WIGGENS
THE MAGIC MOTION

EN

Wiggens Analytics

- Auto Titrator
- Rotational viscometer
- Falling ball viscometer
- Density meter
- pH, COND, DO meter and electrode
- Refractometer



ChomTron
A brand of Wiggens

About WIGGENS

What Does Wiggens Stand for?

***W**ide Product Range*
***I**nternational Orientation*
***G**reat Quality*
***G**reat Service*
***E**nergetic Team*
***N**ew Technology*
***S**olutions*

Wiggens was established in 2005 with the goal of delivering the best laboratory equipment and service for reliable results. Since then Wiggens has been producing top-quality general laboratory equipment, analysis apparatus and chemical reaction and purification solutions. Our brand Wiggens stands for high quality, durability and remarkable performance.

Wiggens is your reliable laboratory companion and provides products that can be used in different kinds of laboratory environments. The Wiggens product range includes:

ChemVak Pumps
Wiggens General Lab Equipment
Life Science Equipment

ChemTron Gas
H_2 Generators
N_2 Generators
O_2 Generators
Zero Air Generators

ChemTron Reaction & Purification System
Reactor
Rotary Evaporator
Thin film evaporator
Molecular distillation device

ChemTron Analytics
Viscometer
Titrator
Density

ChemVak®

ChemVak, A brand of Wiggens, is specialized in Pump technology offering an extensive range of vacuum pumps, vacuum filtrat and liquid pumps for various applications, including chemical-resistant diaphragm pumps, oil-free pumps and rotary vane vacuum pumps, vacuum filtration equipment for a wide range of different applications. In addition, peristaltic pumps, piston Liquid pumps, solvent recovery systems and bio-suction systems are part of the product range.

ChemTron®

ChemTron is our product brand focusing on analysis apparatus, gas generators, chemical reaction solutions, chemical process separation and purification solutions, includeing efficient chemical separation tools-rotary evaporator, thin film evaporator, molecular distillation device, automatic distillation system, crystalization system etc...



Innovation

New concepts and solutions
Customers as generator of ideas
Friendly and modern working atmosphere

Thinking the unusual is usual for us.

Competence

Specialists in all teams
Expert knowledge and experience

Quality

Reliability
ISO 9001
Strong After Sales Service
Made in Germany, China, Switzerland & USA

Flexibility

Special Design, customized products
Constant feedback from subsidiaries and customers



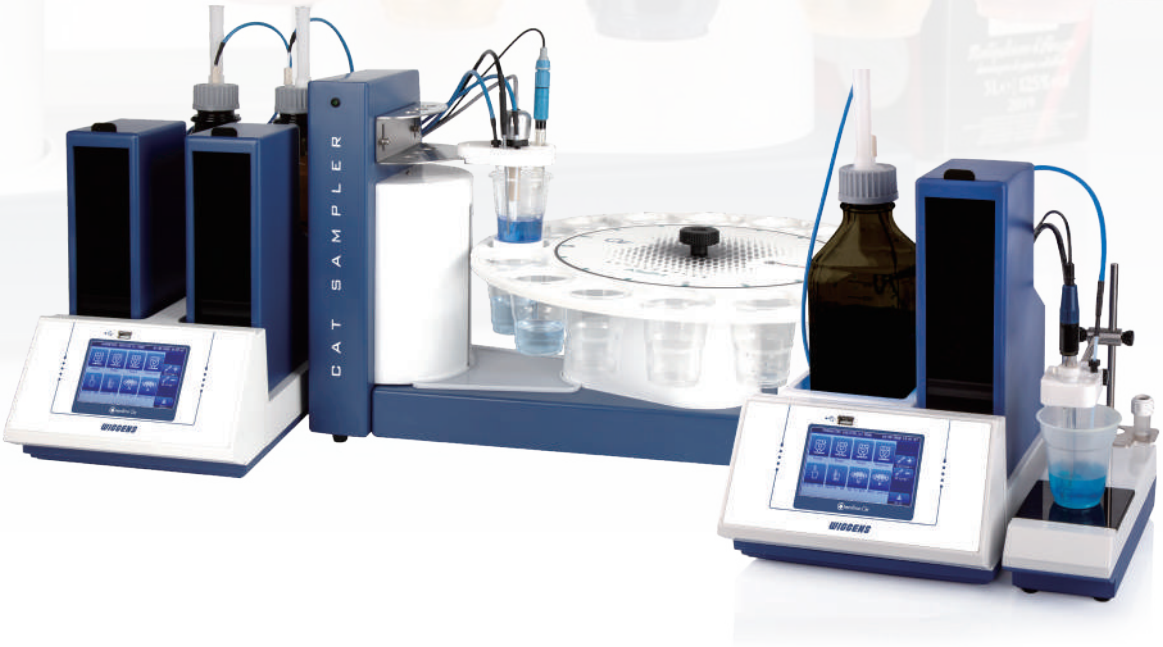
WIGGENS
THE MAGIC MOTION

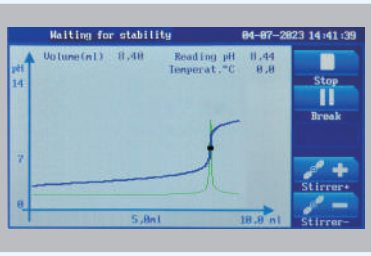
Auto Titrator

Make titration easier...

CAT Automatic Titrator has been designed to simply and precisely perform the widest range of potentiometric titrations, and has always been the first choice if you are looking for a very easy-to-use automatic titrator for any application. A special training or a deeper knowledge of automatic titration are not necessary to get precise and quick results. That and much more is exactly what the new generation of CAT stands for:

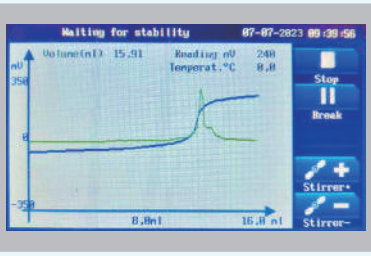
> High resolution pH/mV-measurement input for pH-, silver-,mV-electrodes and double platinum electrode
> Pt 100 temperature measurement input for automatic temperature compensation
> Pre-installed standard methods for alkalinity, total acidity in drinks, free and total SO_2 in wine, chloride etc.
> Constant and progressive titration to equivalent points
> Titration to pH and mV-end points
> Automatic pH measurement (If the auto sampler is present)





Typical applications of water/wastewater and environmental analysis

> Automatic pH measurement
> Alkalinity (p+m value)
> Total kjeldahl nitrogen
> Chloride in wastewater



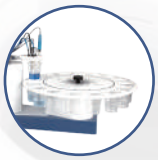
Typical applications of food analysis

> Salt content (chloride, sodium chloride)
> pH-value, total acidity in wine, drinks and other food products
> Ascorbic acid
> protein determination (Kjeldahl-nitrogen in milk and dairy products)
> Free SO_2,total SO_2 determination in wine
> Iodine and peroxide value

CAT. Everything you need.
The advantages at a glance.



Brilliant
Bright display with strong illumination can be viewed easily from a long distance.



Auto-level adjuster
Designed to optimize the procedure of samples auto level, in order to speed up the sample preparation.



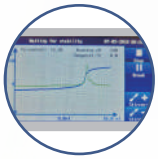
Compact
Compact instrument and can be both upgraded and configured to satisfy the ever challenging laboratory needs.



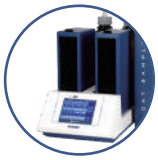
Auto-degassing system
Nitrogen valve for sample degassing.



Easy-to-use
The wide colour touch screen display contains all the messages and the icons that make CAT extremely easy to use. The titrator guides the user in each programming phase, analysis and data interpretation.



Titration curve
During the titration process the graphic trend is displayed in real time, so that the operator is immediately informed about the analysis trend.



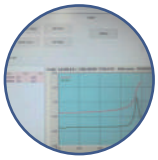
Modular design
Up to 2 burettes and 3 peristaltic pumps, operating together or separately, every stage of titration process can be made truly automatic.



Report
pH electrode calibration report, Standard titration report and Sample titration report.



Peripheral modules
Single analysis stand, 16-position autosampler, 35-position autosampler, printer and software.



Software
Data management software via external PC

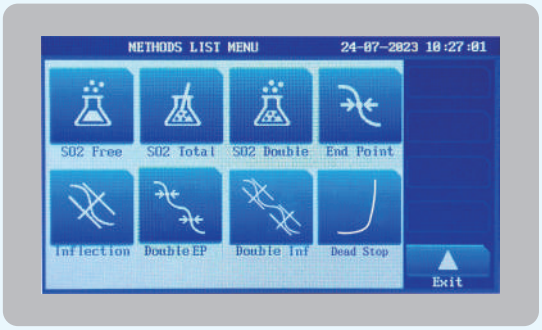


Methods
Default methods, Method template make it quick to edit and start your experiments.



Plug and Play
Intelligent operating concept. Ready for operation with just a few quick and easy steps.

Features



Standard methods

> Pre-installed standard methods for alkalinity, total acidity in drinks, chloride, SO_2 in wine etc.

> Each standard method can be used directly or edited according to actual needs

> The commonly used titration method can be marked and set to the top, which is easy for operators to choose quickly.

Menu

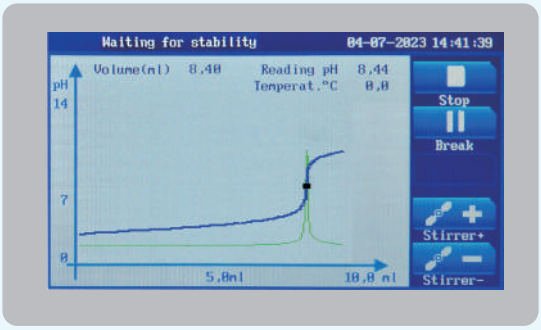
Built-in system setting, date and time setting, calibration solution setting, operator setting, burette manual operation, creep pump manual operation, electrode lifting device manual setting, and continuous titration turntable manual setting function





Utility

Including: manual setting of cleaning steps, manual filling of burette, calibration program settings, pH measurement settings, titration results query, import, transfer and deletion, calibration reports and records



Titration curve

> During the titration process, the titration curve is displayed in real time, and the integral curve will be shown after the titration is finished

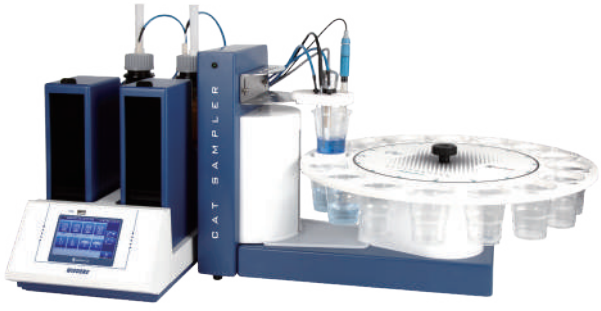
> After titration, display titration results, including starting values, ending values and calculation results

Specification

Model	CAT
Languages	Chinese, English, Italian
The number of burette	10 ml, 1 or 2 burettes
Application Type	Titration to mV and pH end points; Dynamic and linear titration to inflection points (EQ) mV and pH; Dead stop titration
Electrode connection	The BNC socket connects the electrodes
Interfaces	2 x Electrode port BNC; 1 x USB A; 1 x USB B; 1 x RS232 serial (for external printer); 1 x RS232 serial (for sampler); 1 x Bluetooth (for external PC)
Automatic Titration	Independent without external software
Peristaltic pump	Interchangeable pump head (up to 3 per unit), 1ml/sec.
pH	Range: 0-14pH, Accuracy:±0.02pH, Resolution:±0.01pH
mV	Range: ±2000mV, Accuracy:±2mV, Resolution:±0.1mV
µA	Range: ±10µA, Accuracy:±2µA, Resolution:±0.1µA
Temperature	Range: 0-100°C , Accuracy:±1°C , Resolution:±0.1°C
Display	4.3" monochromatic LCD touch screen
pH calibration	Automatic buffer recognition. Refusal of defective electrodes. Notice expired calibration (to be set from 0 to 7 days). Temperature compensation with pt100 probe during pH calibration - 1 buffer calibration (7) - 2 buffers calibration (7, 4 or 10) - Theorical (Nernst equation) - Oenological: 2 buffers calibration (7, 3)
PC software	Need to be ordered separately
Standard methods	Yes
Max. number of methods	30
Controlable via PC software	Yes
Parallel Titration	No
Accessories	Printer; Single analysis stand; 16-position sampler; 35-position micro-sampler; Auto-level adjuster; Automatic degasser; Software for data management on external PC
Burette solution (steps)	12000
Dispensation accuracy	<0.2% (2µL with 10ml syringe)
Dispensation repeatability	± 0.2% (2µL with 10ml syringe)
Ambient conditions	Ambient temperature: + 10 to + 40° C for operation and storage
Material of intelligent interchangeable units	Valve: PTFE/ETFE Cylinder:borosilicate glass 3.3 Hoses: FEP, blue
Result storage	the latest 80 results







Order Information



CAT1 Automatic titrator with one burette and magnetic stirrer

Order No.	Model	Description
CAT1-1-M1	Basis set	Basic unit without electrode, including CAT1,magnetic stirrer(1),stir bar(1),10ml burette(1),titration tube(1),power supply(1),1L glass bottle(1), GL45 and S40 adapter(1),drying tube(1).
CAT1-1-M2	For pH titration	CAT1-1-M1 with pH electrode and buffer solution
CAT1-1-M3	For Precipitation titration	CAT1-1-M1 with Ag electrode
CAT1-1-M4	For Redox titration	CAT1-1-M1 with Pt electrode
CAT1-1-M5	For Dead stop titration	CAT1-1-M1 with Double Platinum electrode



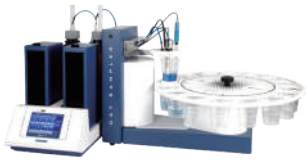
CAT2 Automatic titrator with two burettes and magnetic stirrer

Order No.	Model	Description
CAT2-1-M1	Basis set	Basic unit without electrode, including CAT2,Magnetic stirrer(1),Stir bar(1),10ml burette(2),titration tube(2),power supply(1),1L glass bottle(2), GL45 and S40 adapter(2),drying tube(2).
CAT2-1-M2	For pH titration	CAT2-1-M1 with pH electrode and buffer solution
CAT2-1-M3	For Precipitation titration	CAT2-1-M1 with Ag electrode
CAT2-1-M4	For Redox titration	CAT2-1-M1 with Pt electrode
CAT2-1-M5	For Dead stop titration	CAT2-1-M1 with Double Platinum electrode



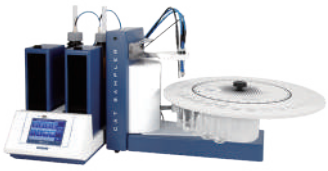
CAT1 Automatic titrator with 16-position auto-sampler

Order No.	Model	Description
CAT1-16-M1	Basis set	Basic unit without electrode, including CAT1, AS24 16 position auto-sampler (1), Stir bar(1),10ml burette(40),titration tube(2),power supply(1),1L glass bottle(2), GL45 and S40 adapter(2),drying tube(2).
CAT1-16-M2	For pH titration	CAT1-16-M1 with pH electrode and buffer solution
CAT1-16-M3	For Precipitation titration	CAT1-16-M1 with Ag electrode
CAT1-16-M4	For Redox titration	CAT1-16-M1 with Pt electrode
CAT1-16-M5	For Dead stop titration	CAT1-16-M1 with Double Platinum electrode



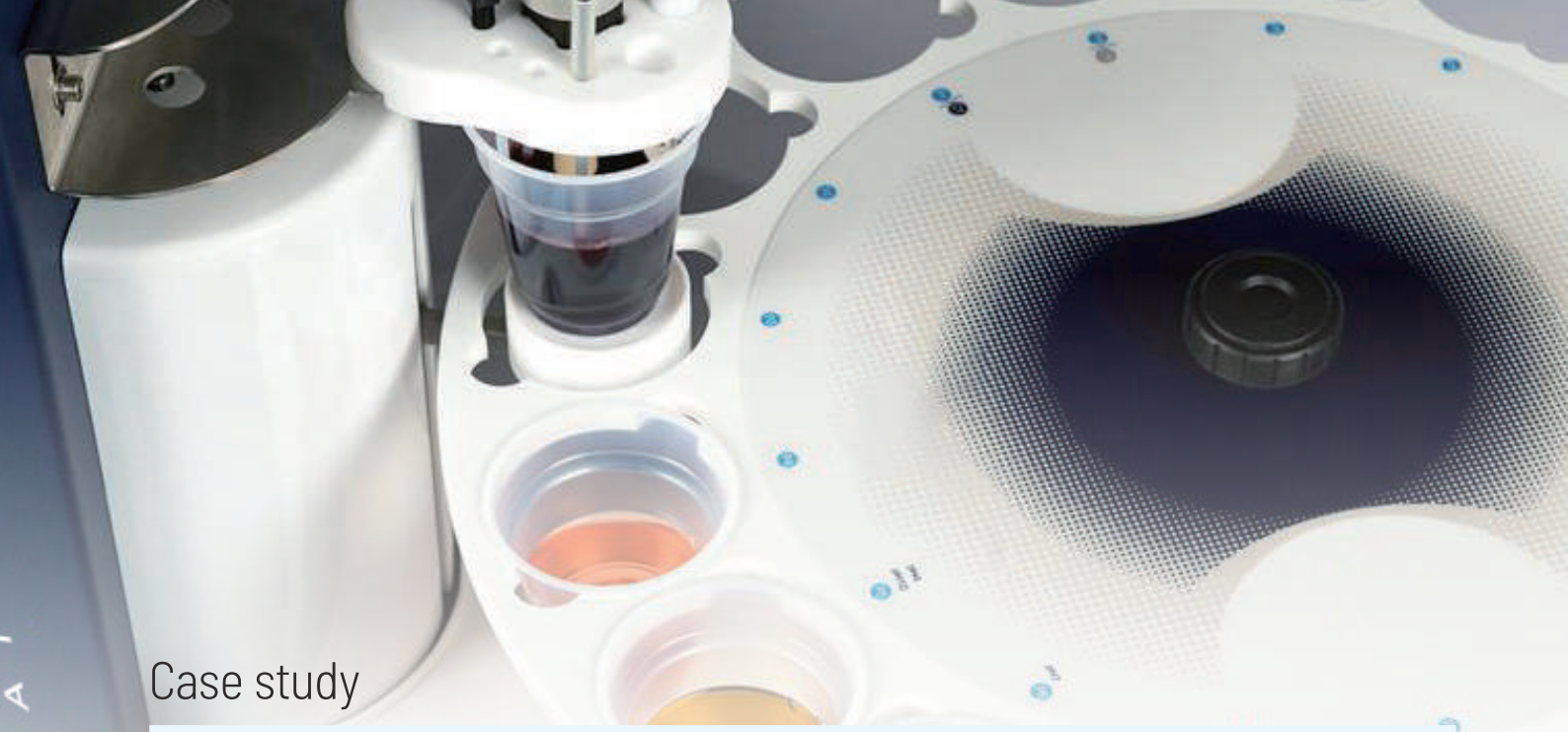
CAT2 Automatic titrator with 16-position auto-sampler

Order No.	Model	Description
CAT2-16-M1	Basis set	Basic unit without electrode, including CAT2, AS24 16 position auto-sampler (1), Stir bar(1),10ml burette(40),titration tube(2),power supply(1),1L glass bottle(2), GL45 and S40 adapter(2),drying tube(2).
CAT2-16-M2	For pH titration	CAT2-16-M1 with pH electrode and buffer solution
CAT2-16-M3	For Precipitation titration	CAT2-16-M1 with Ag electrode
CAT2-16-M4	For Redox titration	CAT2-16-M1 with Pt electrode
CAT2-16-M5	For Dead stop titration	CAT2-16-M1 with Double Platinum electrode



CAT2 Automatic titrator with 35-position micro-sampler

Order No.	Model	Description
CAT2-35-M1	Basis set	Basic unit without electrode, including CAT2, AS24 35 position micro-sampler (1),Stirring paddle(2),10ml burette(2),titration tube(2),power supply(1),1L glass bottle(2), GL45 and S40 adapter(2),drying tube(2).
CAT2-35-M2	For pH titration	CAT2-35-M1 with Micro pH electrode and buffer solution
CAT2-35-M3	For Precipitation titration	CAT2-35-M1 with Micro Ag electrode
CAT2-35-M4	For Redox titration	CAT2-35-M1 with Micro Pt electrode
CAT2-35-M5	For Dead stop titration	CAT2-35-M1 with Micro Double Platinum electrode



Case study

Application	Model	Rigent
Determination of acidity and alkaline	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	-
Redox titration	CAT1-1-M4, CAT2-1-M4, CAT2-16-M4, CAT2-35-M4	-
Halogen titration	CAT1-1-M3, CAT2-1-M3, CAT2-16-M3, CAT2-35-M3	-
Determination of Sodium bisulfite	CAT1-1-M5, CAT2-1-M5, CAT2-16-M5, CAT2-35-M5	Solvent: distilled water Standardisation: $Na_2S_2O_3$ Titrant: Iodine solution (I2) 0.025mol/LL or 0.01 mol/L Other reagents H_2SO_4 10 %, NaOH 4 mol/l, KI-solution 5 %
Determination of total acidity in fruit juice, wine and beverage	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	Titrant: sodium hydroxide solution 0.1mol/l Soda lime for carbon dioxide uptake of the reagent. Titer: potassium hydrogen phthalate (reference material)
Determination of total alkalinity of soda ash	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	Titrant: hydrochloric acid 0.1mol/l Titer: Sodium carbonate
Determination of chloride / sodium chloride in food and water	CAT1-1-M3, CAT2-1-M3, CAT2-16-M3, CAT2-35-M3	Solvent: distilled water Titration agent: silver nitrate solution (AgNO3)0.1 mol/L Standard: NaCl titrimetric standard, HNO3 1 mol/l
Determination of total / Free SO_2 in wine and fruit juice	CAT1-1-M5, CAT2-1-M5, CAT2-16-M5, CAT2-35-M5	Solvent: distilled water Standardisation: $Na_2S_2O_3$ Titrant: Iodine solution (I2) 0.025mol/LL or 0.01 mol/L Other reagents H_2SO_4 10 %, NaOH 4 mol/l, KI-solution 5 %
Determination of acidity/acid degree in milk and milk products	CAT1-1-M2 CAT2-1-M2, CAT2-16-M2 CAT2-35-M2	Solvent: distilled water Standardisation: $Na_2S_2O_3$ Titrant: Sodium hydroxide 0.1mol/l 0.25(SH) or 0.11(Dornic) mol/L Titer: potassium hydrogen phthalate (reference material)
Reducing Sugar titration	CAT1-1-M4, CAT2-1-M4, CAT2-16-M4, CAT2-35-M4	-
Quantitative analysis of ascorbic acid with Iodine titrant	CAT1-1-M5, CAT2-1-M5, CAT2-16-M5, CAT2-35-M5	Titration agent: Iodine solution 0.01 mol/L Other reagents: H_2SO_4 25 % and glyoxal solution 40 %
Determination of nitrate in pickles	CAT1-1-M4, CAT2-1-M4, CAT2-16-M4, CAT2-35-M4	Titrant : Potassium permanganate 0.1 mol/L. and iron (II) 0.1 mol/L.
Determination of Iodine Number	CAT1-1-M4, CAT2-1-M4, CAT2-16-M4, CAT2-35-M4	Solvent : dest. Water, Wijs solution in acetic acid Titration : Sodium thiosulphate solution c ($Na_2S_2O_3$) = 0.1
Determination of alkalinity	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	Titrant : H_2SO_4 or HCl 0.01-0.1 mol/L Titer: Possible with TRIS
COD	CAT1-1-M5, CAT2-1-M5, CAT2-16-M5, CAT2-35-M5	Titrant: ferrous ammonium sulfate hexahydrate Titer: potassium dichromate
Determination of the Permanganate Index	CAT1-1-M4, CAT2-1-M4, CAT2-16-M4, CAT2-35-M4	Titrant: Potassium permanganate and Sodium oxalate
Determination of FOS TAC value in Biogas plants	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	Titrant: Sulfuric Acid Titer: Possible with TRIS(Tris(hydroxymethyl)-aminomethan)
Determination of Nitrogen	CAT1-1-M2, CAT2-1-M2, CAT2-16-M2, CAT2-35-M2	Solvent: Distilled water Titrant: chloric acid 0.1mol/L Titer: Sodium Carbonate

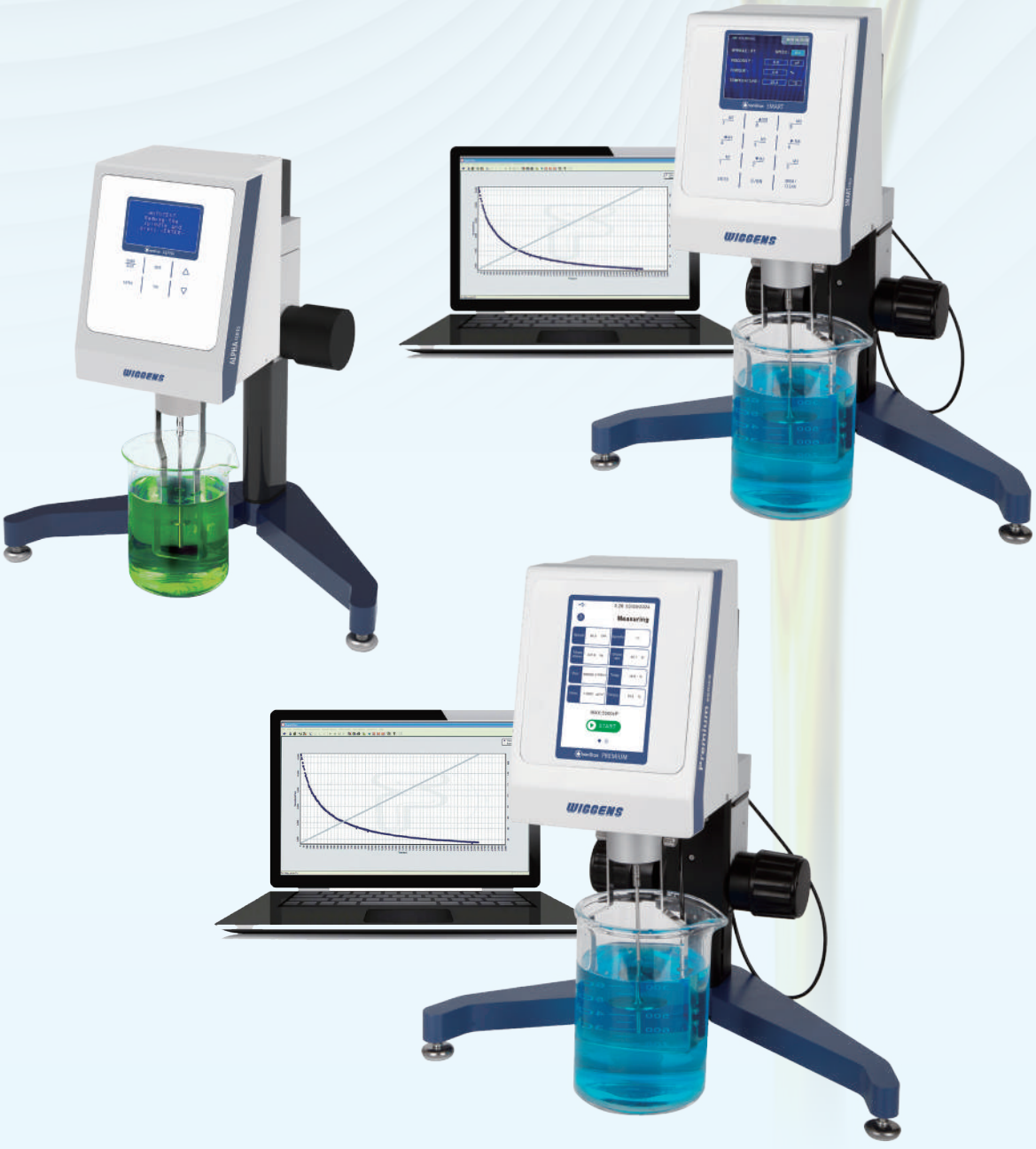
WIGGENS
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Accessories and spare parts

Order No.	Model	Description
285101260	pH electrode	Glass shaft, 3 x ceramic junction, gel electrolyte, Silamid®-reference system, sphere membrane, A-glass, length 120 mm, 12 mm Ø, -5...+80 °C , 0...14 pH
285102413	Silver electrode	Glass shaft, platinum junction, electrolyte KNO3 2 mol/l + KCl 0.001 mol/l, Ag/AgCl-reference system, sensor silver cap 4 mm Ø, chlorinated, plug head, length 120 mm, 12 mm Ø, -5...+100 °C
285102002	Redox electrode	Glass shaft, platinum junction, electrolyte KCl 3 mol/l,Silamid®-reference system, sensor platinum pin 1 mm Ø, plug head, length 170 mm, 12 mm Ø, -5...+100 °C
285103512	Double platinum electrode	Double platinum electrode, glass shaft, sensor 2 platinum pins 1 mm Ø, plug head, length 120 mm, 12 mm Ø, -30...+135 °C
285105702	Micro pH electrode	Microelectrode, glass shaft, platinum junction, electrolyte KCl 3 mol/l, Ag/AgCl-reference system, sensor platinum pin 1 mm Ø, 1 m fixed cable with BNC plug, tapper NS 7.5, length 96 mm, 5 mm Ø, -5...+100 °C
285122497	Electrode cable	Coaxial electrode plug, 1 m coaxial cable, BNC instrument plug
SFLA2261	Peristaltic pump	Peristaltic pump
SFLA2691	Auto-level adjuster	Auto-level adjuster
SQTR074926	Temperature sensor	Temperature sensor
SFLA2681	Automatic degassing system	Automatic degassing system
SQFV062829	Easydata Software	Easydata Software
SQTR074678	Thermal printer	EPSON Thermal printer
SQTR075651	Printing paper	Printing paper



Viscometer



Rotational viscometer

ALPHA series

Alpha series rotational viscometers allow fast and accurate viscosity readings. They are low budget and easy to use.

Touch Keyboard

Latest keyboarding technology, comfortable and easy to handle (6 keys)

Program Features

Time to Torque
Time to Stop

Data Displayed

Selected Speed
Selected Spindle
Viscosity readings (cP or mPa·s or cSt)
Percentage of Full Scale Range (%)
Sample Temperature (°C or °F)
Shear rate (with coaxial spindles) (s-1)
Shear Stress (with coaxial spindles) (N/m^2)
Density (introduced by the user) (g/cm^3)

Viscosity Readings

Absolute viscosity (cP or mPa·s)
Apparent viscosity (cP or mPa·s)
Kinematic viscosity (cSt, mm^2/sec)
(Density introduced by the user)

Graphic Display

Provides huge range of graphical options

Temperature Reading By PT100

Temperature sensor PT100 is opition

USB Interface

Faster transfer data to the USB stick

9 working memories

Set up the unit and get it ready to be used every day choosing the memory you need

Universal Adapter



Main features

> Touch key board 6 keys.
> Direct readout on a graphic display.
> Data displayed:
  Selected speed.....r.p.m.
  Selected spindle.....SP
  Viscosity reading.....cP (mPa·s) or cSt
  Percentage of full scale.....%
  Sample temperature..... °C or °F
  Shear Rate (with coaxial spindles) .....SR (s^{-1})
  Shear Stress (with coaxial spindles) .....SS (N/m^2)
  Density (introduced by the user) .....g/cm^3
> Viscosity reading: dynamic viscosity
  (cP or mPa·s) or kinematics viscosity (cSt).
> Unit converter SI to CGS.
> Program features:
  Time to torque: target torque pre-setting device.
  Time to stop: target time pre-setting device.
  9 working memories.
> AUTO-TEST with sound and visual malfunction alarm.
> AUTO-RANGE function.
> Temperature reading by PT100 (optional).
> User-enabled viscosity and temperature (optional) calibration.
> 7 language options.
> USB-A (PT100, USB Stick, PC)

Technical specifications

> Precision: ± 1% of full scale
> Resolution:
  With low viscosity adapter: 0.01
  For lower than 10.000 viscosity cP: 0.1
  For viscosity equal to or above 10.000 cP: 1
> Repeatability: 0.2%
> Thermometer features:
  Temperature margins:
  -40° C to + 300.0° C (- 40.0 °F to + 572.0 °F)

> Resolution: 0.1°C / 0.1722 °F
> Precision: +/- 0.1 °C
> Type of probe: PT100
> Supplied at 100-240 VAC, 50/60 Hz

Spindles
AISI 316 stainless steel spindles, easily identified
by number and letter when changed according to range of viscosity.

These are the standards our units follow:
> BS: 6075, 5350
> ISO: 2555, 1652
> ASTM: 115, 789, 1076, 1084, 1286, 1417, 1439, 1638, 1824, 2196, 2336, 2364, 2393, 2556, 2669, 2849, 2983, 2994, 3232, 3236, 3716

Order Information

Model	Order No.	Measuring range	Standard spindles	Speed (r.p.m)	Number of speeds	Power supply	Weight
ALPHA L	C01011001	20 to 2,000,000 cP	L1,L2,L3,L4	0.3 to 100	18	100~240V 50/60Hz, 25W	5kg
ALPHA R	C01011002	100 to 13,000,000 cP	R2,R3,R4,R5,R6,R7	0.3 to 100	18	100~240V 50/60Hz, 25W	5kg
ALPHA H	C01011003	200 to 106,000,000 cP	R2,R3,R4,R5,R6,R7	0.3 to 100	18	100~240V 50/60Hz, 25W	5kg

Standard delivery

Viscometer head with serial number / Stand, 3 levelling adjustment for stand / Boss head / Standard spindles / Spindle protector / Power supply cable / Calibration Certificate / Operating manual
NOTE: All parts (including the viscometer stand) find room in the carrying case.

Extra accessories

APM (Small Sample Adapter) / LCP (Low Viscosity Adapters) / Heldal unit (High Viscosity Adapter) / HTA unit (High Temperature Adapter) / Silicon Standard Oils / Thermostatic Bath



Rotational viscometer

SMART series

Innovative equipments with an advanced design and multifunctional viscosity measurements.

- Colour TFT screen for easy readings and fast data recognition.
- Intuitive full-touch keypad: data at your fingertips.
- New USB connection: Type A 2.0 generation for downloading data to the PC.



Screen data

Selected speed.....r.p.m.
Selected spindle.....SP
Viscosity reading.....cP (mPa·s) or cSt
Percentage of full scale.....%
Sample temperature..... °C or °F
Shear Rate (with coaxial spindles) .....SR (s^{-1})
Shear Stress (with coaxial spindles) .....SS (N/m^2)
Density (introduced by the user) .....g/cm^3

Viscosity reading

> Dynamic viscosity (cP or mPa·s)
> Kinematic viscosity (cSt).
> Units Converter from SI to CGS.

Program

> Time to torque: Ending of the test upon reaching a programmed torque.
> Time to stop: Ending of the test upon reaching a programmed time.
> Multistep: posibility to programme several essays in a successive way
> Ramps: essay programation with an initial and final speed in an specific time
> 9 working memories.

Other features

> AUTO-TEST with visual and resonant alarm
> AUTO-RANGE function
> Temperature Reading through PT100 probe
> User-enabled viscosity and temperature calibration
> 7 language options
> USB-A (PT100, USB Stick, PC)
> Datalogger: Posibility to tranfer data to a pendrive into Excel format
> Statistics: Posibility to see data in graphics

Technical specifications

> Precision: +/- 1% full scale of range
> Resolution: For a minus viscosity of 100 cP : 0.01 cP
For a major viscosity of 1000 cP : 0.1 cP
For a major viscosity of 5000 cP : 1.0 cP
For a major viscosity of 10.000 cP : 5.0 cP
For a major viscosity of 25.000 cP : 10.0 cP
For a major viscosity of 50.000 cP : 25.0 cP
For a major viscosity of 100.000 cP : 100.0 cP
For a major viscosity of 1.000.000 cP : 1.000.0 cP
> Repeatability: 0.2%
> Temperature probe features: Temperature limits:
-40°C to 300°C -40 °F to 572 °F Resolution: 0.1°C / -17.722 °F
> Precision: +/- 0.2°C / +/- 17.666 °F
> Type of probe: PT100
> Supplied at 110-240VAC, 50/60 Hz.
> Software: Data Boss
The Data Boss software complies the FDA 21CFR PART 11 regulation

Spindles

AISI 316 Stainless steel spindle, easily to identify according to its letter and number, in terms of the range of viscosity.

Standards

These are the standards our units follow:
• BS: 6075, 5350
• ISO:2555,1652
• ASTM: 115, 789, 1076, 1084,
1286, 1417, 1439, 1638, 1824, 2196, 2336, 2364, 2393, 2556,
2669, 2849, 2983, 2994, 3232, 3236, 3716

Order Information

Model	Order No.	Measuring range	Standard spindles	Speed (r.p.m)	Number of speeds	Power supply	Weight
SMART L	C01012001	10 to 6,000,000 cP	L1,L2,L3,L4	0.01 to 250	2600	100~240V 50/60Hz, 25W	5kg
SMART R	C01012002	25 to 40,000,000 cP	R2,R3,R4,R5,R6,R7	0.01 to 250	2600	100~240V 50/60Hz, 25W	5kg

Standard delivery:

Viscometer head with serial number / Stand, 3 levelling adjustment for stand / Boss head / Standard spindles(4 spindles for L model, and 6 spindles for R models) / Spindle protector / Spindle rack / PT100 probe / Power supply cable / Carrying case / Calibration Certificate / Data cable and software / Operating manual
NOTE: All parts (including the viscometer stand) find room in the carrying case.

Extra accessories

APM (Small Sample Adapter) / LCP (Low Viscosity Adapters) / Heldal unit (High Viscosity Adapter) / HTA unit (High Temperature Adapter) / Silicon Standard Oils / Thermostatic Bath



Rotational viscometer

PREMIUM series

Innovative equipments with an advanced design
and multifunctional viscosity measurements.

> High-resolution display for easy readings and fast data recognition.

> 5" Touch screen: data at your fingertips.

> New USB connection: Type A 2.0 generation for downloading data to the PC.

New
Touch screen

Simplicity
at its finest,
technology
at its best.



Screen data

Selected speed.....r.p.m.
Selected spindle.....SP
Viscosity reading.....cP (mPa·s) or cSt
Percentage of full scale.....%
Sample temperature..... °C or °F
Shear Rate (with coaxial spindles) .....SR (s^{-1})
Shear Stress (with coaxial spindles) .....SS (N/m^2)
Density (introduced by the user) .....g/cm^3

Viscosity reading

> Dynamic viscosity (cP or mPa·s)
> Kinematic viscosity (cSt).
> Units Converter from SI to CGS.

Program

> Time to torque: Ending of the test upon reaching a programmed torque.
> Time to stop: Ending of the test upon reaching a programmed time.
> Multistep: posibility to programme several essays in a successive way
> Ramps: essay programation with an initial and final speed in an specific time
> 12 working memories.

Other features

> AUTO-TEST with visual and resonant alarm
> AUTO-RANGE function
> Temperature Reading through PT100 probe
> User-enabled viscosity and temperature calibration
> 4 language options (more operating language available)
> USB-A (PT100), USB-A (USB Stick), RS232 (PC)
> Datalogger: Posibility to tranfer data to a pendrive into Excel format
> Statistics: Posibility to see data in graphics

Technical specifications

> Precision: +/- 1% full scale of range
> Resolution: For a minus viscosity of 100 cP : 0.01 cP
For a major viscosity of 1000 cP : 0.1 cP
For a major viscosity of 5000 cP : 1.0 cP
For a major viscosity of 10.000 cP : 5.0 cP
For a major viscosity of 25.000 cP : 10.0 cP
For a major viscosity of 50.000 cP : 25.0 cP
For a major viscosity of 100.000 cP : 100.0 cP
For a major viscosity of 1.000.000 cP : 1.000.0 cP
> Repeatability: 0.2%
> Temperature probe features: Temperature limits:
-40°C to 300°C -40 °F to 572 °F Resolution: 0.1°C / -17.722 °F
> Precision: +/- 0.2°C / +/- 17.666 °F
> Type of probe: PT100
> Supplied at 110-240VAC, 50/60 Hz.
> PC Software

Spindles

AISI 316 Stainless steel spindle, easily to identify according to its letter and number, in terms of the range of viscosity.

Standards

These are the standards our units follow:

• BS: 6075, 5350
• ISO:2555,1652
• ASTM: 115, 789, 1076, 1084, 1286, 1417, 1439, 1638, 1824, 2196, 2336, 2364, 2393, 2556, 2669, 2849, 2983, 2994, 3232, 3236, 3716

Order Information

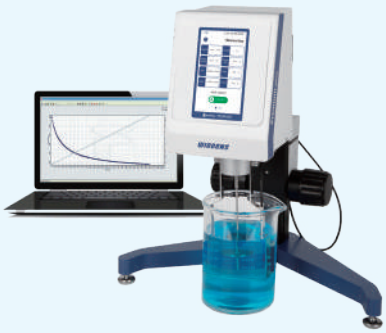
Model	Order No.	Measuring range	Standard spindles	Speed (r.p.m)	Number of speeds	Power supply	Weight
PREMIUM L	C01013001	10 to 6,000,000 cP	L1,L2,L3,L4	0.01 to 250	2600	100~240V 50/60Hz, 25W	5kg
PREMIUM R	C01013002	25 to 40,000,000 cP	R2,R3,R4,R5,R6,R7	0.01 to 250	2600	100~240V 50/60Hz, 25W	5kg
PREMIUM H	C01013003	200 to 320,000,000 cP	R2,R3,R4,R5,R6,R7	0.01 to 250	2600	100~240V 50/60Hz, 25W	5kg

Standard delivery:

Viscometer head with serial number / Stand, 3 levelling adjustment for stand / Boss head / Standard spindles(4 spindles for L model, and 6 spindles for R and H models) / Spindle protector / Spindle rack / PT100 probe / Power supply cable / Carrying case / Calibration Certificate / Data cable and software / Operating manual
NOTE: All parts (including the viscometer stand) find room in the carrying case.

Extra accessories

APM (Small Sample Adapter) / LCP (Low Viscosity Adapters) / Heldal unit (High Viscosity Adapter) / HTA unit (High Temperature Adapter) / Silicon Standard Oils / Thermostatic Bath



Accessories for rotational viscometers

Small Sample Adapter

The small sample adapter consists of a cylindrical sample chamber and coaxial spindles, designed for flawless, accurate viscosity measurements of small volumes. Cylindrically designed for shear measurements. (Spindles supplied separately, TL5,6,7 for model L, and TR8,9,10,11 for Model R and H).





APM



APM/B

Technical Features

- Removable, easy-to-clean stainless steel sample chamber.
- Flow jacket sample thermostatisation between -10 and +100°C (optional).
- Sample volume: from 8 to 13 ml, varies with spindle.
- PT100 temperature sensor with adapter (W8006083) is optional.

Order No.	Model	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)
		Alpha L	Alpha R	Alpha H	Smart L / Premium L	Smart R / Premium R	Premium H
C01019001	APM	30~200,000	500~3,300,000	4,000~26,660,000	13~200,000	200~3,300,000	1,600~26,660,000
C01019002	APM/B	30~200,000	500~3,300,000	4,000~26,660,000	13~200,000	200~3,300,000	1,600~26,660,000

PLEASE NOTE: It is not recommended to work with viscosity values of less than 15% of the lower part of the selected scale.

Low Viscosity Adapter

The low viscosity adapter is used on the rotational viscometers to perform accurate and reproducible readings on materials with viscosity as low as 1 cP (mPa·s). Cylindrically designed for shear measurements. (Supplied with spindle.)

Technical Features

- Easy to clean, removable stainless steel sample container.
- Sample volume: from 16 to 18 ml.
- Flow jacket for sample thermostatisation from -10 to +100°C (optional).
- PT100 temperature sensor with adapter (W8006082) is optional.





LCP



LCP/B

Order No.	Model	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)	Measure range (cP)
		Alpha L	Alpha R	Alpha H	Smart L / Premium L	Smart R / Premium R	Premium H
C01019003	LCP	6~2,000	64~21,000	None	2.4~2,000	27~21,300	None
C01019004	LCP/B	6~2,000	64~21,000	None	2.4~2,000	27~21,300	None

PLEASE NOTE: It is not recommended to work with viscosity values of less than 15% of the lower part of the selected scale.

Heldal unit for helicoidal movement

Accessory designed for viscosity measurements of non-flowing substances. In these materials the viscosity cannot be measured by standard methods and spindles due to cavitation effect around the spindle. We recommend using the HELDAL unit and T-bar spindles for comparative measurements on nonflowing substances.
A Wiggens viscometer is mounted on the Heldal unit, and it restricts measuring head to smoothly run up and down within pre-established limits, allowing constant contact between T-bar spindle and test sample thanks to the helical line described.

Additional Features

- Easy to use, install and clean.
- Supplied with motor, 6 T-shaped spindles and carrying case.
- Compatible with all Wiggens rotational viscometers.

Applications

- Creams - Gels
- Pastes - Gelatin
- Other non-flowing substances.





Order No.	Model	Measure range (cP)	Measure range (cP)	Measure range (cP)
		Alpha L / Smart L / Premium L	Alpha R / Smart R / Premium R	Alpha H / Premium H
C01019005	HELDAL	1,500~3,100,000	16,600~33,300,000	130,000~260,000,000

PLEASE NOTE: The measurements obtained with Heldal do not measure absolute viscosity! They are only comparative measurements with the same geometry as T-shaped spindles.

Specification

Wiggens model	Alpha L	Alpha R	Alpha H	Smart L
Order No.	C01011001	C01011002	C01011003	C01012001
Keypad	6 keys	6 keys	6 keys	12 keys
Measuring range	20 - 2,000,000cP	100 - 13,000,000cP	200 - 106,000,000cP	10~6,000,000cP
Speed range	0.3~100rpm	0.3~100rpm	0.3~100rpm	0.01~250rpm
Number of speed	18	18	18	2600
Temperature sensor	USB-A	USB-A	USB-A	USB-A
PC connection	\	\	\	USB-A
Standard delivery	Viscometer head	Viscometer head	Viscometer head	Viscometer head
	PT100 (Optional)	PT100 (Optional)	PT100 (Optional)	PT100 (Standard)
	Smart stand	Smart stand	Smart stand	Smart stand
	L1/2/3/4 spindles	R2/3/4/5/6/7 spindles	R2/3/4/5/6/7 spindles	L1/2/3/4 spindles
	Spindle protector	Spindle protector	Spindle protector	Spindle protector
	\	\	\	Spindle rack
	Power cable 100~240V	Power cable 100~240V	Power cable 100~240V	Power cable 100~240V
	Certificate	Certificate	Certificate	Certificate
	Operation manual	Operation manual	Operation manual	Operation manual
	\	\	\	PC software (Databoss)
	\	\	\	USB cable
	Carrying case	Carrying case	Carrying case	Carrying case
Spindle (optional)	\	R1	R1	\
Small volume adapter APM(without spindle)	APM	APM	APM	APM
	APM/B	APM/B	APM/B	APM/B
APM spindle	TL5/6/7	TR8/9/10/11	TR8/9/10/11	TL5/6/7
	LCP	LCP	\	LCP
Low viscosity adapter LCP(with spindle)	LCP	LCP	\	LCP
	LCP/B	LCP/B	\	LCP/B
LCP spindle	LCP/SP	LCP/SP	\	LCP/SP
HELDAP adapter(with spindle)	HELDAL	HELDAL	HELDAL	HELDAL
Spindle	PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF
Program	TTT(time to torque)	TTT(time to torque)	TTT(time to torque)	TTT(time to torque)
	TTS(time to stop)	TTS(time to stop)	TTS(time to stop)	TTS(time to stop)
	9 methods	9 methods	9 methods	9 methods
	\	\	\	Customer-defined speed
	\	\	\	Multistep
	\	\	\	Ramp
	7 language options	7 language options	7 language options	7 language options
	Temp. calibration	Temp. calibration	Temp. calibration	Temp. calibration
	Viscosity calibration	Viscosity calibration	Viscosity calibration	Viscosity calibration
Display	r.p.m	r.p.m	r.p.m	r.p.m
	Spindle No.	Spindle No.	Spindle No.	Spindle No.
	cP(mP.s)/cSt	cP(mP.s)/cSt	cP(mP.s)/cSt	cP(mP.s)/cSt
	Percent torque	Percent torque	Percent torque	Percent torque
	°C / °F (with PT100)	°C / °F (with PT100)	°C / °F (with PT100)	°C / °F
	SR* (shear rate)	SR* (shear rate)	SR* (shear rate)	SR* (shear rate)
	SS* (shear stress)	SS* (shear stress)	SS* (shear stress)	SS* (shear stress)
	Density (input)	Density (input)	Density (input)	Density (input)

*The shear stress (SS) and shear rate can be measure when coaxial spindles (LCP-SP, TL and TR spindle) are used

WIGGENS
THE MAGIC MOTION

Specification

Smart R	Premium L	Premium R	Premium H	Wiggens model
C01012002	C01013001	C01013002	C01013003	Order No.
12 keys	Touch screen	Touch screen	Touch screen	Keypad
25~40,000,000cP	10~6,000,000cP	25~40,000,000cP	200~320,000,000cP	Measuring range
0.01~250rpm	0.01~250rpm	0.01~250rpm	0.01~250rpm	Speed range
2600	2600	2600	2600	Number of speed
USB-A	USB-A	USB-A	USB-A	Temperature sensor
USB-A	USB-A	USB-A	USB-A	PC connection
Viscometer head	Viscometer head	Viscometer head	Viscometer head	Standard delivery
PT100 (Standard)	PT100 (Standard)	PT100 (Standard)	PT100 (Standard)	
Smart stand	Smart stand	Smart stand	Smart stand	
R2/3/4/5/6/7 spindles	L1/2/3/4 spindles	R2/3/4/5/6/7 spindles	R2/3/4/5/6/7 spindles	
Spindle protector	Spindle protector	Spindle protector	Spindle protector	
Spindle rack	Spindle rack	Spindle rack	Spindle rack	
Power cable 100~240V	Power cable 100~240V	Power cable 100~240V	Power cable 100~240V	
Certificate	Certificate	Certificate	Certificate	
Operation manual	Operation manual	Operation manual	Operation manual	
PC software (Databoss)	PC software (Databoss)	PC software (Databoss)	PC software (Databoss)	
USB cable	USB cable	USB cable	USB cable	
Carrying case	Carrying case	Carrying case	Carrying case	
R1	\	R1	R1	Spindle (optional)
APM	APM	APM	APM	Small volume adapter APM(without spindle)
APM/B	APM/B	APM/B	APM/B	
TR8/9/10/11	TL5/6/7	TR8/9/10/11	TR8/9/10/11	APM spindle
LCP	LCP	LCP	\	
LCP	LCP	LCP	\	Low viscosity adapter LCP(with spindle)
LCP/B	LCP/B	LCP/B	\	
LCP/SP	LCP/SP	LCP/SP	\	LCP spindle
HELDAL	HELDAL	HELDAL	HELDAL	HELDAP adapter(with spindle)
PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF	PA/PB/PC/PD/PE/PF	Spindle
TTT(time to torque)	TTT(time to torque)	TTT(time to torque)	TTT(time to torque)	Program
TTS(time to stop)	TTS(time to stop)	TTS(time to stop)	TTS(time to stop)	
9 methods	12 methods	12 methods	12 methods	
Customer-defined speed	Customer-defined speed	Customer-defined speed	Customer-defined speed	
Multistep	Multistep	Multistep	Multistep	
Ramp	Ramp	Ramp	Ramp	
7 language options	4 language options	4 language options	4 language options	
Temp. calibration	Temp. calibration	Temp. calibration	Temp. calibration	
Viscosity calibration	Viscosity calibration	Viscosity calibration	Viscosity calibration	
r.p.m	r.p.m	r.p.m	r.p.m	Display
Spindle No.	Spindle No.	Spindle No.	Spindle No.	
cP(mP.s)/cSt	cP(mP.s)/cSt	cP(mP.s)/cSt	cP(mP.s)/cSt	
Percent torque	Percent torque	Percent torque	Percent torque	
℃ / ℉	℃ / ℉	℃ / ℉	℃ / ℉	
SR* (shear rate)	SR* (shear rate)	SR* (shear rate)	SR* (shear rate)	
SS* (shear stress)	SS* (shear stress)	SS* (shear stress)	SS* (shear stress)	
Density (input)	Density (input)	Density (input)	Density (input)	

*The shear stress (SS) and shear rate can be measure when coaxial spindles (LCP-SP, TL and TR spindle) are used

High Temperature Adapter

Wiggens offers the latest in SHRP asphalt binder testing equipment specifically designed to meet the requirements of AASHTO T316 / ASTM D4402 high temperature test methods for asphalt binders. The precision and accuracy for controlling sample temperatures up to 300° C is ideal for the asphalt industry as well as high viscosity samples.



Standard delivery

> Alignment bracket
> Thermo container with safety guard and insulating cap
> Extracting tools
> Temperature controller

Optional

> TL or TR spindles (TL5,6,7 for model L, TR8,9,10,11 for model R and H)

Spindle

	Model	Viscosity range cP (mPa··s)
	L1	15-20.000
	L2	50-100.000
	L3	200-400.000
	L4	1.000-400.000
	R1	In R Models:100-20.000 In H Models:800-160.000
	R2	In R Models:100-80.000 In H Models:800-640.000
	R3	In R Models:100-200.000 In H Models:800-1.600.000
	R4	In R Models:200-400.000 In H Models:1.600-3.200.000
	R5	In R Models:400-800.000 In H Models:3.200.000-6.400.000
	R6	In R Models:1.000-2.000.000 In H Medels:8.000.000-16.000.000
	R7	In R Models:4.000-8.000.000 In H Medels:32.000.000-64.000.000
	TR 8	nR Models: 50-170.000 In H Models:400-1.300.000
	TR 9	InR Models:250-830.000 inH Models:20.000-6.700.000
	TR 10	nR Models: 500-1.700.000 In H Models:4.000-13.300.000
	TR 11	in R Models:1.000-3.300.000 in H Medels:80-28.700.000
	TL5	3-10.000
	TL6	30-100.000
	TL7	60-200.000
	LCPS	

Order No.	Model	For Model
C01019010	Included L1,2,3,4	Model L
C01019011	L1	Model L
C01019012	L2	Model L
C01019013	L3	Model L
C01019014	L4	Model L
C01019018	Included R2,3,4,5,6,7	Model R / H
C01019019	R1	Model R / H
C01019020	R2	Model R / H
C01019021	R3	Model R / H
C01019022	R4	Model R / H
C01019023	R5	Model R / H
C01019024	R6	Model R / H
C01019025	R7	Model R / H
C01019044	LCPS	LCP
C01019031	Included TL5,6,7	Model L with APM
C01019032	TL5	Model L with APM
C01019033	TL6	Model L with APM
C01019034	TL7	Model L with APM
C01019037	Included TR8,9,10,11	Model R / H with APM
C01019038	TR 8	Model R / H with APM
C01019039	TR 9	Model R / H with APM
C01019040	TR 10	Model R / H with APM
C01019041	TR 11	Model R / H with APM
C01019100	Included PA~PF	Model R / H with Heldal
C01019101	PA	Model R / H with Heldal
C01019102	PB	Model R / H with Heldal
C01019103	PC	Model R / H with Heldal
C01019104	PD	Model R / H with Heldal
C01019105	PE	Model R / H with Heldal
C01019106	PF	Model R / H with Heldal

Silicone standard oil

- Calibration performed by accredited laboratory
- Direct traceability to national/international standards
- Dynamic viscosity
- Kinematic viscosity
- Package: 250ml /500ml



250ml bottle	500ml bottle			
Order No.	Order No.	KV,(mm²/s), 20°C	DV(mPa.s), 20°C	Urel(k=2)
C01019081	C01019096	2.0079	1.6234	0.0016
C01019082	C01019097	5.0208	4.0814	0.0016
C01019083	C01019098	9.9462	8.0694	0.0016
C01019084	C01019099	20.063	17.509	0.0021
C01019085	C01019100	51.647	43.874	0.0021
C01019086	C01019101	102.46	87.726	0.0027
C01019087	C01019102	197.32	170.43	0.0027
C01019088	C01019103	547.56	532.34	0.0033
C01019089	C01019104	1099.0	1069.8	0.0033
C01019090	C01019105	2189.4	2131.4	0.0039
C01019091	C01019106	5080.1	4946.5	0.0039
C01019092	C01019107	10143	9884.4	0.0044
C01019093	C01019108	20443	19918	0.0044
C01019094	C01019109	50444	49178	0.0050
C01019095	C01019110	102400	99850	0.0050

Temperature sensor and adapter

Order No.	Model	For Model
W8006081	Temperature sensor	All Models
W8006082	Temperature sensor with adapter	LCP
W8006083	Temperature sensor with adapter	APM



Visco bath

It is very important to keep the temperature stable during the viscosity measurement

Order No.	Model	Temp. range	Temp. stability	Bath opening / depth	Filling volume	Dimensions	Refrigeration method
		°C	°C	W×L/D cm	L	W×L×H cm	
9021701	DD-200F	-20...+200	±0.01	13×15/15	3~4	23×39×65	Compressor
9021702	DD-201F	-20...+200	±0.01	13×15/15	3~4	44×41×44	Compressor
8601151	C150	3...60	±0.1	-	0.9	19x37x36	Peltier
8601301	C300	3...60	±0.1	-	0.9	40x19x39	Peltier

Falling ball viscometer

VISCO BALL

The Viscoball measures accurately the viscosity of transparent Newtonian liquids and gases (with a special ball).
2 YEARS WARRANTY

Measuring principle
Complies with DIN 53015 / ISO 12058, The rolling and sliding movements of a ball through the sample liquid are timed in an inclined cylindrical measuring tube. The sample viscosity is correlated to the time a ball requires to traverse a defi nite distance. By turning the measuring tube upside down again the return of the ball may also be used for an additional measurement applying the return constant.
The test results are given as dynamic viscosity in the internationally standardized, absolute units of mPa·s.

Main Features

> High accuracy through improved visibility of falling ball.
> Minimized test time due to accurate return run of the ball.
> Reduced cost of ownership through increased life time of falling tube.
> Extended re-calibration periods through improved bearing support.

The VISCO BALL viscometer is mainly used for low viscosity substances such as used in:

> Mineral oil industry (oils, liquid hydrocarbons, ...)
> Food industry (sugar solution, honey, beer, milk, gelatine, fruit juice, ...)
> Chemical industry (polymer solutions, solvents, resin solutions, latex dispersions, adhesive solutions, ...)
> Cosmetic/Pharmaceutical industry (raw materials, glycerine, emulsions, suspensions, solutions, extracts, ...)
> Petroleum industry (light crude, machine oil, crude petroleum,...)
> Fuels (petrol, diesel oil, paraffin, ...).
> Paper industry (emulsions, pigment dispersion, paper additives, ...)
> Paints and varnishes (printing inks, varnishes, water lacquers, inks,...)
> Detergents (liquid washing agents, washing-up liquids, tenside solutions,...)



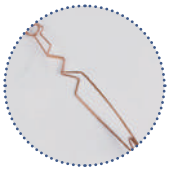
Technical data	
Viscosity range	0.6-75000 mPa·s (cP)
Temperature range	-20°C up to +120°C
Temperature resolution	0.1 °C
Inner size of measure tube	15.95mm
Size of jacket joint	10mm
Reproducibility	Better than 0.5%
Comparability	Better than 1%
Certificate	Factory calibration certificate
Standard delivery	Set of 6 balls / digital thermometer / Cleaning tools / Calibration sheet / User manual

Temperature control unit need to be ordered separately

Order information

Order No.	Model	Material	Measuring range mPa·s (cP)
V92000	Falling ball viscometer		
V92101	1	Borosilicate glass	0.6~10
V92102	2	Borosilicate glass	7.0~130
V92103	3	Stainless steel	30~700
V92104	4	Stainless steel	200~4800
V92105	5	Stainless steel	1500~45000
V92106	6	Stainless steel	75000


Cleaning tool


Pincers

Density meter



Density meter

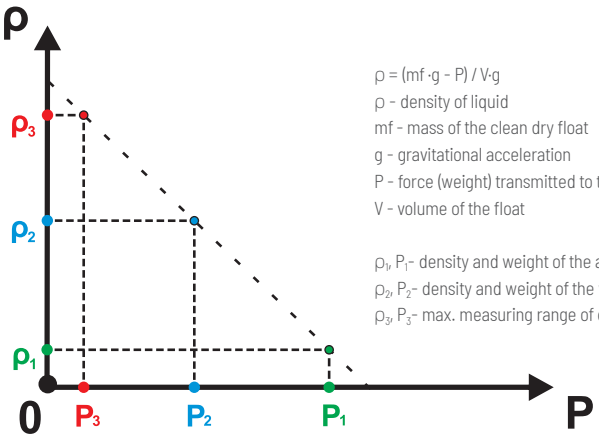
Dendi

Portable Density/Specific Gravity/Concentration Meter
2 YEARS WARRANTY

Principle of operation

The operating principle of the device is – weighting of the glass float with filler fully immersed in liquid. It allows measuring observed density and temperature of wide range of opaque and transparent liquids. The buoyancy force of liquid acts on the float, which has precise weight and volume; the float's movement is transmitted to the beam with balance. The electronics employ sophisticated signal processing and computational algorithms to deliver high accuracy measurements. The device has a rugged design with little need for service and easy cleaning. The calibration requires only distilled water. Built-in tables of water densities at testing temperatures and air density (average value for standard european conditions) allows to determine linear dependence of density and weight (see graph on top). Taken together these features result in a device with a long service life and very low cost of ownership.





$\rho = (mf \cdot g - P) / V \cdot g$
ρ - density of liquid
mf - mass of the clean dry float
g - gravitational acceleration
P - force (weight) transmitted to the beam with balance
V - volume of the float

ρ_1, P_1- density and weight of the air
ρ_2, P_2- density and weight of the water
ρ_3, P_3- max. measuring range of density and weight (2 000 kg/m^3)

- Wide range of supported measuring units
- Covered Density range: 500...2 000 kg/m^3
- Automatic measurements
- Simple in operation, safe
- Density/Concentration and Temperature measurements in one instrument
- Unit conversion
- Automatic temperature compensation
- No experienced personnel required

Preparation of the Samples

- Liquids for measurements must be gas-free and their temperature must be equal to the ambient temperature ±5°C .
- If the same beaker is used for various liquids clean it thoroughly and dry before filling with new sample!
- For accurate sample preparation place the float into the beaker and fill it with measured liquid up to the top.
- Place the beaker to the special tray on the base of the device and set the float on the measuring arm - to ensure that the level sample is 2-4 mm above the float.
- Then you may take the float off the beaker and make a mark on the beaker with the help of marker for glass.

Two Step Operation



Weighting float on air...



Weighting float in liquid...

Preparation of the Device

> Make an external survey of the float and other submersible parts. They must be clean and dry, without mechanical injuries. Any dents or impurity adhered on the float will influence the accuracy of the density measurements!
> In case of impurity – wash the float in appropriate solvent and dry it with some non-fluffy material (paper towel, rags, etc.).
> Set and remove the float on the measuring arm – to check its free running. All the time take care of cleanness in the inlet of the measuring arm!
> Set the device on the workplace and adjust its horizontal position (in accordance with level vial) with the help of adjusting screws.
> Switch ON the device and warm it up for 10 minutes.



Specifications

	Dendi-1	Dendi-2
Measuring range		
Density	0…3 g/cm^3 (0… 3000 kg/m^3)	0…3 g/cm^3 (0… 3000 kg/m^3)
Density Standard	0.6…1.2 g/cm^3 (600… 1200 kg/m^3)	0.6…1.2 g/cm^3 (600… 1200 kg/m^3)
Temperature	+15…+30°C (+59… +86° F)	+15…+30°C (+59… +86° F)
Accuracy		
Density	±0.001 g/cm^3 (±1.0 kg/m^3)	±0.0005 (±0.5)
Density Standard	±0.2°C (±0.4° F)	±0.2°C (±0.4° F)
Repeatability		
Density	±0.00050 g/cm^3 (±0.50 kg/m^3)	±0.00025 (±0.25)
Temperature	±0.1°C (±0.2° F)	±0.1°C (±0.2° F)
Supported Measuring Units		
Observed/Relative Density	g/cm^3, kg/m^3, lb/gal, lb/ft^3; API; SG	g/cm^3, kg/m^3, lb/gal, lb/ft^3; API; SG
Base Density	at 15°C ; 20°C ; 60° F; API60; SG60	at 15°C ; 20°C ; 60° F; API60; SG60
Tables	ASTM D1250	ASTM D1250
Alcohol Tables (volume%)	ºBx, ºP	ºBx, ºP
Temperature	°C or ° F	°C or ° F
Ambient Temperature	+15…+30°C (+59… +86° F)	+15…+30°C (+59… +86° F)
Sample Volume	100 ml (26.4·10 gal)	100 ml (26.4·10 gal)
Power Supply	NiMH 9V-150 mAh	NiMH 9V-150 mAh
Operating Time without Charging	Appr. 12 hours	Appr. 12 hours
Dimensions (H x L x W), Weight	135 x 100 x 190mm, 1.3 kg	135 x 100 x 190mm, 1.3 kg
Temperature Compensation	Automatic	Automatic
Delivery	Delivered in compact carrying case	Delivered in compact carrying case

Specific Gravity Bottle Measurement System

The gravity bottle is used in the determination of the specific gravity of cement, sand and materials of similar fineness.

Product Features

- The top is with standard taper glass stopper
- The middle smaller neck bulb holds 17ml, the above is from 18ml-24ml.
- Powerful and infinitely adjustable pressure pump
- Bright, white, easy-to-read display
- Very quiet , Easy handling





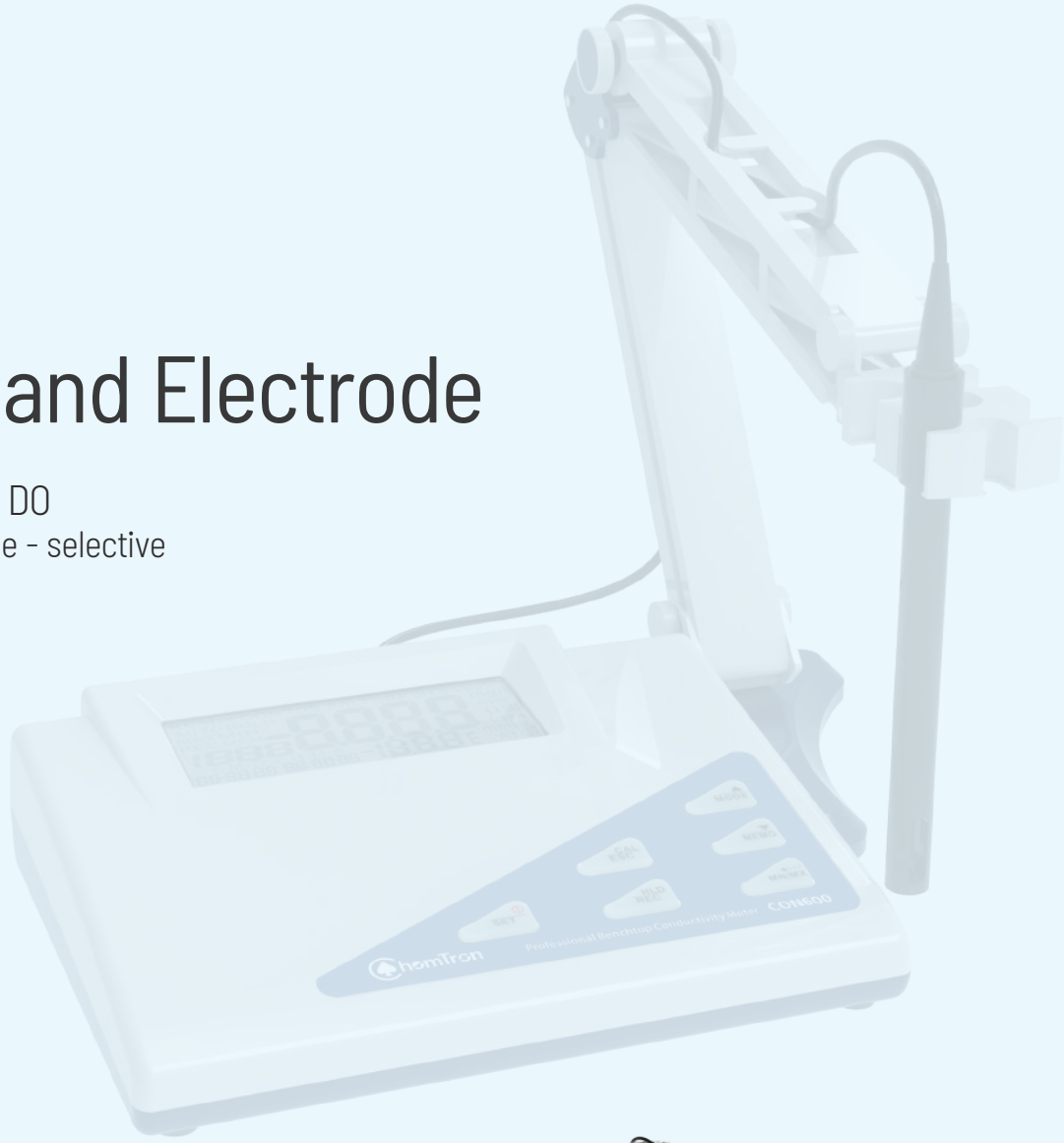


Specifications

Component	Paramters	
Specific Gravity Bottles	Material	Borosilicate glass
	Capacity	250ml
	O.D. of bulb	90mm
	Granduation	24ml
	High precision	250mm
Transparent thermostat bath	Working temperature range	R.T.+5°C ~60°C
	Temperature stability	±0.03°C
	Measuring station	3
Support and clamp	Stainless steel, adjustable height	

Meter and Electrode

pH, COND and DO
Precise - reliable - selective
In lab and field





Portable pH Meter

Portable pH Meter pH 90 is a portable yet highly accurate pH meter. It is used in all industries as well as commercial and educational teaching aids.
The meter uses a regular BNC connector and accepts a variety of other electrodes for special measurement needs. The meter comes complete in a hard carrying case with calibration buffer solutions.

Features

- Large LCD with multiple display, display of pH, temperature and time simultaneously
- Auto lock Measurement, meter automatically senses a stabilized endpoint reading
- This ensures workers only takes in an accurate reading all the time and every time.
- Multi-point calibration (ISO, NIST and manual, up to 5 points calibration)
- Electrode status indicator, able to display percentage of slope of the electrode after successive calibration. This feature enables users to determine if the electrode should be replaced due to wear and tear.
- Real time memory, able to save records of up to 99 data memory with date and time, enable download to PC.
- Online PC link, able to link to a PC for online display with optional PC kit (sold separately) and download saved data. Meter uses regular AAA size batteries and tap power source from PC when connected via the USB cable.

Standard delivery

1- pH90 meter(1)
2- H011-AS004, pH electrode, glass(1)
3- Temperature sensor, PT9010(1)
4- Operation manual (English)
5- Carrying case(1)

Optional

1- SDH401-A125, Buffer solution, pH=4.01, 100ml
2- SDH701-A125, Buffer solution, pH=7.00, 100ml
3- SDH686-A125, Buffer solution, pH=6.86, 100ml
4- SDH918-A125, Buffer solution, pH=9.18, 100ml
5- SDH100-A125, Buffer solution, pH=10.01, 100ml



Specifications

Model	pH90			
	pH	mV		Temperature
Range	-2 to 16 pH	±700mV	±2000mV	0 to 120°C
Resolution	0.01pH	0.1mV	1mV	0.1°C
Accuracy	±0.02pH	±0.5mV	±2mV	±0.1 °C ±0.5°C (Probe)
Calibration	Min. 2 point, Max. 5 point			
Buffer Recognition	up to 60°C or 95°C depending on the buffer type			
Automatic Temperature Compensation	pH electrode temperature error compensation 0 to 120°C			
Memory	99 data with real time clock			
Power source	4 x 1.5Volt AAA size battery			
Operating temperature	5 to 40°C			
Storage temperature	-20 to 60°C			
Operating humidity	Up to 95% RH			
Order No.	W8001090			

Portable Conductivity Meter

Portable Conducivity-TDS-Salinity Meter CON 90 is a portable yet highly accurate conductivity meter. It is used in all industries as well as commercial and educational teaching aids. It has full functionality that matches an expensive bench meter.

The meter comes complete in a hard carrying case with calibration buffer solutions.

Features

- Large LCD with multiple display, display of conductivity, TDS, Salinity with temperature and time simultaneously, able to display reading in µSiemen, mSiemen, ppm, ppt.
- Auto lock Measurement, meter automatically senses a stabilized endpoint reading
- This ensures workers only takes in an accurate reading all the time and every time.
- Automatic Range, meter can automatically switch to the next higher range to enhance the accuracy over the 5 calibrated points.
- Cell Constant, meter can accept probe of different cell constant 0.1, 1.0 and 10.0
- TDS Factor, TDS factor can be adjusted to allow higher accuracy of different types of chemical or liquid of known conversion.
- Real time memory, able to save records of up to 99 data memory with date and time, enable download to PC.
- Online PC link, able to link to a PC for online display with optional PC kit (sold separately) and download saved data.Meter uses regular AAA size batteries and tap power source from PC when connected via the USB cable.

Standard delivery

1- CON90 meter(1)
2- CT25-A0016, Conductivity electrode, K=1(1)
3- Temperature sensor, PT9010, S.S. (1)
4- Operation manual (English)
5- Carrying case(1)

Optional

1- SDC008-A125, Test solution, 84µS/cm, 100ml
2- SDC014-A125, Test solution, 1413µS/cm, 100ml
3- SDC128-A125, Test solution, 12.88mS/cm, 100ml
4- SDC050-A125, Test solution, 15.0mS/cm, 100ml
5- CT25-A0026, Conductivity electrode, K=0.1
6- CT25-A0036, Conductivity electrode, K=10



Specifications

Model	DO80
Range	0 - 20 ppm, 0 - 50°C
Display Resolution	0.01 ppm, 0.1°C
Accuracy (machine only)	± 1.5% FS, 0.3°C
Operating Temperature	0 to 50°C
Calibration	Single point calibration in air at 100%
Battery type	4 x 1.5V AAA size battery or DC9V adaptor (optional item)
Battery life	Approximately 100 hours continuous use
Size	195 x 40 x 36mm
Order No.	W8003080

Portable Dissolved Oxygen Meter

DO 80 is a top range meter for field use. Each meter comes with a 3 meter probe for submerged testing under water in streams, ponds or water tanks. Users can preset salinity compensation and atmospheric compensation to allow direct reading without any conversion tables. It can store up to 99 memory with date and time records. To allow night visibility, there is a backlit display handy. The HD3030 is suitable for aquaculture or industrial users.

Advanced Features:

> Dual DO and temperature display
> One touch calibration in air
> Able to set salinity and atmospheric pressure compensation
> Save up to 99 data in memory with real time clock
> Make online data logging on PC with optional RS232 kit
> Able to show maximum and minimum reading over saved data
> Backlite for night display



Standard delivery

1-DO80 meter (1)
2-DO electrode PD3030-3 with cable (1)
3-Operation manual
4-DO membrane Cap and O-ring
5-Carrying case (1)

Optional

AX30-232-RS232PC, Data logging to PC



Make online data logging on PC with optional RS232 kit

Specifications

Model	CON90						
Range	Conductivity / TDS					Salinity	Temperature
	0~19.99µS/cm	0~199.9µS/cm	0~1999µS/cm	0~19.99mS/cm	0~199.9mS/cm	0~100.0ppt	0~120 °C
	0~9.99ppm	0~99.9ppm	0~999ppm	0~9.99ppt	0~99.9ppt		
Resolution	0.01 µs/cm or ppt	0.1 µs/cm or ppt	1 µs/cm or ppt	0.01 mS/cm or ppt	0.1 mS/cm or ppt	0.1ppt	0.1 °C
Accuracy	±1% Full Scale						±0.5 °C
Calibration	5 points with 1 point on each range						
TDS Factor	Adjustable from 0.40 to 1.00						
Cell constant	Selectable from 0.1 , 1.0 & 10.0						
ATC	Automatic from 0 - 100 °C						
Memory	99 data with real time clock						
Power source	4 x 1.5Volt AAA size battery						
Battery Life	40 hours of continuous use with white backlight on						
Order No.	W8002090						

Benchtop pH Meter

Features

> Large LCD with Multiple Display, display of pH, temperature and time simultaneously
> Hold Display function, automatically lock reading when a stable reading is established.
> Multi point calibration, automatic buffer recognition with built-in standards:
ISO - pH7.00, 4.01, 10.01
NIST - pH6.68, 4.01, 9.18
Custom - Manual set to any buffer standard.
Up to 5 points calibration



Make online data logging on PC with optional RS232 kit

Standard delivery

1- pH610 meter(1)
2- H011-AS004, pH electrode, glass (1)
3- Temperature sensor, PT9020, S.S. (1)
4- Support stand of electrode(1)
5- Power cable and adapter(1)
6- Operation manual (English)

Optional

1- SDH401-A125, Buffer solution, pH=4.01, 100ml
2- SDH701-A125, Buffer solution, pH=7.00, 100ml
3- SDH686-A125, Buffer solution, pH=6.86, 100ml
4- SDH918-A125, Buffer solution, pH=9.18, 100ml
5- SDH100-A125, Buffer solution, pH=10.01, 100ml
6- AX30-232-RS232PC, Data logging to PC

Specifications

Model	pH610		
	pH	mV	Temperature
Range	0 to 14 pH	± 1999 mV	0 to 90°C
Display Resolution	0.01 pH	0.1-199.9 mV 1-1999 mV	0.1°C
Accuracy	± 0.02 pH	±0.2 mV ±2 mV	± 0.5°C
Calibration	5 point selectable		
Operating Voltage	9 to 12V DC, min 650mA		
Operating Temperature	5 to 40°C		
Storage Temperature	-20 to 60°C		
Slope recognition	±60 mV		
Meter Size	217 x 168 x 585mm		
Order No.	W8001610		

Benchtop Conductivity Meter

The Professional Conductivity Bench Meter is a dedicated stationary meter specially designed for laboratory and educational use. It is able to link with a PC for online data logging, or a user can save data in its memory with the date and time and download the data later to a PC. For enhanced accuracy, the meter can calibrate up to 5 points at 1 point on each of its range. The meter is complete with an electrode stand and a PC communication kit.



Standard delivery

1- CON600 meter(1)
2- CT25-A0016, Conductivity electrode, K=1(1)
1- Temperature sensor, PT9020, S.S. (1)
5- Support stand of electrode(1)
6- Power cable and adapter(1)
7- Operation manual (English)

Optional

1- SDC008-A125, 84µS/cm Test solution, 100ml
2- SDC014-A125, Test solution, 1413µS/cm, 100ml
3- SDC128-A125, Test solution, 12.88mS/cm, 100ml
4- SDC050-A125,15.0mS/cm Test solution, 100ml
5- CT25-A0026, Conductivity electrode, K=0.1
6- CT25-A0036, Conductivity electrode, K=10
7- AX30-232-RS232PC, Data logging to PC



Make online data logging on PC with optional RS232 kit

Specifications

Model	CON 600				
Range	0- 19.99µS/cm	0 - 199.9µS/cm	0 -1999 µS/cm	0 -19.99 mS/cm	0 - 199.9 mS/cm
Display Resolution	0.01 µS/cm	0.1 µS/cm	1 µS/cm	0.01 mS/cm	0.1 mS/cm
Accuracy	± 1% F.S. + 1digit				
Calibration	5 point with 1 point on each range				
TDS factor	Adjustable 0.3 to 1.00				
Temperature compensation	Automatic 0 to 80°C				
Memory	99 data with real time clock				
Operating Temperature	5 to 40°C				
Storage Temperature	-20 to 60°C				
Operating humidity	Up to 95% relative humidity				
Meter Size	217 x 168 x 585mm				
Order No.	W8002600				

WIGGENS
THE MAGIC MOTION



Accessories

Electrode / Probe

Order No.	Model	Description	Suitable for
H011-AS004	pH electrode	Glass body combination pH electrode, General purpose, 0.9m cable	pH 90/pH610
H012-0001	pH electrode	Glass body combination pH electrode with Pointed-Tip 0.9m cable	pH 90/pH610
H045-AP001	pH electrode	Glass body combination pH electrode with Flat tip 0.9m cable	pH 90/pH610
H04C-A0001	Micro pH electrode	Glass body combination pH electrode, Length: 50 / 80mm, Ø12/Ø5mm, 0.9m cable	pH 90/pH610
CT25-A0016	Conductivity electrode	Plastic body conductivity electrode platinized Platinum cell K=1	CON 90/CON600
CT25-A0026	Conductivity electrode	Plastic body conductivity electrode platinized Platinum cell K=0.1	CON 90/CON600
CT25-A0036	Conductivity electrode	Plastic body conductivity electrode platinized Platinum cell K=10	CON 90/CON600
PD3030-3	DO electrode	Dissolved Oxygen electrode with 0.9 meter cable for DO80	DO80



pH electrode



conductivity electrode



Dissolved Oxygen electrode



pH Reference Solution

Order No.	Model	Description
RFOZNO-A125	RFOZNO	4M KCl, without Ag/Agcl, 100ml
RFOZNO-A500	RFOZNO	4M KCl, without Ag/Agcl, 500ml
RFOZAG-A125	RFOZAG	4M KCl, with Ag/Agcl, 100ml
RFOZAG-A500	RFOZAG	4M KCl, with Ag/Agcl, 500ml

pH buffer solution

Order No.	Model	Description
SDH401-A125	SDH401	CAL pH 4.01 Standard pH buffer Solution, 100ml
SDH401-A500	SDH401	CAL pH 4.01 Standard pH buffer Solution, 500ml
SDH686-A125	SDH686	CAL pH 6.86 Standard pH buffer Solution, 100ml
SDH686-A500	SDH686	CAL pH 6.86 Standard pH buffer Solution, 500ml
SDH701-A125	SDH701	CAL pH 7.00 Standard pH buffer Solution, 100ml
SDH701-A500	SDH701	CAL pH 7.00 Standard pH buffer Solution, 500ml
SDH918-A125	SDH918	CAL pH 9.18 Standard pH buffer Solution, 100ml
SDH918-A500	SDH918	CAL pH 9.18 Standard pH buffer Solution, 500ml
SDH100-A125	SDH100	CAL pH 10.01 Standard pH buffer Solution, 100ml
SDH100-A500	SDH100	CAL pH 10.01 Standard pH buffer Solution, 500ml

Standard DO Solution

Order No.	Model	Description
DOGALSO-A125	DOGALSO	Electrolyte for DO electrode, 100ml
DOGALSO-A500	DOGALSO	Electrolyte for DO electrode, 500ml

Standard Conductivity Solution

Order No.	Model	Description
SDC008-A125	SDC008	CAL 84uS Standard Conductivity Solution, 100ml
SDC008-A500	SDC008	CAL 84uS Standard Conductivity Solution, 500ml
SDC014-A125	SDC014	CAL 1413uS Standard Conductivity Solution, 100ml
SDC014-A500	SDC014	CAL 1413uS Standard Conductivity Solution, 500ml
SDC128-A125	SDC128	CAL 12.88mS Standard Conductivity Solution, 100ml
SDC128-A500	SDC128	CAL 12.88mS Standard Conductivity Solution, 500ml
SDC150-A125	SDC150	CAL 15.0mS Standard Conductivity Solution, 100ml
SDC150-A500	SDC150	CAL 15.0mS Standard Conductivity Solution, 500ml

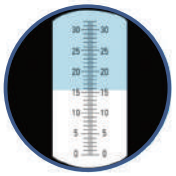
pH/ORP Storage and Cleaning Solution

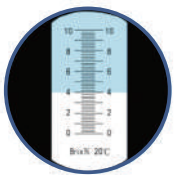
Order No.	Model	Description
CSHOST-A125	CSHOST	pH/ORP Storage solution,100ml
CSHOST-A500	CSHOST	pH/ORP Storage solution,500ml
CSHOCL-A125	CSHOCL	pH/ORP Cleaning solution,100ml
CSHOCL-A500	CSHOCL	pH/ORP Cleaning solution,500ml
CSHOPC-A125	CSHOPC	pH/ORP Cleaning solution for Protein,100ml
CSHOPC-A500	CSHOPC	pH/ORP Cleaning solution for Protein,500ml

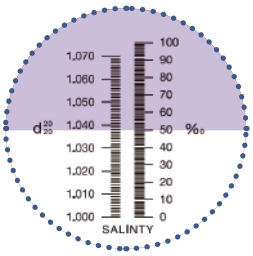
Refractometer

WIGGENS offer various model of refractometer for the measurement of sugar, prediction of alcohol and salinity. These meters are self-contained and made of precision prism and optics. Most of the meters come with bi-metal automatic temperature compensation. The mechanical designs require no batteries to operate.

Sugar Refractometer	Range	Resolution
BR0010N	0~10%	0.1%
BR0018N	0~18%	0.1%
BR0032N	0~32%	0.2%
BR2862N	28~62%	0.2%
BR5892N	58~92%	0.2%
Sugar Refractometer ATC		
BR0010T	0~10%	0.1%, ATC
BR0018T	0~18%	0.1%, ATC
BR0032T	0~32%	0.2%, ATC
BR2862T	28~62%	0.2%, ATC
BR5892T	58~92%	0.2%, ATC
Salinity Refractometer		
SA0010	0~100‰ 1.000~1.070	1‰ 0.005
SA0028	0~28%	0.2%
Salinity Refractometer ATC		
SA0010T	0~100‰ 1.000~1.070	1‰ 0.005
SA0028T	0~28%	0.2%
Honey refractometer		
HN1230	12-30% Honey Moisture	0.1%
HN5892	58-92% Brix 38-43° Be' 12-27% water	0.5% 0.5 1%
Honey refractometer ATC		
HN1230T	12-30% Honey Moisture	0.1%
HN5892T	58-92% Brix 38-43° Be' 12-27% water	0.5% 0.5 1%
Alcohol Refractometer		
AL-1N	0~80% v/v ;	0~60%(1%) 60~80%(2.5%)
AL-2N	0~80% w/w ;	0~60%(1%) 60~80%(2.5%)
AL-3N	0~25% v/v	0.1%
AL-4N	0~25% v/v 0~40% Brix	0.1% 0.2% Brix
AL-5N	0~25% v/v 0~20% Baume	0.1% 0.2% Baume
Alcohol Refractometer ATC		
AL-3T	0~25% v/v	0.2%
AL-4T	0~25% v/v 0~40%Brix	0.2% 0.2%
AL-5T	0~25% v/v 0~20Baume	0.2% 0.2
Wine Refractometer		
WN-1N	0~140Oe 0~25KMW (Babo) 0~32%Mas Sacch	1 0.2 0.2%
WN-2N	0~170Oe	2
WN-3N	3~140Oe 0~32%	1 0.2%









Wine Refractometer ATC	Range	Resolution
WN-1T	0~1400e 0~25KMW(Babo) 0~32%Mas Sacch Temperature offset	1 0.2 0.2%
WN-2T	0~1700e Temperature offset	2
WN-3T	3~1400e 0~32%, Temperature offset	1 0.2%
Urea Refractometer (Medical)		
UR-1N	0~12g/dl	0.2g/dl
UR-2N	0~12g/dl 1.000~1.050sg 1.3330~1.3600RI	0.2g/dl 0.002sg 0.00025RI
Urea Refractometer ATC (Medical)		
UR-1T	0~12g/dl 1.000~1.040sg	0.2g/dl 0.002sg
UR-2T	0~12g/dl 1.000~1.050sg 1.3330~1.3600RI	0.2g/dl 0.002sg 0.00025RI



Digital Refractometer

Model	Scales	Range	Resolution	Accuracy
BR0035	Brix RI	0 ~ 35% 1.3330 ~ 1.3900	0.1 0.0001	±0.5 ±0.0005
BR5892	Brix RI	58-92% 1.4370 ~ 1.5233	0.1 0.0001	±0.5 ±0.0005
BR0085	Brix RI	0-85% 1.3330 ~ 1.5100	0.1 0.0001	±0.5 ±0.0005
SA0028	NaCl RI	0-28% 1.3330 ~ 1.4100	0.1 0.0001	±0.2 ±0.0003
SA0035	NaCl (Solubility) RI	0-30% 1.3330 ~ 1.4100	0.1 0.0001	±0.2 ±0.0003
SA0100	Sea Water Salinity Sea Water Specific Gravity	0-100% 1.000 ~ 1.070	0.1 0.001	±0.2 ±0.001
WN3150	Oe (Germany) Oe (Swiss) Mass S/W Vol AP KMW	3 ~ 150 0-150 0-35% 0-22% 0-25	1 1 0.1 0.1 0.1	±1 ±1 ±0.2 ±0.2 ±0.2
EG3258	EG (CRC88)	32 ~ (-58) ^{0}F 0 ~ (-50)°C 0 ~ 75% Volume	0.1 ^{0}F 0.1°C 0.1	±1 ^{0}F ±0.5°C ±0.3
PG3258	PG (CRC88)	32 ~ (-58) ^{0}F 0 ~ (-50)°C 0 ~ 60% Volume	0.1 ^{0}F 0.1°C 0.1	±1 ^{0}F ±0.5°C ±0.3
ET0060	Ethanol	0 ~ 60% Volume 0 ~ 60% Weight	0.1 0.1	±0.3 ±0.3
MT0060	Methanol	0 ~ 60% Volume 0 ~ 60% Weight 0 ~ (-50) °C 32 ~ (-58) ^{0}F	0.1 0.1 0.1°C 0.1 ^{0}F	±0.5 ±0.5 ±0.5°C ±1 ^{0}F
IPA0060	Isopropyl Alcohol (IPA)	0 ~ 60% Volume 0 ~ 60% Weight 0 ~ (-50) °C 32 ~ (-58) ^{0}F	0.1 0.1 0.1°C 0.1 ^{0}F	±0.5 ±0.5 ±0.5°C ±1 ^{0}F
PLA0043	Plato Plato Specific Gravity RI	0-43% 1.000-1.134 1.3330-1.4082	0.1 0.001 0.0001	±0.1 ±0.001 ±0.0003
SM0035	Soymilk RI	0 ~ 35% 1.3330-1.4100	0.1 0.0001	±0.1 ±0.0003





Gas Generator

HYDROGEN GENERATOR

Purity : 99.9996% or 99.99996%
Flow rate : 100mL/min ~ 20L/min
General version, Flat version, Tower version and 19" Rack version

NITROGEN GENERATOR

Flow rate : 200mL/min - 2000L/min
Purity : 95 - 99.9999%

ZERO AIR GENERATOR

Flow rate : 1.5~30L/min
HC & CO Content : < 0.05ppm
CO_2 Content : < 1ppm
NO_x SO_x Content : < 0.1ppm

COMPRESSED AIR SYSTEM / PURIFIED AIR SYSTEM

Flow rate : 20 ~ 900L/min
Pressure : 5 - 10 bar



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