw Materials: Determination of Water Content of Polyols
D4928	Standard Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration
D5460	Standard Test Method for Rubber Compounding Materials—Water in Rubber Additives
D6304	Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration
D6869	Standard Test Method for Coulometric and Volumetric Determination of Moisture in Plastics Using the Karl Fischer Reaction (the Reaction of Iodine with Water)
E1064	Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration
E203	Standard Test Method for Water Using Volumetric Karl Fischer Titration

United States Pharmacopeia –National Formulary

2.5.12.	WATER: SEMI-MICRO DETERMINATION
2.5.32.	WATER: MICRO DETERMINATION

ISO

760	Determination of water -- Karl Fischer method (General method)
10101-3	Natural gas -- Determination of water by the Karl Fischer method -- Part 3: Coulometric procedure
12937	Petroleum products -- Determination of water -- Coulometric Karl Fischer titration method
14897	Plastics -- Polyols for use in the production of polyurethane -- Determination of water content
7335	Iron ores -- Determination of combined water content -- Karl Fischer titrimetric method
8534	Animal and vegetable fats and oils — Determination of water content — Karl Fischer method (pyridine free)
15512	Plastics -- Determination of water content

JIS

C2101	Testing methods of electrical insulating oils
K0068	Test methods for water content of chemical products
K0113	General rules for methods of potentiometric, amperometric, coulometric, and Karl Fischer titrations
K1557-2	Plastics -- Polyols for use in the production of polyurethane -- Part 2: Determination of water content
K2275-2	Crude petroleum and petroleum products -- Determination of water -- Part 2: Potentiometric Karl Fischer titration method
M8211	Iron ores -- Method for determination of combined water content
M8250	Iron ores -- Determination of hygroscopic moisture in analytical samples -- Gravimetric, Karl Fischer titration and mass-loss methods

European Pharmacopoeia

38 <921>	WATER: DETERMINATION

Density/Specific Gravity Meter, Portable Density/Specific Gravity Meter
DA-800 Series, DA-130N (ASTM D7777 Only)

ASTM

D1250	Standard Guide for Use of the Petroleum Measurement Tables
D4052	Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
D4806	Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel
D5002	Standard Test Method for Density, Relative Density, and API Gravity of Crude Oils by Digital Density Analyzer
D5931	Standard Test Method for Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter
D7777	Standard Test Method for Density, Relative Density, or API Gravity of Liquid Petroleum by Portable Digital Density Meter

European Pharmacopoeia

2.2.5.	RELATIVE DENSITY

ISO

12185	Crude petroleum and petroleum products -- Determination of density -- Oscillating U-tube method
15212-1	Oscillation-type density meters -- Part 1: Laboratory instruments

JIS

K0061	Test methods for density and relative density of chemical products
K2249-1	Crude petroleum and petroleum products -- Determination of density -- Part 1: Oscillating U-tube method
Z8804	Methods of measuring density and specific gravity of liquid

OIML

R 22	Traceability and computerization of alcoholometric tables

United States Pharmacopeia –National Formulary

31 <841>	SPECIFIC GRAVITY

Refractometer
RA-600 Series

ASTM

D1218	Standard Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids
D1569	Standard Test Methods for Detergent Alkylate
D1992	Standard Guide for Testing Synthetic Plasticizers Used in Rubber
D2140	Standard Practice for Calculating Carbon-Type Composition of Insulating Oils of Petroleum Origin
D4056	Standard Test Method for Estimation of Solubility of Water in Hydrocarbon and Aliphatic Ester Lubricants
D4095	Standard Practice for Use of the Refractometer for Determining Nonvolatile Matter (Total Solids) in Floor Polishes
D5006	Standard Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels

European Pharmacopoeia

2.2.6.	REFRACTIVE INDEX

ISO

1743	Glucose syrup — Determination of dry matter content — Refractive index method

ICUMSA

GS4/3-13	The Determination of Refractometric Dry Substance (RDS%) of molasses - Accepted and Very Pure Syrups (Liquid Sugars), Thick Juices and Run-off Syrups - Official

OIML

124	Refractometers for the measurement of the sugar content of grape must

United States Pharmacopeia –National Formulary

31 <831>	REFRACTIVE INDEX

Product range

■ Titration P.6
- Automatic Potentiometric Titrator

■ Moisture Measurement P.8
- Volumetric Karl Fischer Moisture Titrator
- Coulometric Karl Fischer Moisture Titrator
- Hybrid Karl Fischer Moisture Titrator®
- KEMAQUA Reagent & Solvent
- KEMAQUA Water Standard

■ Measurement of Density, SG, Alcohol, Brix P.10
- Density/Specific Gravity Meter
- Alcohol Meter
- Portable Density/Specific Gravity Meter
- Density Standards

■ Measurement of Refractive Index, Brix P.12
- Refractometer
- Portable Brix Meter
- Refractive Index Standards

■ Measurement of Beverage Product Total Gas, Air Content, & Pressure P.14
- Gas Volume Analyzer

■ Viscosity Measurement P.15
- EMS Viscometer

■ Thermal Analysis P.16
- WBGT Meter
- Quick Thermal Conductivity Meter

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