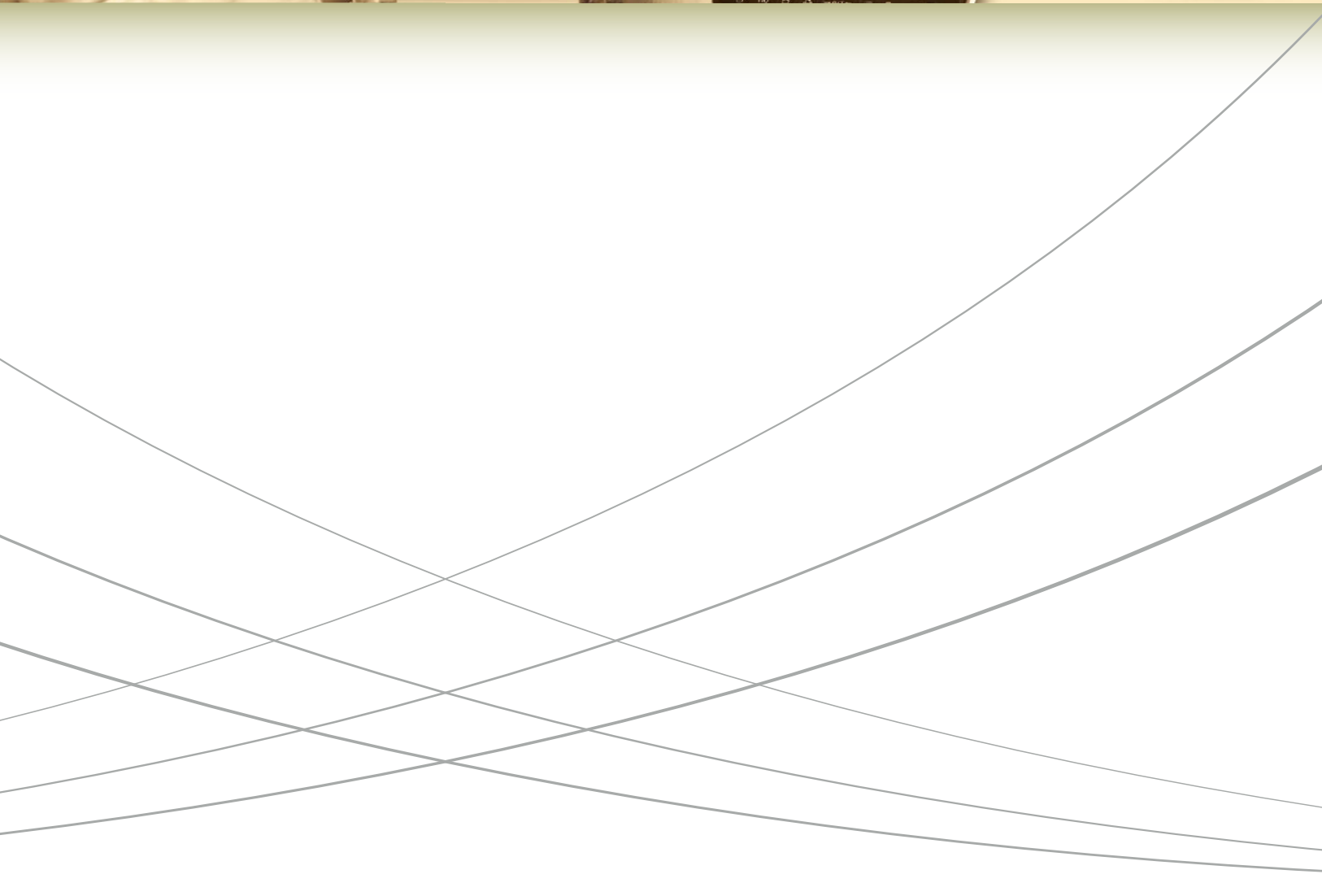


Shimadzu Electronic Balances General Catalog





Shimadzu began manufacturing balances in 1918. For more than 100 years, we have been at the forefront of providing precision, quality solutions for the most challenging R&D and QA/QC requirements. Our steadfast customer-focused commitment and unwavering dedication to technical excellence are both hallmarks of our history and the principles that guide us into the future.

Supporting manufacturing in the future,
utilizing 100 years of experience and knowledge

SHIMADZU ELECTRONIC BALANCES

A Tradition of Weighing Expertise

Established in 1875 in Kyoto, Japan, Shimadzu Corporation is one of the pioneers of scientific precision instruments.

Top-pan and torsion balance production started in 1918, and equal-beam analytical balances were introduced in 1925. Since their release, the continuous improvement of Shimadzu balances has contributed to research and development across all industries.

Around the turn of the 20th century, precision weighing was a time-consuming practice performed only by experienced operators. Placing the sample and small masses on pans hung from a beam scale with a moving indicator was a tedious process. Shimadzu strove continuously to streamline weighing procedures. The introduction of the direct reading analytical balance (patented in Japan in 1948) signified a new era in weighing technology. In the Type L balance, the sensitive mass-loading work was replaced by convenient dial operations. This reduced weighing time by 66% and, subsequently, reduced demand for conventional balances.

Shimadzu then added the top-loading direct reading balance with Roberval's mechanism in 1959. Until recently, many of these instruments were still utilized in modern laboratories. Shimadzu continued to pioneer technologies, releasing its first

electronic balance in 1971—the Digibalance. This release marked a milestone in precision weighing, introducing simplicity and ease of use to analytical weighing.

Six years later (1977), the application of microprocessors in electronic balances further enhanced weighing performance. The compact ED Series provided substantial improvements in sensitivity, resolution, and stability.

More recently, Shimadzu has introduced user-friendly instruments and features to the market, such as: temperature-based fully-automatic calibration in 1985, the first one-piece force cell (OPF, later renamed UniBloc™) in 1989, the high-sensitivity AEM-5200 Micro Balance in 1993, and the unique Windows® Direct feature perfectly suited for the computerized laboratory of the 21st Century.

Its most recent achievement is the AP Series, advanced performance balances featuring UniBloc and a high response speed, and which are applicable for a wide range of applications.

Moving forward, Shimadzu is committed to providing innovative products for the analytical marketplace.

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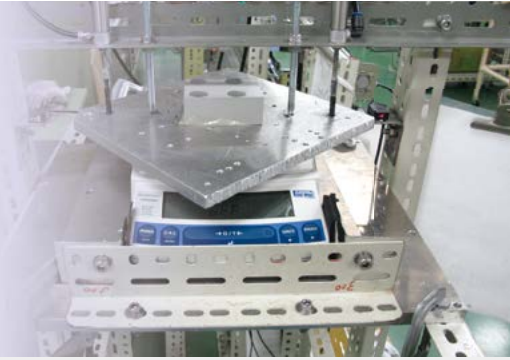
P 43 - Moisture Analyzers

P 60 - Physical Dimensions



UniBloc Power!

Shimadzu balances advance to the UniBloc generation



Impact resistance test for four balances

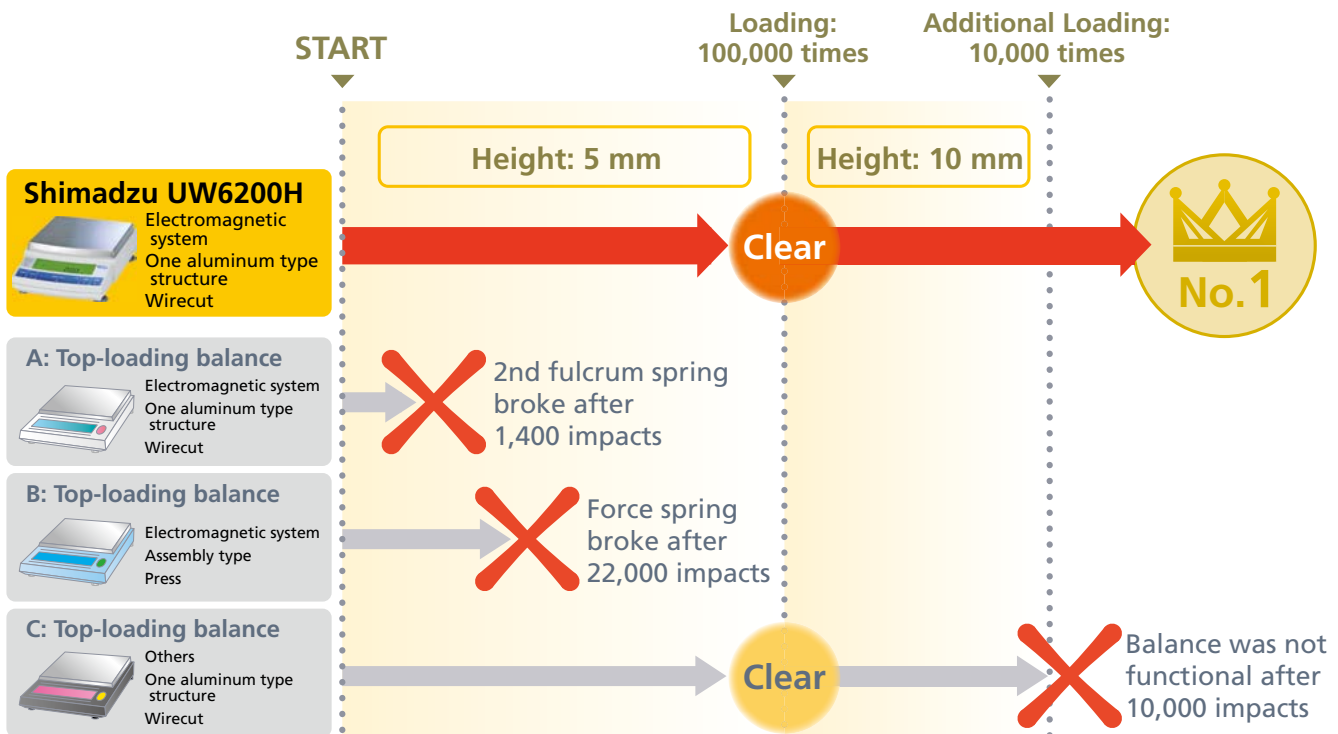
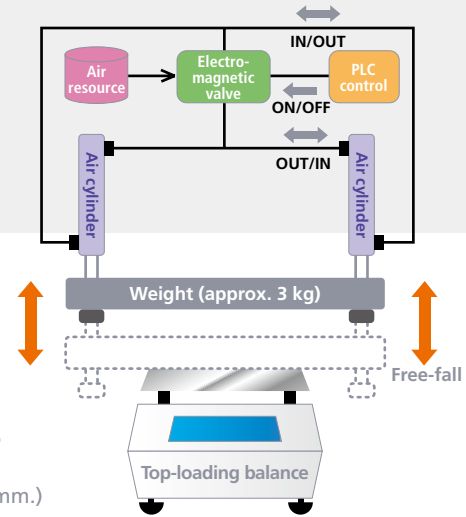
made by typical manufacturers.

(Shimadzu internal test)

Test results of impact resistance test with top-loading balances (Minimum display: 10 mg)

Test conditions Free-falling the weight (3 kg) at 4 sec intervals.

(Weight was dropped 100,000 times from a height of 5 mm.
After the first 100,000 tests, it was dropped from a height of 10 mm.)



The results of this impact resistance test prove Shimadzu UW/UX series balances with UniBloc technology are the toughest. Put Shimadzu balances in your lab and experience UniBloc power.

UniBloc technology leads to a new era of measurement



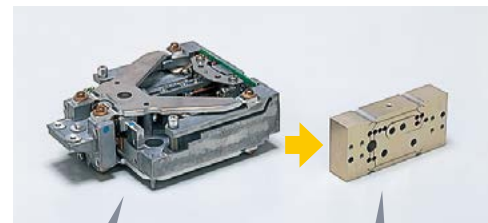
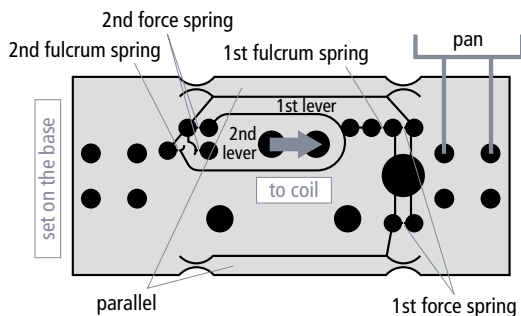
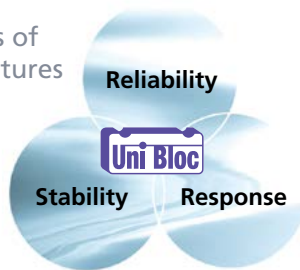
Shimadzu introduced one-piece force cell technology for precision balances in 1989. Today's UniBloc is created by high-precision electric discharge wire processing applied to a block of aluminum alloy, and replaces the conventional electro-magnetic balance sensor assembly. UniBloc's compact, uniform structure ensures stable temperature characteristics, excellent response time and stable corner-load performance.

In addition, the UniBloc design permits a consistency of production that assures reliability and a long operational life.

The updated UniBloc technology expands the UniBloc balance lineup, which now ranges from semi-micro with a minimum display of 0.01 mg to precision platform balances up to 52 kg in capacity.

One-piece force cell patented in USA in 1989, No. 4799561, in China in 1991, No. 12729, in Japan in 1995, No. 1905686

Keywords of UniBloc features



Conventional measurement unit
It consists of approx. 70 pcs with various materials

Amount 1/70

Volume 1/10

Uni Bloc
Number of parts: 1 pc
Volume: approx. 1/10 of conventional one



UniBloc family of balances

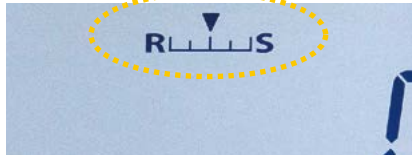
Shimadzu Balances Offer a Diverse Range of Functions

01

High Level Functionality

Easy Setting

During operation, if you want to make the display slightly more stable, or alternatively, want to improve the response speed, you can make one-touch adjustments without interrupting measurement. A special indicator is provided that instantly shows the adjustment status.



Menu Operation Key

Easy-to-Operate Key Layout

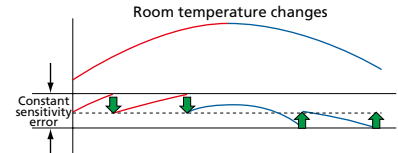
Keys exclusively for menu operations are arranged separately from the measurement keys. Menus can be operated intuitively using the cross-shaped key layout.



Perfect Self Calibration

Electronic balances are precision instruments very susceptible to changes in room temperature. Sensitivity must be calibrated every time the balance is used since changes in room temperature influence mass measurement values, which are not supposed to change. The balance detects changes in room temperature that affect sensitivity, and automatically starts calibration using built-in weights. As a result, sensitivity errors are always kept within a constant range.

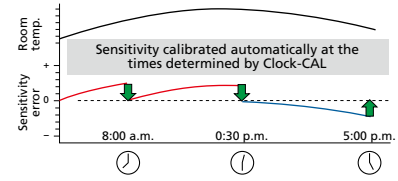
This allows the operator to concentrate on measurement tasks without having to worry about sensitivity calibration.



The perfect self calibration (PSC) function keeps the sensitivity error within a constant range at all times.

Clock-CAL

The balance starts calibration using built-in weights at preset times. If you set calibration times before important measurements (e.g. before starting work in the morning or during the lunch or evening break), the balance will automatically start calibration when the preset time is reached. This lets you take stable, reliable measurements without worrying about sensitivity calibration.



02

Durability

UniBloc Next-Generation Mass Sensor: UniBloc

Developed by Shimadzu, UniBloc is created by high-precision electric discharge wire processing applied to a block of aluminum alloy in order to replace the conventional sensor block assembly. As such, it uses no springs or screws. This uniform structure dramatically improves response and temperature characteristics, and the simple yet compact design enhances impact resistance. Balances equipped with UniBloc provide highly reliable mass measurement even during prolonged use.



03

Convenient Functions

Internal Calibration

The balance has built-in motor-driven calibration weights. Sensitivity can be calibrated whenever needed with a single key press.

Single-Lever CAL

The balance has built-in calibration weights. Sensitivity is calibrated with a simple lever operation. Sensitivity can be calibrated easily, whenever needed.

Dry Battery Operation

The balance can also run on dry cell batteries, enabling use outdoors where no power is available.



Checkweighing

Preset the upper and lower limit values to display pass, high or low, depending on the sample weight.

Comparator Output

Proper weight, high, low and other pass/fail judgments can be indicated by a buzzer, or output externally as a contact signal. (Optional comparator buzzer or relay output interface required.)

Backlight

Naturally, weight measurements can be taken even if the work site is dark, and prolonged use at normal work sites will not tire your eyes.



04

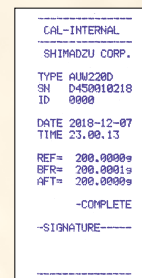
ISO
GLP
GMP

Built-in Clock

With the optional printer connected, data can be recorded with date and time stamps. Calibration reports can also be date- and time-stamped, which is ideal for establishing the measurement management and traceability required by GLP, GMP and ISO 9001.

ISO Calibration Report

Simply connect an optional printer to automatically print out which balance was calibrated when, and the calibration results. Absolutely no troublesome settings are required. Furthermore, the current date and time can be printed at any time during measurement.



(AUV Series Printout Sample)

05

PC Connection

Balance Keys

Using Balance Keys, a balance data collection software, allows importing balance data directly to a user's applications with the intuitive feel of keyboard input. In addition, data from multiple balances can be imported.

RS-232C Interface

Equipped with an RS-232C interface for easy integration with other devices and computers.

Computer Connection Function

Systems can be connected to a computer via an optional cable/adaptor kit. For more details, visit the Shimadzu website.

06

Network

LabSolutions™ Balance

Connecting with LabSolutions lets you save data from balances, HPLC and other analytical instruments to a database, and create reports automatically. Uniform data management means no transcription errors and is perfect for security.



07

Applications

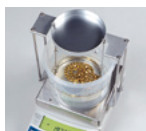
Piece Counting

A built-in piece counting function enables balances to be used as parts counters (piece scales).

Specific Gravity Measurement

A specific gravity calculation function based on the immersion method is built in.

Just attach the optional Specific Gravity Measurement Kit to use a balance as a specific gravity meter.



Built-in Animal Measurement Mode

The weight of mice, rats, rabbits, and other small animals can be measured. Stable measurements are obtained even if the animal moves.



Carat Measurement

Results can be displayed in carats when measuring precious stones.



Excellent Performance for Multiple Industries

Chemical



- Weigh liquids and powders in development departments
- Measure specific gravity and moisture ratio of resin pellets, rubber, etc.
- Input mass values via connection to a titration system for quality management
- Measure mass and moisture ratio of dyes, pigments, and inks
- Measure and control materials accumulated on filters
- Control moisture ratio levels during catalyst production

Food



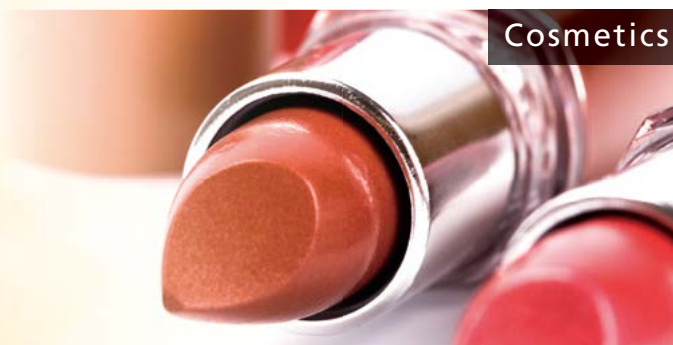
- Check weights when receiving raw materials
- Confirm the net weight of final products
- Measure the moisture ratio and control the quality of raw materials and products
- Weigh trace quantities of additives
- Weigh raw materials during formulation

Medical Products



- Control pharmaceutical usage quantities by measuring weight before and after use
- Weigh raw materials
- Confirm the weight of stents and other miniature medical devices
- Measure the moisture ratio and control the quality of raw materials and products
- Measure weight changes during animal experiments
- Measure drugs during drug manufacturing processes

Cosmetics



- Measure weight changes in creams and compresses at specified intervals
- Control the quality of product containers and cases
- Measure the moisture ratio of hair, etc.

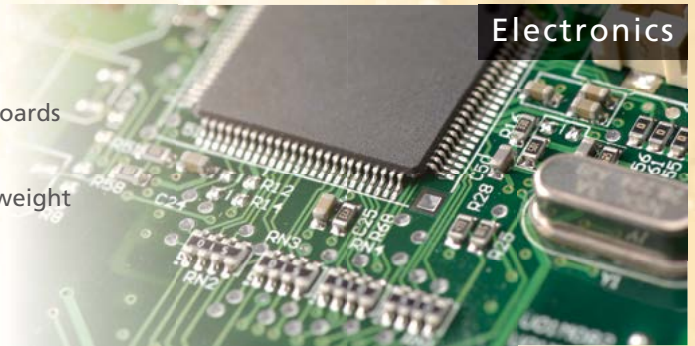
Metals/Precious Metals



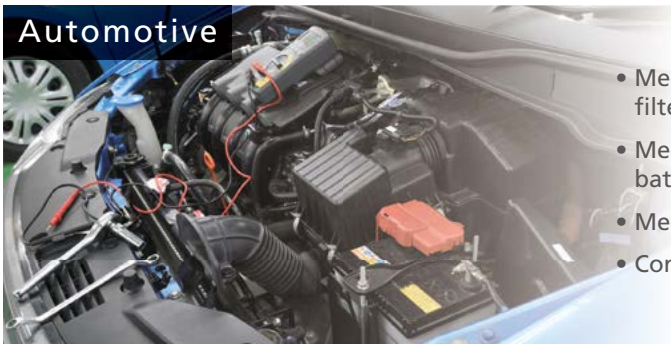
- Count the number of very small products
- Check the weight of coated steel sheets/plates after polishing
- Control the moisture ratio and specific gravity of iron and steel raw materials
- Measure trace quantities machined from metals, etc.
- Measure the specific gravity of rare metals and compare it to theoretical values
- Control the amount of wear on metal materials
- Weigh items when purchasing precious metals or bullion

Electronics

- Check weights when manufacturing electronic circuit boards
- Measure tiny semiconductor parts
- Check for missing items in product packages based on weight
- Control the quantity of plastics used in LED lenses



Automotive







- Measure exhaust gas accumulation on ceramic parts and filters
- Measure electrolyte injection quantities on lithium-ion battery production lines
- Measure moisture ratio in sheet materials
- Control contamination remaining on machinery parts



Academia

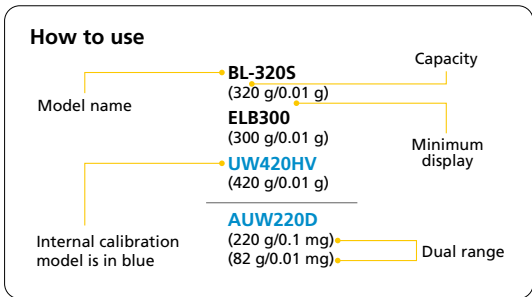
- Use for training students
- Manage reagent use by weight, in combination with a chemical substances management system
- Use in lectures to explain basic principles and theory





	~100g	100g~	300g~	500g~	1kg~	3kg~	
0.01mg	AP125WD (120g/0.1mg) (52g/0.01mg) AUW220D (220g/0.1mg) (82g/0.01mg) AUW120D (120g/0.1mg) (42g/0.01mg)	AP225W (220g/0.01mg) AP135W (135g/0.01mg) AP225WD (220g/0.1mg) (102g/0.01mg)				NEW	
				AP Series (0.01mg model)	AUW-D Series	ATX-R/ATY-R Series	

0.1mg	ATX84R (82g/0.1mg) ATY64R (62g/0.1mg) ATX84 (82g/0.1mg) ATY64 (62g/0.1mg)	AP124W AP124X AP124Y (120g/0.1mg) AP224W AP224X AP224Y (220g/0.1mg) AUW220 AUX220 AUY220 (220g/0.1mg) ATX124R ATY124R (120g/0.1mg) ATX224R ATY224R (220g/0.1mg) ATX224 ATY224 (220g/0.1mg) AUW120 AUX120 AUY120 (120g/0.1mg) ATX124 ATY124 (120g/0.1mg) TWC623N TXC623N (620ct/0.001ct)	AP324W AP324X AP324Y (320g/0.1mg) AUX320 AUW320 (320g/0.1mg) ATX324R ATY324R (320g/0.1mg) ATX324 ATY324 (320g/0.1mg)					NEW
				AP Series (0.1mg model)	AUW/AUX/AUY Series	ATX-R/ATY-R Series	ATX/ATY Series	

0.001g (1mg)	UP223X UP223Y (220g/0.001g) UW220H UX220H (220g/0.001g) TW223N TX223N (220g/0.001g) BL-220H (220g/0.001g)	UP423X UP423Y (420g/0.001g) UW420H UX420H (420g/0.001g) TW423N TX423N (420g/0.001g) TW323N TX323N (320g/0.001g) BL-320H (320g/0.001g)	UP623X UP623Y (620g/0.001g) UP823X UP823Y (820g/0.001g) UW820H (820g/0.001g) UW620H UX620H (620g/0.001g)	UP1023X UP1023Y (1020g/0.001g) UW1020H UX1020H (1020g/0.001g)			NEW
				UW/UX Series	UP-X/UP-Y Series		



	~100g	100g~	300g~	500g~	1kg~	3kg~
0.01g (10mg)		TXB222L (220g/0.01g) ELB200 (200g/0.01g) ELB120 (120g/0.01g) UW220HV (220g/0.01g)	UP422X UP422Y (420g/0.01g) UW420S UX420S (420g/0.01g) TXB422L (420g/0.01g) BL-320S (320g/0.01g) ELB300 (300g/0.01g) UW420HV (420g/0.01g)	UP822X UP822Y (820g/0.01g) UW820S UX820S (820g/0.01g) TXB622L (620g/0.01g) BL-620S (620g/0.01g) ELB600 (600g/0.05g) UW620HV (620g/0.01g)	UP2202X UP2202Y (2200g/0.01g) UW2200H UX2200H (2200g/0.01g) TX2202N (2200g/0.01g) BL-2200H (2200g/0.01g)	UP4202X UP4202Y (4200g/0.01g) UP6202X UP6202Y (6200g/0.01g) UW4200H UX4200H (4200g/0.01g) TX4202N (4200g/0.01g) TX3202N (3200g/0.01g) BL-3200H (3200g/0.01g)
		 <p style="text-align: center;">UP-X/UP-Y Series</p>		 <p style="text-align: center;">TW-N/TX-N/TXB Series</p>		

0.1g (100mg)	 <p style="text-align: center;">UP-X/UP-Y Series</p>	 <p style="text-align: center;">ELB Series</p>	 <p style="text-align: center;">BL Series</p>	ELB600S (600g/0.1g) UW820SV (820g/0.1g)	ELB2000 (2000g/0.1g) ELB1200 (1200g/0.1g) UW2200HV (2200g/0.1g)	UP4201X UP4201Y (4200g/0.1g) UW4200S UX4200S (4200g/0.1g) TXB4201L (4200g/0.1g) BL-3200S (3200g/0.1g) ELB3000 (3000g/0.1g) UW4200HV (4200g/0.1g)
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	5kg~	10kg~	30kg~	50kg~
0.01g (10mg)	UW6200H UX6200H (6200g/0.01g)	 <p style="text-align: center;">UW/UX Series</p>		

0.1g (100mg)	UP8201X UP8201Y (8200g/0.1g) UW8200S UX8200S (8200g/0.1g) TXB6201L (6200g/0.1g) UW6200HV (6200g/0.1g)	BW22KH BX22KH (22kg/0.1g) BW12KH BX12KH (12kg/0.1g)	BW32KH BX32KH (32kg/0.1g)	 <p style="text-align: center;">UP-X/UP-Y Series</p>	 <p style="text-align: center;">BW-K/BX-K Series</p>
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1g	TXB6200L (6200g/1g) ELB6000S (6000g/1g) UW8200SV (8200g/1g)	ELB12K (12kg/1g)	BW32KS BX32KS (32kg/1g)	BW52KS BX52KS (52kg/1g)
	 <p style="text-align: center;">TXB Series</p>		 <p style="text-align: center;">ELB Series</p>	

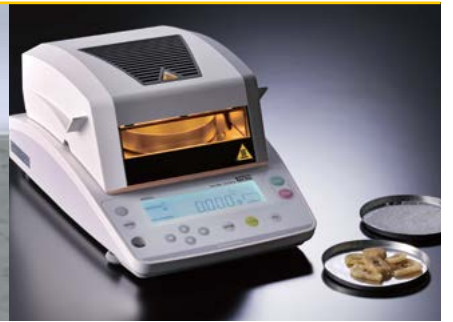
Product Lineup




○ : Standard function △ : Option

									
		AP-WD AP-W	AP-X	AP-Y	AUX-D AUV	AUX	AUY	ATX-R ATY-R	ATX ATY
 UniBloc	UniBloc	○	○	○	○	○	○	○	○
 Perfect Self Calibration	Perfect Self Calibration	○	○		○	○		○ (ATX-R only)	
 Clock-CAL	Clock-CAL	○	○		○				
 Internal Calibration	Internal Calibration	○	○		○	○		○ (ATX-R only)	○ (ATX only)
 Single-Lever CAL	Single-Lever CAL								
 Built-in Clock	Built-in Clock	○	○	○	○	○			
 ISO Calibration Report	ISO Calibration Report	○	○	○	○	○			
 Menu Operation Key	Menu Operation Key	○	○	○					
 Easy Setting	Easy Setting	○	○	○				○	○
 Backlight	Backlight				○ (AUV only)				
 Organic EL Display	Organic EL Display	○	○	○					
 Computer Connection Function	Computer Connection Function	○	○	○	○	○	○	○	△*1
 Balance Keys	Balance Keys	○	○	○	○	○	○	○	○
 Built-in RS-232C Interface	Built-in RS-232C Interface	○	○	○	○	○	○	○	△*1
 Built-in USB Interface	Built-in USB Interface	○	○	○				○	
 Analog Bar Graphic Display	Analog Bar Graphic Display	○	○	○	○	○	○		
 Checkweighing	Checkweighing	○	○	○				○	○
 Comparator Output	Comparator Output								
 Piece Counting	Piece Counting	○	○	○	○	○	○	○	○
 Carat Measurement	Carat Measurement	○	○	○	○	○	○	○	○
 Specific Gravity Measurement	Specific Gravity Measurement	○	○	○	○	○	○	○	
 Dry Battery Operation	Dry Battery Operation								
 Standard Below-weigh Hook	Standard Below-weigh Hook	○	○	○	○	○	○		
 Built-in Animal Measurement Mode	Built-in Animal Measurement Mode								
 Formulation Mode	Formulation Mode	○	○	○	○	○	○	○	○
 Internal Timer Output	Internal Timer Output	○	○	○	○	○			

*1 Requires optional I/O-RS conversion cable or interface IFB-102A. *2 Requires an optional below-weigh hook. *3 The picture is UP-X. *4 The picture is UP-Y.



 UP-X UW*3	 UP-Y UX*4	 TW TX	 TXB	 BW-K BX-K	 ELB	 BL	 UW-V	 MOC63u MOC-120H
○	○	○		○			○	○
○							○	
○							○	
○		○ (TW-N only)		○ (BW-K only)			○	
○	○			○			○	○
○	○			○			○	○
		○	○					
		○	○					
○	○	○	○				○	○
○	○	○	○	○	△*1	△*1	○	○
○	○	○	○	○	○	○	○	○
○	○	○	○	○	△*1	△*1	○	○
								○ (MOC63u only)
○	○	○	○	○		○	○	
○	○	○	○	○		○	○	
○	○	○	○	○		○	○	
○	○	○	○	○		○	○	
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○	○	○	○	○		○	○	
○	○	○	○	○	△*2	△*2	○	
○	○	○	○	○				
○	○	○	○	○			○	
○	○	○	○	○				○

AP Series

Advanced Performance UniBloc Balances

Provides High-speed Response and High Stability
A New Stage in Analytical Balance Performance

High Speed

The response time for trace measurements (from 1 mg) is about 2 seconds.
This significantly improves weighing efficiency.

Stress Free

The STABLO™-AP ionizer can be mounted.
This eliminates the influence of static electricity, achieving reliable measurements in a simpler procedure.

For Regulation

Interlocking with LabSolutions Balance enables compliance with a variety of data integrity regulations, including ISO 17025 for testing laboratories, ISO 9001 and ISO 14001 for the manufacturing industry, and GLP/GMP and the United States Pharmacopeia (USP) for the pharmaceutical industry.

For HPLC

Functions are included for the preparation of buffer solutions used in HPLC.
As a result, the operation can be performed accurately and easily, even by non-specialists.

Save Your Operation

Equipped with USB as standard*1. Includes many diverse functions to support users.

*1 All models: USB-B type connector as standard AP-W Series: USB-A type and B type as standard



* AP224W with optional ionizer



Watch the AP overview video on our website.
<https://www.shimadzu.com/an/balance/analytical/ap.html>

High Speed

Fast measurement significantly improves operational efficiency.

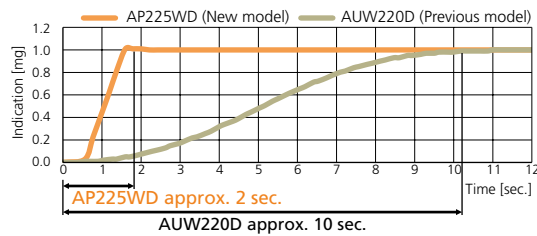
Fast Response with UniBloc AP Technology

Shimadzu analytical balances boast the one-piece UniBloc weighing sensor, which is now even more advanced.

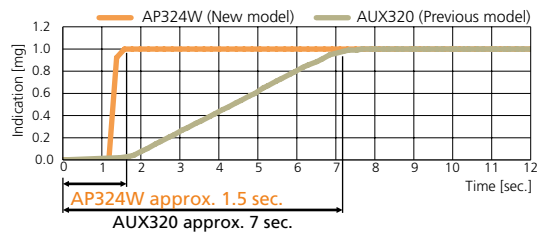
The response time is reduced to about 1/5 the time of previous models.

In addition, the UniBloc sensor offers a response time of just 2 seconds, an improvement from 10 seconds with the previous model.

Response During Trace Measurements with the 0.01 mg Model (Equivalent to 1 mg / With Conditions Set by Shimadzu)



Response During Trace Measurements with the 0.1 mg Model (Equivalent to 1 mg / With Conditions Set by Shimadzu)



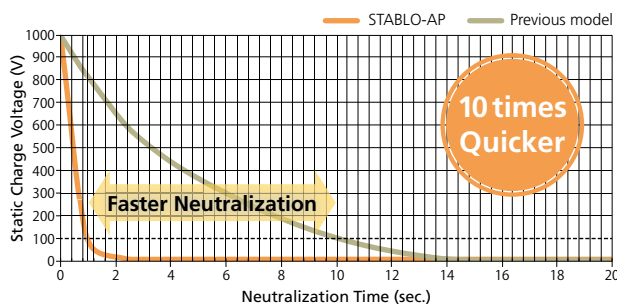
Model	Previous Model	AP Series
0.01 mg	10 sec.	2 sec.
0.1 mg	7 sec.	1.5 sec.



* AP135W

Built-in High-Performance Ionizer (Optional)

Comparison of Neutralization Speed (Representative Values)



Measurement Conditions

- Time from ± 1000 V to ± 100 V
- For this evaluation, a 150 x 150 mm charged plate monitor (CPM, 20pF) was used.
- Distance between CPM and ionizer: 100 mm

The ionizer eliminates influence of static electricity in 1/10 the time of previous models.

Note: Example of typical static electricity removal time (± 1000 V \rightarrow ± 100 V)
1 sec. for STABLO-AP and 10 sec. for STABLO-EX (previous model)

AC Method with Excellent Ion Polarity Balance

Mount the STABLO-AP in the balance and use it as a built-in model



Stress Free

A variety of accessories and options suitable for semi-micro measurements



Highly Sophisticated Simulation Technology

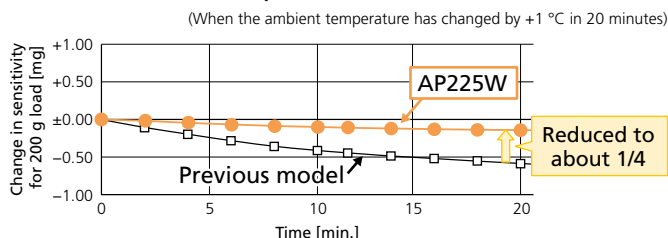
Increased weighing capacity from 135 mg to 220 g (0.01 mg model)

Micro amount weighing over 135 mg (read 0.01 mg step) is possible.

Improved Sensitivity Stability When Ambient Temperature Changes

The temperature of the operational environment is affected by the external air temperature, turning off the air-conditioning, people entering the room, etc. The stability with respect to these small temperature variations in the operational environment has been improved. When the ambient temperature has changed by +1 °C in 20 minutes, the AP225W provides an improvement in the stability of the sensitivity by a factor of four compared to the previous model.

Change in Sensitivity When Repeatedly Weighing 200 g (Measurement carried out by Shimadzu)



Improved Minimum Weight

(Minimum display 0.01mg, AP225W/135W/225WD/125WD only)

By improving stability technologies, the minimum weight required for meeting USP Chapter 41 requirements has been improved from 30 mg to 20 mg. *In a factory test in our company

The AP Holder (standard accessory for AP225W) compatible with a variety of weighing containers is provided standard, and static electricity is properly removed from the bottom of the container, resulting in easier operation.

→ The AP Holder in combination with the ionizer can eliminate the influence of static electricity on the weight value. See page 23 for more information.



Volumetric flask (100 mL)



Test tube (10 mL)



AP Holder

Containers that can be used with the AP Holder (Examples)

Container	Applicable Volume*
Volumetric flask	10 to 100 mL
Conical flask	100 mL
Beaker	
Centrifuge tube (Spitz tube)	3 to 25 mL
Test tube	

* About 70 mm or more height or length is required.

Easy-to-Use Multi Stand

(0.01 mg model only, equipped as standard)



With weighing paper, for example, if the tare is larger than the pan diameter, measurements can be simplified by attaching the special multi stand.



The internal windbreak plate suppresses the influence of convection and air flow within the weighing chamber, improving the stability and response of measurement values.

For HPLC

Buffer Solution Preparation Mode **NEW**

(AP-W Series only)

- **Recipes for 13 commonly used buffer solutions are included**

Preparation recipes for commonly used buffer solutions are provided as standard.

e.g. disodium phosphate, sodium acid citrate

- **New buffer solution recipes can be registered**

If a buffer solution is not registered by default, it can be added.

- **Instructions are shown on the display**

The target weighing value is shown on the display and analog bar in order to compare the target with the current weight. Manual calculation is not needed.

- **Record function**

Record output with date, time and operator name.

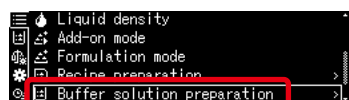
The pH level of mobile phase (eluent) solutions used in liquid chromatographs is adjusted to improve separation of components and extend the life of columns. This pH adjustment process is performed using a buffer solution. Currently, the most common method is using a pH meter to measure the pH as the solution is prepared; however, this process requires considerable time and effort, which can cause operational bottlenecks.

An alternative method does not require a pH meter. It involves preparing solutions by weighing fixed theoretically calculated quantities of an acid and base.

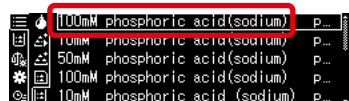
AP series supports weighing these acids and bases. If the type and quantity of the buffer solution are specified, the balance displays the type and quantity of sample that should be weighed. Then the buffer solution can be prepared easily by adding water to the specified quantity of sample.

Preparation example: When weighing and preparing 50 mM of di-sodium hydrogen phosphate, 2-hydrate and 50 mM of sodium dihydrogenphosphate, 2-hydrate in order to prepare 3 L of 100 mM phosphoric acid (sodium) buffer solution at pH = 2.1:

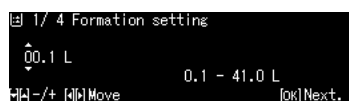
Example of preparation by AP series



Select the buffer solution mode.



Specify the type and quantity.



Displays the name and quantity of sample.



Prepare as instructed on screen.

Complete buffer solution



Number	Buffer solution preparation list
1	100 mM phosphoric acid (sodium) pH = 2.1
2	10 mM phosphoric acid (sodium) pH = 2.6
3	50 mM phosphoric acid (sodium) pH = 2.8
4	100 mM phosphoric acid (sodium) pH = 6.8
5	10 mM phosphoric acid (sodium) pH = 6.9
6	20 mM citric acid (sodium) pH = 3.1
7	20 mM citric acid (sodium) pH = 4.6
8	10 mM tartaric acid (sodium) pH = 2.9
9	10 mM tartaric acid (sodium) pH = 4.2
10	20 mM acetic acid (ethanolamine) pH = 9.6
11	100 mM acetic acid (sodium) pH = 4.7
12	100 mM boric acid (potassium) pH = 9.1
13	100 mM boric acid (sodium) pH = 9.1

* Results can be printed with date/time and user ID.

Sample Preparation **NEW**

(AP-W Series only)

When preparing a standard solution from a particular component, the standard powder for this component will be a hydrochloride or a hydrate. Preparing a standard solution of the target component at a desired concentration requires difficult calculations prior to weighing it. With the AP series, however, the required weight value is automatically calculated, so it can be weighed without performing manual calculations.

Example of preparation by AP series

Weigh 25 mg Amitriptyline to make a standard solution

Standard sample of Amitriptyline is Amitriptyline Hydrochloride.

Calculation is essential to determine part of Acidum hydrochloricum by molecular weight in order to make a 100 mg/mL Amitriptyline solution.

Molecular weight of Amitriptyline: 277.4

Molecular weight of Acidum hydrochloricum: 36.5

Molecular weight of Amitriptyline Hydrochloride: $277.4 + 36.5 = 313.9$

To compare the molecular weight of Amitriptyline Hydrochloride with Amitriptyline, the following calculation is necessary.

$$313.9 / 277.4 = 1.132$$

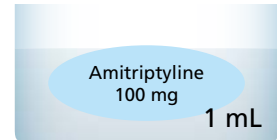
The molecular weight of Amitriptyline Hydrochloride is 1.132 times of Amitriptyline.

So, if 25mg of Amitriptyline is used, it follows that the weight of Amitriptyline Hydrochloride should be:

$$25 \text{ mg} \times 1.132 = 28.3 \text{ mg.}$$

Hence, 28.3 mg of Amitriptyline Hydrochloride is needed to make the correct standard solution.

Standard solution of Amitriptyline



Amitriptyline Hydrochloride



No need for manual calculation

AP series can automatically calculate the sampling weight using the molecular amount of the standard sample, molecular weight of unnecessary sample, and the target value in order to reach the correct concentration solution.

Just weigh the target weight value on display and the target weight of the standard sample can be obtained.

	Sample preparation AMITRIPTYLINE Target 0.0283 g Gross 0.0283 g Picking 0.0250 g	OK	
Target weighing value	→	→	
Current sample value	→	→	
Standard sample value	→	→	

"OK" mark shown when target weight is reached.

Checking weighing conditions on the same display

Save Your Operation

USB Offers Greater Expandability **NEW**

(USB host: AP-W Series only)

Equipped with an RS-232C connector, a USB device and a USB host as standard. You can now simultaneously send output to both a computer and printer or connect a USB flash drive, a barcode reader, or an external numeric keypad.

Transcription errors can be avoided and data can be recorded without a computer.



USB and RS-232C are standard

USB host is available for AP-W Series

USB flash drive

Connecting a USB memory device allows you to record large amounts of weighing data in CSV format. Used in combination with the interval output function, it enables recording of long-term changes over time.



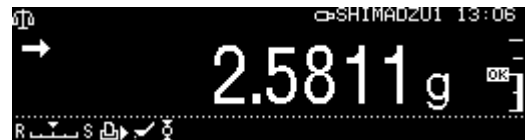
Example of a record:
 File name
 Date and time
 Weighing value

* The information saved will differ depending on the function used.

Display capture function

Weighing display can be recorded into USB memory in BMP format. User name, date/time, and setting can be shown with display information.

The user name, time, measurement conditions, pass/fail judgments, and other information displayed on screen can be saved as is, enabling the recording of measurements and checks after measurements.



Numeric keypad

Connecting a common external numeric keypad makes it easier to enter numeric values. This is especially useful for entering the mass value of weights, setting upper/lower limit values for the comparator function, or entering the sample count during piece counting mode.

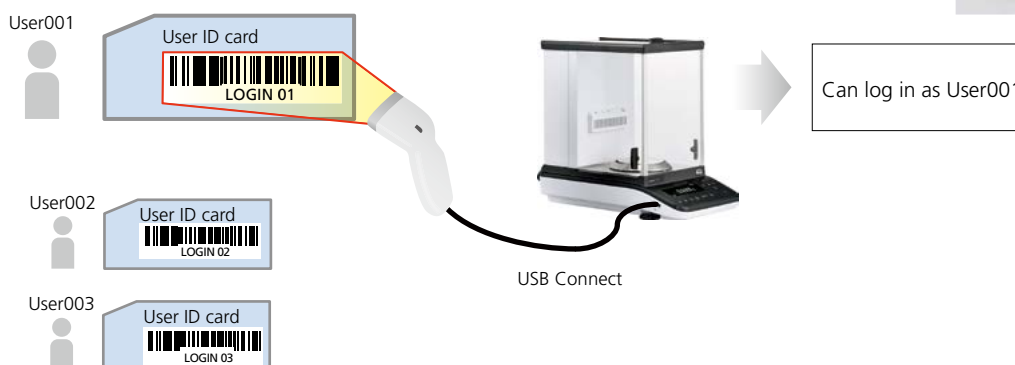


Barcode reader

A barcode reader can be connected. Simply reading a barcode makes it possible to input user ID/Password. It is possible to manage sample IDs using barcodes.



An example of login by barcode



An ID and password are needed to log in to the AP series if protected access is activated. With the barcode, an operator can log in by scanning the barcode instead of inputting an ID and password.

* The latest information can be seen from the Shimadzu website (<https://www.shimadzu.com/an/balance/>)

Equipped with USB as standard.*1
Includes many diverse functions to support users.

*1 AP-W Series only

Easy-to-Read Organic EL Display

(All models)

Because the pixel elements in the organic electroluminescence display emit light, the screen can be seen clearly even in dark locations. Multi-language display capability*2 provides a more intuitive operating interface. A wider viewing angle has also improved the visibility of measurement values, which helps increase the efficiency of measuring operations.

*2 English, Chinese and Japanese



Clearly visible from the side

```

[Menu] Standard measurement
[Menu] Parts counter measurement >
[Menu] Percent measurement >
[Menu] Averaging mode
[Menu] Solid specific gravity
    
```

English example

Exceptional Visibility

The visibility remains the same even when viewed from different angles. The viewing angle is a wide expanse of ± 85 degrees, both vertically and horizontally. That means the display is clearly visible even when working beside the balance. A high-resolution dot-matrix display makes it easy to read detailed text.

Periodic Inspection Support Function **NEW**

(AP-W/AP-X Series only)

AP series supports periodic inspections. The function allows inspection of repeatability, corner load error, and linearity by simply following instructions displayed on the screen.

Example of printing

```

[Menu] Repeatability inspection 1
[Menu] Repeatability inspection 2 >
[Menu] Corner load error inspection >
[Menu] Linearity error inspection >
    
```

Select the inspection mode.

```

[Menu] Start
[Menu] Weight value 200 g
[Menu] Tolerance 0.0010 g
[Menu] Repeat count 6
    
```

In this case, repeatability inspection is selected.

```

1/12 Repeatability inspection.
Put on the 200g weight.
[OK] Cancel.
    
```

Place standard weights as instructed.

```

12/12 Repeatability inspection.
200gError 0.0041g (FAILED)
0gError 0.0004g (PASSED)
[OK] Close.
    
```

Results are displayed.



Printing sample

```

REPEATABILITY
-----
LOAD = 150 g
MPE = 0.0010 g
-----
N001
IL = 150.0000 g
I0 = 0.0000 g
N002
IL = 149.9999 g
I0 = -0.0001 g
N003
IL = 149.9999 g
I0 = -0.0001 g
N004
IL = 149.9999 g
I0 = 0.0000 g
N005
IL = 149.9999 g
I0 = 0.0000 g
N006
IL = 149.9999 g
I0 = 0.0000 g
TEST RESULTS
LOAD = 0.0001 g
(PASSED)
ZERO = 0.0001 g
(PASSED)
    
```

IL: Loaded weight
I0: Zero value

And more...

Wide Variety of Functions to Support Users

Smart Settings

(All models)

Response and stability settings can be changed during measurements with a single touch. Changing the settings for different applications can make it even easier to use.



User-friendly arrow keys

The indicator is operated using the left and right arrow keys. Moving the setting toward [R] prioritizes response, which makes it easier to operate the balance. Conversely, moving it toward [S] makes it easier to stabilize weight values, which can improve readability in environments with vibration.



Moving it left prioritizes response and moving it right prioritizes stability. Five setting levels are available.



Specific Gravity Measurement

(All models)

In combination with an optional specific gravity measurement kit, the balance can be used to measure specific gravity. Operations are simplified by a text-based navigation function. By using sinkers, the specific gravity of liquid can be measured as well. This allows measuring the specific gravity of metals, rubbers, plastics, and other materials easily.



First measure the empty weight.



Then place it in the container filled with water, as instructed on the screen.



The specific gravity value is displayed using simple steps.

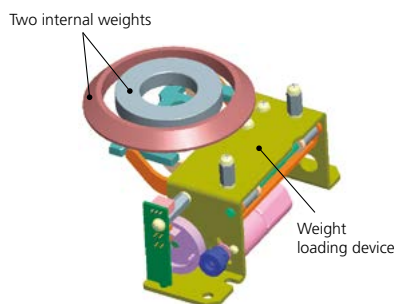


For Better Weighing Results

(AP-W/AP-X Series only)

- **Two internal weights provided**

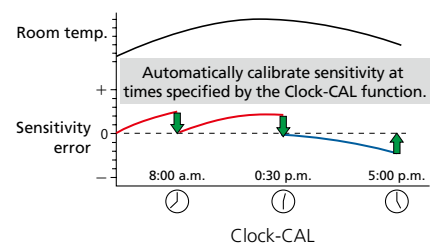
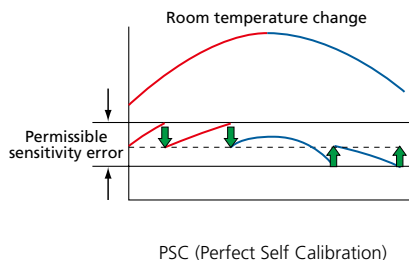
0.01 mg models are calibrated at 2 points with the internal weights (weight value and 1/2 value).



- **Includes Perfect Self Calibration (PSC) function**

The analytical balance automatically detects any temperature changes that could affect sensitivity and automatically starts calibration.

The Clock-CAL function enables automatic calibration at a pre-specified time (for example, before starting work, during lunch, or after work hours).



The Reason the AP Holder in Combination with the Ionizer Can Eliminate the Influence of Static Electricity on the Weight Value

Why is the AP Holder needed as a countermeasure to static electricity?

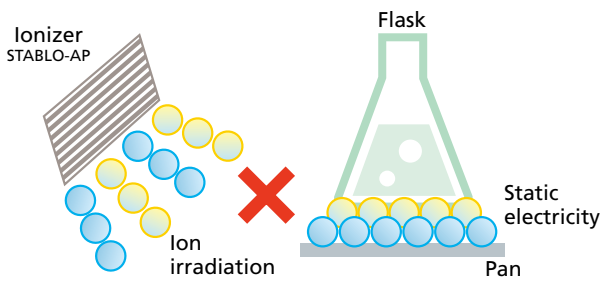
If the AP Holder and the STABLO-AP ionizer are used together, static electricity can be quickly removed from the entire test chamber, including the surfaces of glass containers, which helps to decrease the weighing time and improve reliability.



AP Holder

Example of Removing Static Electricity from a Flask

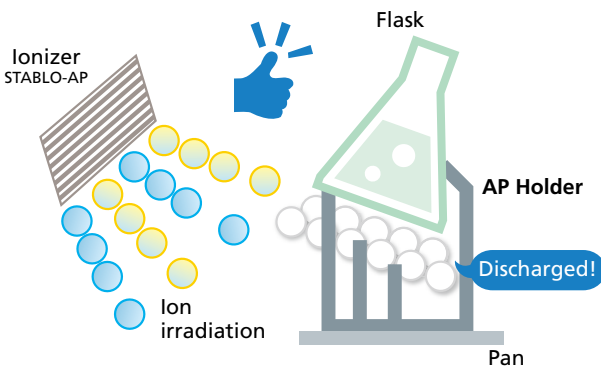
NG The conical flask is directly placed on the pan.



Ions emitted from the ionizer cannot reach the bottom of the flask, so removal of static charge from the bottom of the flask is insufficient. Therefore, Coulomb forces act between the surrounding metal parts and the windshield door, which affects the weight value.

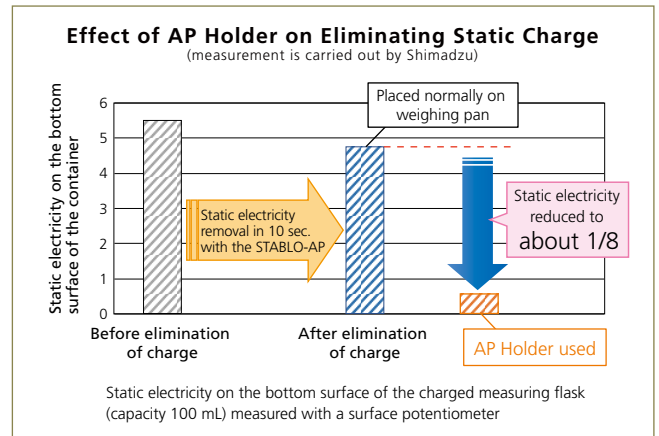
The bottom of the flask is in close contact with the pan, so removal of the static charge is obstructed, leading to an unstable weight value.

OK The conical flask is tilted using the AP Holder and placed on the pan.



The AP Holder can hold the container in a tilted position, so the charge can be reliably removed from the bottom of the container being mounted on the AP Holder.

Using the AP Holder to separate the flask from the pan, the ions supplied by the ionizer reach the locations where there is static charge on the bottom of the flask. This improves the neutralization effect and results in a stable weight value.



AP Series Specifications

W Series Analytical Balances

Series	W Series						
Model	AP225W	AP135W	AP125WD	AP225WD	AP124W	AP224W	AP324W
Capacity	220 g	135 g	120 g / 52 g	220 g / 102 g	120 g	220 g	320 g
Minimum Display	0.01 mg		0.1 mg / 0.01 mg		0.1 mg		
Calibration Weight	Built-in*1						
External Calibration Weight Range for Span Calibration	95 to 220.00090 g (200 g)	45 to 135.00090 g (100 g)	45 to 120.00090 g (100 g)	95 to 220.00090 g (200 g)	45 to 120.009 g (100 g)	95 to 220.009 g (200 g)	95 to 320.009 g (300 g)
Repeatability (Standard deviation)	0.015 mg (to 20 g) 0.03 mg (to 100 g) 0.05 mg (to weighing capacity)	0.05 mg	0.1 mg / 0.02 mg	0.1 mg / 0.05 mg	0.1 mg		0.15 mg
Repeatability (for Low Loads)*2	0.01 mg (5 g low loads)	0.015 mg (5 g low loads)		0.1 mg (5 g low loads)		0.1 mg (10 g low loads)	0.1 mg (20 g low loads)
Minimum Weight*2	20 mg			200 mg			
Linearity	±0.1 mg		±0.2 mg / ±0.05 mg	±0.2 mg / ±0.1 mg	±0.2 mg		±0.3 mg
Response Time for Trace Measurements*3				2 sec.			
Response Time*4	8 sec.		2 sec. / 8 sec.		2 sec.		
USB Host (Type A)	Included						
USB Device (Type B)	Included						
Recipe Compounding	Included						
HPLC Buffer Solution Preparation	Included						
mol Conversion Function	Included						
Sample (Concentration) Preparation	Included						
Inspection Support Function	Included						
Clock-CAL	Included						
Ionizer	Optional						
Operating Temperature/Humidity Range	5 to 40°C 20 to 85%*5						
Sensitivity Stability Against Temperature Range	±2 ppm/°C (10 to 30°C)						
Pan Size	ø91 mm						
Body Dimensions	Approx. W212 × D411 × H345 mm (power supply unit included)			Approx. W212 × D367 × H345 mm			
Weight	Approx. 7.9 kg			Approx. 7.0 kg			
Display	OEL display (dot matrix)						
Input/Output Terminal	RS-232C (D-sub 9P plug)		USB host (Type A)	USB device (Type B)	Ionizer		

X Series / Y Series Analytical Balances

Series	X Series			Y Series		
Model	AP124X	AP224X	AP324X	AP124Y	AP224Y	AP324Y
Capacity	120 g	220 g	320 g	120 g	220 g	320 g
Minimum Display	0.1 mg					
Calibration Weight	Built-in			No		
External Calibration Weight Range for Span Calibration	45 to 120.009 g (100 g)	95 to 220.009 g (200 g)	95 to 320.009 g (300 g)	45 to 120.009 g (100 g)	95 to 220.009 g (200 g)	95 to 320.009 g (300 g)
Repeatability (Standard deviation)	0.1 mg		0.15 mg	0.1 mg		0.15 mg
Repeatability (for Low Loads)*2	0.1 mg (5 g low loads)	0.1 mg (10 g low loads)	0.1 mg (20 g low loads)	0.1 mg (5 g low loads)	0.1 mg (10 g low loads)	0.1 mg (20 g low loads)
Minimum Weight*2	200 mg					
Linearity	±0.2 mg		±0.3 mg	±0.2 mg		±0.3 mg
Response Time for Trace Measurements*3	2 sec.					
Response Time*4	2 sec.					
USB Host (Type A)	Not Included					
USB Device (Type B)	Included					
Recipe Compounding	Not Included					
HPLC Buffer Solution Preparation	Not Included					
mol Conversion Function	Included			Not Included		
Sample (Concentration) Preparation	Not Included					
Inspection Support Function	Included			Not Included		
Clock-CAL	Included			Not Included		
Ionizer	Optional			Not Included		
Operating Temperature/Humidity Range	5 to 40°C 20 to 85%*5					
Sensitivity Stability Against Temperature Range	±2 ppm/°C (10 to 30°C)					
Pan Size	ø91 mm					
Body Dimensions	Approx. W212 × D367 × H345 mm					
Weight	Approx. 7.0 kg			Approx. 6.5 kg		
Display	OEL display (dot matrix)					
Input/Output Terminal	RS-232C (D-sub 9P plug)	USB device (Type B)	Ionizer	RS-232C (D-sub 9P plug)	USB device (Type B)	

*1 Minimum display 0.01 mg models include two internal weights (see page 22 for details).

*2 Be compliant with USP Chapter 41. This is the tested value by the weight of the balance's capacity 5% (or 5 grams' weight). In the case of the AP225W, the results are for tests carried out with the optional internal windbreak plate applied. The minimum weight value is affected by the installation environment, so it is necessary to measure it in the actual environment of use.

*3 The response time for displaying 90% of the added sample amount value in trace measurements (from 1 mg)

*4 The response time value is typical.

*5 Non-condensing.

AP Series

0.01 mg model

AP225W
AP135W

0.01 mg / 0.1 mg model

AP225WD
AP125WD

0.1 mg model

AP124W AP124X AP124Y
AP224W AP224X AP224Y
AP324W AP324X AP324Y



* Power supply unit included.



STABLO-AP Ionizer



EP-100 Electronic Printer



EP-110 Electronic Printer
(Multifunction printer with liquid crystal display)



SMK-601
Specific Gravity Measurement Kit



Internal Windbreak Plate



AP Holder

Optional Accessories

Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
Label Roll Paper for EP-100/110 (10 Rolls)
Specific Gravity Measurement Kit SMK-601
Display Protective Cover (Set of 5)

USB Cable
RS-232C Cable
AC Adapter (Standard accessory)
Internal Windbreak Plate
RS-I/O Interface Cable
AP Holder (Standard accessory for AP225W)

Static Remover (Ionizer)



Shimadzu's proprietary ionizer for analysts troubled by static charging of samples or containers

One-touch attachment and removal adds even more convenience

— an excellent solution against **static electricity.**

STABLO-AP provides reliable measurement by removing static electricity.

1

On Stand



2

Hand-held



3

Built-in Balance (AP series)

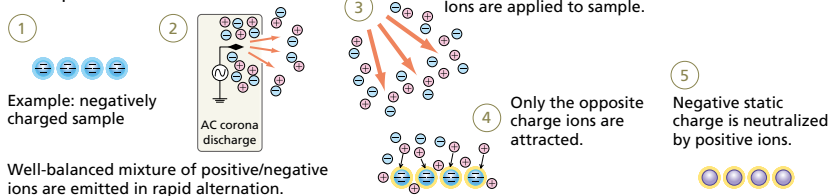


Features of STABLO-AP

Static Electricity Removal by Ion Irradiation

With the high-frequency AC corona discharge method, Shimadzu's STABLO-AP ionizer provides a stable ion balance and excellent static removal performance on samples and containers. Precision weighing work becomes remarkably efficient. Electrodes are safely housed inside the unit.

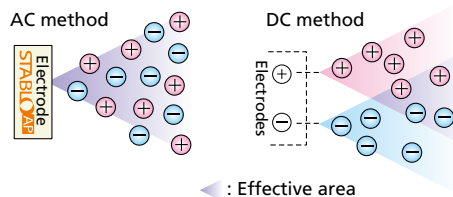
Concept of static removal



AC Method Produces Excellent Ion Balance

AC method: AC voltage is applied on the discharge needle and a well-balanced mixture of positive/negative ions is emitted in rapid alternation from one electrode.

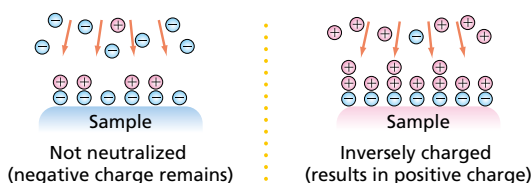
DC method: DC voltage is applied to a couple of electrodes. One is positive and the other is negative. Each electrode emits ions of one polarity only. An effective static removal angle is limited if the two electrodes are distanced. As electrodes deteriorate, initial ion balance is lost.



What is "ion balance"?

Ion balance is the balance of positive and negative ions that are supplied by an ionizer. If ion balance is poor, static electricity is not removed or inverse charging may result.

If ion balance is poor.....



Application

Static electricity keeps the sample out of the ampoule



The sample is hard to handle because it adheres to the ampoule inlet and sides.



STABLO-AP removes the charge from the ampoule.



The static charge is gone in seconds. This improves productivity.

Plastic wrap sticks to rubber gloves



Plastic wrap adheres to rubber gloves, making it difficult to work with.



Fasten STABLO-AP to the stand, and remove the static from the gloves.



The static is removed in about 10 seconds, and the plastic wrap no longer sticks.

■ STABLO-AP is convenient when using an electronic balance



When the powder in the Petri dish is electrically charged, and the numerical value fluctuates



When the powdered medicine paper is electrically charged, and the numerical value is unstable



When the measurement spoon is electrically charged, and bringing it near the pan affects the numerical value

Specifications

Ion Generation Method	AC corona discharge method
Ion Balance	±10 V
Effective Static Removal Range	Approx. 400 mm from the outlet
Static Elimination Time (approx.)	1 second (Typical value) (from ±1000 V to ±100 V)
Ozone Concentration	0.06 ppm
Electrode Probes	Tungsten (durability: 30,000 hours)
Weight	Approx. 710 g (Main unit: 395 g, Stand: 315 g)
Operating Temperature and Humidity	0 °C to + 40 °C, 25 % RH to 85 % RH (non-condensing)
Rated Electric Power Supply	DC 24 V, 1.0 A

Analytical Balances

AU series

Multi Functional Analytical Balances

UniBloc Analytical Balances

AUW-D series dual-range semi-micro balances
 AUW/AUX/AUY series analytical balances

Excellent Weighing Performance

- Compact UniBloc mechanism and digital processing technology produce fast response and stability at the same time.

For Applications

- Shimadzu's unique Balance Keys (https://www.shimadzu.com/an/balance/balance_keys/)
- Measurement results can be transmitted to Excel® or other Windows® applications without installing any additional software on your computer. All you have to add is one RS-232C cable.
- Piece counting, various mass units, below-weigh hook, specific gravity measurement software are all standard features.



AUW-D/AUX/AUY Series

AUW Series

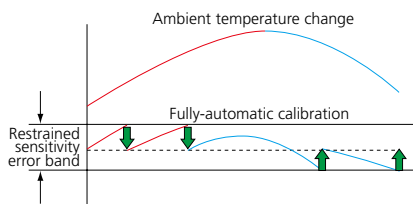


Choose the model according to your field requirements.

Excellent response, stability and zero return performance – in a semi-micro balance.

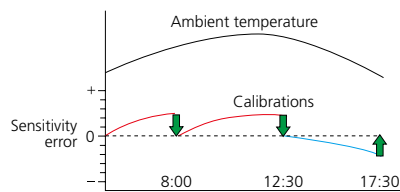
PSC (Perfect Self-Calibration) (AUW-D/AUW/AUX series only)

Automatically calibrates the balance if an ambient temperature change occurs that could affect sensitivity.



Clock-CAL

This automatically calibrates the balance at pre-specified times (such as before starting work, during lunch, or after work hours).



Internal Calibration (AUW-D/AUW/AUX series only)

The balance has built-in motor-driven calibration weights. Sensitivity can be calibrated whenever needed with a single key press.



ISO Calibration Report

Simply connect an optional printer to automatically print out which balance was calibrated when, and the calibration results. Absolutely no troublesome settings are required. Furthermore, the current date and time can be printed at anytime during measurement.



Interval Timer (AUW-D/AUW/AUX series only)

Data can be automatically output at time intervals set in the range from 1 second to 99 minutes 59 seconds. This function can be combined with Balance Keys.



Piece Counting

A built-in piece counting function enables balances to be used as parts counters (piece scales).



RS-232C Interface

All models are equipped with an RS-232C interface for easy integration with other devices and computers.



Specific Gravity Measurement

Installing the optional SMK-401 specific gravity measurement kit transforms the balance into a dedicated instrument for measuring specific gravity or density. Specific gravity measurement software is already installed in the Shimadzu balance.



Measuring Carats

The balance supports measurements in carats, *momme*, percent, and a variety of other measurement units. (The unit *momme* is only used for measuring pearls.)

AUW-D Series



AUW Series



AUX Series



AUY Series



AU Series

Model name	AUW-D Series		AUW Series			AUX Series			AUY Series	
	AUW220D	AUW120D	AUW320	AUW220	AUW120	AUX320	AUX220	AUX120	AUY220	AUY120
Capacity	220 g/82 g	120 g/42 g	320 g	220 g	120 g	320 g	220 g	120 g	220 g	120 g
Minimum Display	0.1 mg/0.01 mg		0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Pan Size (mm)	Approx. 80 dia.									
Body Dimensions	Approx. W217 × D356 × H338 mm									
Weight	Approx. 7 kg									

Optional Accessories

Description
Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
Specific Gravity Measurement Kit SMK-401
In-use Protective Cover
RS-232C Cable
USB Conversion Cable
Application Keyboard AKB-301
Foot Switch FSB-102PK
Foot Switch FSB-102TK



Electronic Printer
EP-100



Electronic Printer
EP-110



Application Keyboard
AKB-301



STABLO-AP



Specific Gravity Measurement Kit
SMK-401

Analytical Balances

AT-R series

Basic Models of Analytical Balances

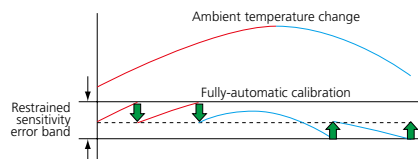
Basic Model with Improved Convenience

- Freely set responsiveness or stability
- Perform stable measurements in combination with an ionizer
- Connect with a computer via USB or RS-232C



PSC (Perfect Self-Calibration) (ATX-R only)

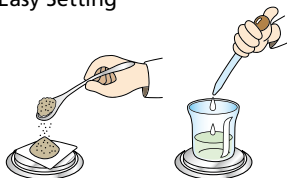
Automatically calibrates the balance if an ambient temperature change occurs that could affect sensitivity.



Internal Calibration (ATX-R only)

The balance has built-in motor-driven calibration weights. Sensitivity can be calibrated whenever needed by a single key press.

Easy Setting



Computer Connection Function

Systems can be connected to a computer via an optional cable/adaptor kit. For more details, visit the Shimadzu website.



RS-232C Interface

All models are equipped with an RS-232C interface for easy integration with other devices and computers.



USB Interface

A USB connector is built in for connecting to a PC.



Piece Counting

A built-in piece counting function enables balances to be used as parts counters (piece scales).



Checkweighing

This displays pass, high, or low judgments.



Measuring Carats

The balance supports measurements in carats, *momme*, percent, and a variety of other measurement units. (The unit *momme* is only used for measuring pearls.)



Percentage Measurement

Measures a percentage value with respect to a preset reference.



Formulation Mode

This is convenient when formulating (preparing) multiple substances.



R L L L L S
Response-focused (R)
for weighing process

R L L L L S
Stability-focused (S)
when vibrations become a concern



ATX-R Series



ATY-R Series



AT-R Series

Model	ATX324R	ATX224R	ATX124R	ATX84R	ATY324R	ATY224R	ATY124R	ATY64R
Capacity	320 g	220 g	120 g	82 g	320 g	220 g	120 g	62 g
Minimum Display	0.1 mg							
Pan Size (mm)	Approx. 91 dia.							
Dimensions	Approx. W213 x D356 x H338 mm							
Weight	Approx. 6.2 kg				Approx. 6.0 kg			

Optional Accessories

Description
Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
USB Cable Set
SMK-501 Specific Gravity Measurement Kit
AP Holder
Protective Cover (5 pc set)
AC Adapter (Provided with the main unit)



STABLO-AP



Electronic Printer EP-100



Electronic Printer EP-110



Specific Gravity Measurement Kit SMK-501



AP Holder

Analytical Balances

AT series

Basic Models of Analytical Balances

Economical Analytical Balance Equipped with UniBloc

- Adopts UniBloc, which provides excellent impact resistance, responsiveness, and stability
- Equipped with the Easy Setting function, so responsiveness and stability can be adjusted during measurements
- Buy a separately available I/O-RS cable to import the results to a PC (Equipped with the Balance Keys function)



PCS Piece Counting

A built-in piece counting function enables balances to be used as parts counters (piece scales).

% Percentage Measurement

Measures a percentage value with respect to a preset reference.



Internal Calibration (ATX only)

The balance has built-in motor-driven calibration weights. Sensitivity can be calibrated whenever needed by a single key press.

H I G O L O Checkweighing

This displays pass, high, or low judgments.

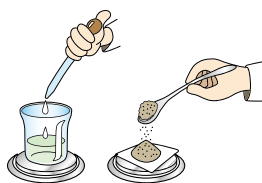
CARAT Measuring Carats

The balance supports measurements in carats, *momme*, percent, and a variety of other measurement units. (The unit *momme* is only used for measuring pearls.)

Formulation Mode

This is convenient when formulating (preparing) multiple substances.

Easy Setting



R L L L L S
Response-focused (R) for weighing process

R L L L L S
Stability-focused (S) when vibrations become a concern



ATX Series



ATY Series



ATX/ATY Series

Model	ATX324	ATX224	ATX124	ATX84	ATY324	ATY224	ATY124	ATY64
Capacity	320 g	220 g	120 g	82 g	320 g	220 g	120 g	62 g
Minimum Display	0.1 mg							
Pan Size (mm)	Approx. 91 dia.							
Dimensions	Approx. W213 x D356 x H338 mm							
Weight	Approx. 6.2 kg				Approx. 6.0 kg			

Optional Accessories

Description
Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
I/O-RS Conversion Cable
USB-Serial Adapter
Protective Cover (5 pcs)
AC Adapter (Provided with main unit)



STABLO-AP



Electronic Printer EP-100



Electronic Printer EP-110



I/O-RS Conversion Cable



USB-Serial Adapter

Electronic Balances

UP series

Multi Functional Top-Loading Balances

Top-loading Balances with the Fastest Response Performance in Its Class



Large Pan with 0.01 g
Minimum Display Value
UP2202X UP2202Y
UP4202X UP4202Y
UP6202X UP6202Y



Large Pan with 0.1 g
Minimum Display Value
UP4201X UP4201Y
UP8201X UP8201Y



Small Pan with 0.001 g
Minimum Display Value
UP223X UP223Y UP423X UP423Y
UP623X UP623Y UP823X UP823Y
UP1023X UP1023Y



Small Pan with 0.01 g
Minimum Display Value
UP422X UP422Y
UP822X UP822Y

* Windbreak can be removed.



PSC (Perfect Self-Calibration) (UP-X series only)

Automatically calibrates the balance if an ambient temperature change occurs that could affect sensitivity.

Clock-CAL (UP-X series only)

This automatically calibrates the balance at pre-specified times (such as before starting work, during lunch, or after work hours).

Internal Calibration (UP-X series only)

Enables calibration by pressing a single key with one finger. That ensures calibration can be performed whenever needed.

Printout with Date and Time

If a printer (optional) is connected, then data can be marked with the date and time. Calibration results can also be marked with date and time, which is perfect for managing measurements or establishing traceability as required by GLP/GMP/ISO 9001 standards.

ISO Calibration Report

Simply connect an optional printer to automatically print out which balance was calibrated when, and the calibration results. Absolutely no troublesome settings are required. Furthermore, the current date and time can be printed at anytime during measurement.

Backlight LCD

This backlit LCD can be clearly read even in the darkest of environments.

Checkweighing

By specifying upper and lower limit values in advance, the comparator indicates whether the sample weight passes the criteria, is too heavy, or is too light.

Comparator Output

Acceptable, high, or low weight results or other pass/fail results can be indicated by an audible sound or output externally as a contact signal. (Optional comparator audible indicator or relay output interface required.)

Measuring Carats

The balance supports measurements in carats, *momme*, percent, and a variety of other measurement units. (The unit *momme* is only used for measuring pearls.)

Computer Connection Function

Systems can be connected to a computer via an RS-232C cable or using a USB-serial adapter kit. For more details, visit the Shimadzu website.

Piece Counting

A built-in piece counting function enables the balance to be used as a parts counter (counting balance).

Specific Gravity Measurement Function

The built-in specific gravity measurement function is based on the liquid immersion method. By installing the specific gravity measurement kit (optional), the balance can be used as a hydrometer.



UP-X Series



UP-Y Series



UP-X series

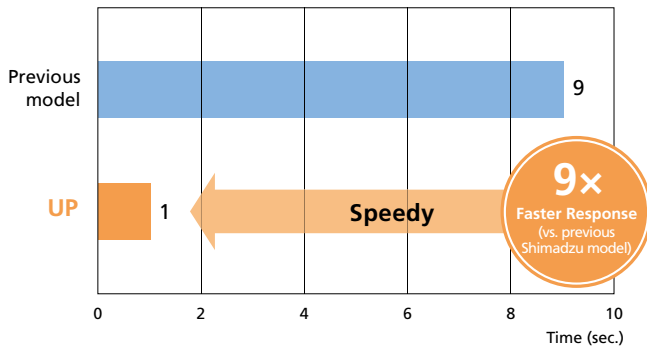
Model name	UP223X	UP423X	UP623X	UP823X	UP1023X	UP2202X	UP4202X	UP6202X	UP422X	UP822X	UP4201X	UP8201X
Capacity	220 g	420 g	620 g	820 g	1020 g	2200 g	4200 g	6200 g	420 g	820 g	4200 g	8200 g
Minimum Display	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g
Pan Size (mm)	Approx. 108 x 105					Approx. 170 x 180			Approx. 108 x 105		Approx. 170 x 180	

UP-Y series

Model name	UP223Y	UP423Y	UP623Y	UP823Y	UP1023Y	UP2202Y	UP4202Y	UP6202Y	UP422Y	UP822Y	UP4201Y	UP8201Y
Capacity	220 g	420 g	620 g	820 g	1020 g	2200 g	4200 g	6200 g	420 g	820 g	4200 g	8200 g
Minimum Display	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g
Pan Size (mm)	Approx. 108 x 105					Approx. 170 x 180			Approx. 108 x 105		Approx. 170 x 180	

Response for Weighing Minute Quantities

Large-pan model with 0.01 g minimum display value
 Small-pan model with 0.001 g minimum display value



Measurement Conditions:

Large-pan model with 0.01 g minimum display value and 0.1 g load
 Small-pan model with 0.001 g minimum display value and 0.01 g load

Optional Accessories

Description
Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
RS-232C Cable 25P-9P (1.5 m)
USB-Serial Replacement Kit
Application Keyboard AKB-301
Windbreak Set *1
Windbreak Set (For large pan) *2
Glass Windbreak WBC-102
Large Size Windbreak WBC-502
In-use Protective Cover (3 pcs) (For large-pan models with 0.01 g min. display value)
In-use Protective Cover (5 pcs) (For large-pan models with 0.1 g min. display value)
In-use Protective Cover (5 pcs) (For small-pan model)
In-use Protective Cover (5 pcs) (For display and key part)
Animal Bucket Set (For large-pan models with 0.01 g minimum display value)
Animal Bucket Set (For large-pan models with 0.1 g minimum display value)
Specific Gravity Measurement Kit SMK-101A (For large-pan model) (Up to approximately 2 kg for weighing capacity)
Specific Gravity Measurement Kit SMK-102 (For small-pan model)
Remote Display RDB-201
Remote Display RDB-202
Relay Output Interface IFB-RY1
RY1 Connection Cable
AC Adapter *3

*1 Included standard with small pan models with 0.001 g minimum display value.

*2 Included standard with large pan models with 0.01 g minimum display value.

*3 Included standard with main unit.

Electronic Balances

UW/UX series

Multi Functional Top-Loading Balances

Top-loading Balances with UniBloc Technology



UW4200S UX4200S
 UW8200S UX8200S
 UW2200H UX2200H
 UW4200H UX4200H
 UW6200H UX6200H



UW420S UX420S
 UW820S UX820S



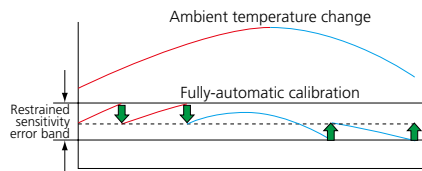
UW220H UX220H
 UW420H UX420H
 UW620H UX620H
 UW820H UX820H
 UW1020H UX1020H

* Windbreak can be removed.



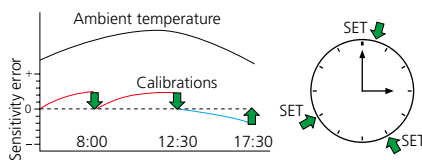
PSC (Perfect Self-Calibration) (UW only)

Automatically calibrates the balance if an ambient temperature change occurs that could affect sensitivity.



Clock-CAL (UW only)

This automatically calibrates the balance at pre-specified times (such as before starting work, during lunch, or after work hours).



Internal Calibration (UW only)

Press just two keys to calibrate the balance whenever calibration is necessary.



ISO Calibration Report

Simply connect an optional printer to automatically print out which balance was calibrated when, and the calibration results. Absolutely no troublesome settings are required. Furthermore, the current date and time can be printed anytime during measurement.



Backlight LCD

The backlight LCD display can be clearly read in the darkest of environments.



Checkweighing

When upper and lower thresholds are set, the balance indicates if the sample weight is within the range (GO), over (HI) or under (LO).



Piece Counting

A built-in piece counting function enables the balance to be used as a parts counter (counting balance).



Specific Gravity Measurement Function

The built-in specific gravity measurement function is based on the liquid immersion method. By installing the specific gravity measurement kit (optional), the balance can be used as a hydrometer.



Computer Connection Function

Systems can be connected to a computer via an RS-232C cable or using a USB-serial adapter kit. For more details, visit the Shimadzu website.



Data transfer port of UW/UX Series



Measuring Carats

The balance supports measurements in carats, *momme*, percent, and a variety of other measurement units. (The unit *momme* is only used for measuring pearls.)

UW Series



UX Series



UW Series

Model name	UW220H	UW420H	UW620H	UW820H	UW1020H	UW420S	UW820S	UW2200H	UW4200H	UW6200H	UW4200S	UW8200S
Capacity	220 g	420 g	620 g	820 g	1020 g	420 g	820 g	2200 g	4200 g	6200 g	4200 g	8200 g
Minimum Display	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g
Pan Size (mm)	Approx. 108 × 105						Approx. 170 × 180					

UX Series

Model name	UX220H	UX420H	UX620H	UX820H	UX1020H	UX420S	UX820S	UX2200H	UX4200H	UX6200H	UX4200S	UX8200S
Capacity	220 g	420 g	620 g	820 g	1020 g	420 g	820 g	2200 g	4200 g	6200 g	4200 g	8200 g
Minimum Display	0.001 g	0.001 g	0.001 g	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g
Pan Size (mm)	Approx. 108 × 105						Approx. 170 × 180					

Optional Accessories

Description
Static Electricity Remover STABLO-AP Ionizer
Electronic Printer EP-100
Electronic Printer EP-110
RS-232C Interface IFB-102A (Needed only for multiple connection)
Small Size Windbreak (For models with capacity of 300 g to 620 g only) (Std. acc. for models with readability of 0.001 g)
Glass Windbreak (For models with capacity of 220 g to 820 g only)
Large Size Windbreak (For all models)
Specific Gravity Measurement Kit SMK-101 (For large pan 170 × 180 mm)
Specific Gravity Measurement Kit SMK-102 (For small pan 108 × 105 mm)
Protective In-use Cover for Key Panel and Display (5 pcs)
Small Animal Bucket Set (For large-pan models only)
Angle Adjuster and Wall Hook for Remote Display
Stand for Remote Display (1 m high)
Foot Switch FSB-102PK (For printing)
Foot Switch FSB-102PK (For taring)
RS-232C Cable, for IBM PC/AT Compatibles (25P-9P, Null modem, 1.5 m)
RS-232C Cable, for Multiple Connections (25P-25P, Null modem, 1.5 m)
Application Keyboard AKB-301
Remote Display Unit RDB-201 with Operation Keys
Remote Display Unit RDB-202



Glass windbreak
WBC-102



Large size windbreak
WBC-502



STABLO-AP



Application Keyboard
AKB-301

Electronic Balances

TW/TX/TXB series

The beginning of the new standard.
Extremely capable, but easy to operate.



Internal Calibration

Press just two keys to calibrate the balance whenever calibration is necessary (TW only). Calibration is very fast, taking only 15 sec.



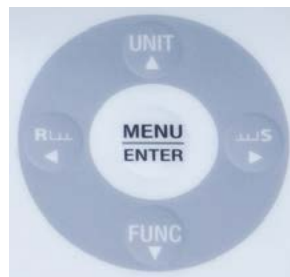
Easy Setting

Quickly adjust the desired ratio of stability and response for every application, even during measurement, with one-touch operation.



Menu Operation Key

Menu navigation keys are separated from weighing operation keys and arranged in a familiar 5-way navigation circle. Up, Down, Right, Left and Enter are the simple operational steps.



Dry Battery Operation

Power the TXB series balances with an AC adapter or batteries.



Piece Counting

Unit weights of up to five different samples can be easily entered, stored and recalled for use.



Measuring Carats

In addition to grams (g), weigh in %, number of pieces, ct, kg, mg, lb, oz, TTI, etc. or a custom conversion unit, more than 20 units in all. Change quickly from display of % or counting to gram weight (g) display.



Checkweighing

Compare samples to target values or pass/fail criteria and clearly indicate the results.

TW Series



TX Series



TXB Series



TW223L TW323L TW423L
TX223L TX323L TX423L

TW Series

Model name	TW223L	TW323L	TW423L	TWC323L	TWC623L
Capacity	220 g	320 g	420 g	320 ct (64 g)	620 ct (124 g)
Minimum Display	0.001 g	0.001 g	0.001 g	0.001 ct (0.0002 g)	
Pan Size (mm)	Approx. ø110			Approx. ø80	
Dimensions	Approx. W206 × D291 × H241 mm				
Weight	Approx. 4.2 kg			Approx. 4.1 kg	



TX2202L TX3202L
TX4202L

TX Series

Model name	TX223L	TX323L	TX423L	TX2202L	TX3202L	TX4202L	TXC323L	TXC623L
Capacity	220 g	320 g	420 g	2200 g	3200 g	4200 g	320 ct (64 g)	620 ct (124 g)
Minimum Display	0.001 g	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.001 ct (0.0002 g)	
Pan Size (mm)	Approx. ø110			Approx. W167 × D181			Approx. ø80	
Dimensions	Approx. W206 × D291 × H241 mm			Approx. W200 × D291 × H80 mm			Approx. W206 × D291 × H241 mm	
Weight	Approx. 3.8 kg			Approx. 2.8 kg			Approx. 3.8 kg	



TWC323L TXC323L
TWC623L TXC623L

TXB Series

Model name	TXB422L	TXB622L	TXB4201L	TXB6201L
Capacity	420 g	620 g	4200 g	6200 g
Minimum Display	0.01 g	0.01 g	0.1 g	0.1 g
Pan Size (mm)	ø110		ø160	
Dimensions	Approx. W199 × D260 × H77 mm			
Weight	Approx. 1.5 kg			



TXB2201L TXB6201L
TXB4201L TXB6200L



TXB222L TXB622L
TXB422L TXB621L

Optional Accessories

Description
Electronic Printer EP-100
Electronic Printer EP-110
RS-232C Cable
In-use Protective Cover
In-use Protective Cover for Display
USB Conversion Kit



Electronic Printer
EP-100



Electronic Printer
EP-110

Top-Loading Balances

BL series

Basic Top-Loading Balances

High-Resolution Balances Made Affordable



BL-320S



BL-220H
BL-320H



Piece Counting

Piece counting function is standard.



Analog Bar Graph Display

Remaining weighing capacity can be seen at a glance.

BL Series



BL Series

Model name	BL-220H	BL-320H	BL-320S	BL-620S	BL-2200H	BL-3200H	BL-3200S
Capacity	220 g	320 g	320 g	620 g	2200 g	3200 g	3200 g
Minimum Display	0.001 g	0.001 g	0.01 g	0.01 g	0.01 g	0.01 g	0.1 g
Pan Size (mm)	W100 × D100			W160 × D124			



Data transfer port of BL Series

Optional Accessories

Description
Electronic Printer EP-100
Electronic Printer EP-110
In-use Protective Cover



Electronic Printer
EP-100



Electronic Printer
EP-110

Portable Electronic Balances

ELB series

Basic Portable Electronic Balances

Precision without Compromise

ELB600S
ELB6000S
ELB600
ELB1200
ELB2000
ELB3000
ELB12K



ELB120
ELB200
ELB300



Easy battery replacement



Dry Battery Operation

Battery operation makes it portable.



Specific Gravity Measurement

Optional specific gravity kit is available for extra efficiency.



Piece Counting

Piece counting, percent display, and specific gravity modes are easily accessible.

ELB Series



ELB Series

Model name	ELB120	ELB200	ELB300	ELB600	ELB600S	ELB1200	ELB2000	ELB3000	ELB6000S	ELB12K
Capacity	120 g	200 g	300 g	600 g	600 g	1200 g	2000 g	3000 g	6000 g	12 kg
Minimum Display	0.01 g	0.01 g	0.01 g	0.05 g	0.1 g	0.1 g	0.1 g	0.1 g	1 g	1 g
Pan Size (mm)	ø110			W170 x D130						



Data transfer port of ELB Series

Optional Accessories

Description
Electronic Printer EP-100
Electronic Printer EP-110
RS-232C Interface IFB-102A
Specific Gravity Measurement Kit SMK-201 (Except for ELB120, 200, 300 for rectangular-pan models only)
Carrying Case
In-use Protective Cover
Below-weigh Hook (Except for ELB12K)



Electronic Printer EP-100



Electronic Printer EP-110

Precision Platform Balances

Precision Balances for Heavy Samples

BW-K/BX-K series

The Shimadzu precision platform balances have been engineered with the innovative UniBloc mechanism since 1989. Powerful features support any imaginable weighing application. The BW-K Series includes internal calibration weight.



BW12KH



Hook assy for below weighing (Optional)



Data transfer port of BW-K/BX-K Series



BW-K Series



BX-K Series



BW-K/BX-K Series

Model name	BW12KH	BW22KH	BW32KH	BW32KS	BW52KS	BX12KH	BX22KH	BX32KH	BX32KS	BX52KS
Capacity	12 kg	22 kg	32 kg	32 kg	52 kg	12 kg	22 kg	32 kg	32 kg	52 kg
Minimum Display	0.1 g	0.1 g	0.1 g	1 g	1 g	0.1 g	0.1 g	0.1 g	1 g	1 g
Pan Size (mm)	W345 × D250									

Optional Accessories

Description
RS-232C Interface IFB-102A (For multiple connections)
Electronic Printer EP-100
Electronic Printer EP-110
Foot Switch FSB-102PK (For printing)
Application Keyboard AKB-301
USB-Serial Conversion Kit
RS-232C Cable
Below-weigh Hook



Electronic Printer
EP-100



Electronic Printer
EP-110



Application Keyboard
AKB-301

Moisture Analyzer

MOC-120H

Moisture Analyzer with a Wide Sample Pan

Measure the Moisture Ratio of Even Large or Large Amounts of Samples

- The moisture ratio is found by heating the sample with the built-in infrared heater.
- The sample pan measures 130 mm in diameter, which is optimal for large and large amounts of samples.
- Importing results to a PC is easy (equipped with the Balance Keys function).
- Equipped with the UniBloc aluminum block mass sensor.



MOC-120H



MOC-120H

Model	MOC-120H
Measurement Method	Infrared heating/dry mass measurement
Pan Size	130 mm dia
Minimum Weight Displayed	0.001 g
Moisture Ratio Measurement Range	0.01 to 100.00 %
Minimum Moisture Ratio Displayed	0.01 %
Maximum Sample Quantity	120 g
Measurement Modes	Automatic operation mode, Timed operation mode, High-speed drying mode, Low-speed drying mode
Drying Heat Source	Medium wave infrared quartz heater
Temperature Settings Range	30 to 200 °C (1 °C steps)
Unit Dimensions and Weight	W 220 x D 415 x H 190 mm, 4.5 kg
Operational Temperature and Humidity Range	5 to 40 °C, relative humidity of 85 % max.
Required Power Supply	100 to 120/220 to 240 VAC, 640 W max.
Accessories	Sample pan x 2, pan holder, windbreak, sample pan tongs, aluminum sheet x 20, spatula

Printer



Drying conditions during measurement and the final measurement value can be graphed and printed.

Optional Accessories

Description
Printer Set Includes a Connection Cord and 1 Roll of Printer Paper (Thermal paper)
Printer Paper (10 rolls)
RS-232C Cable
Sample Pan
Aluminum Sheets (500 pcs)
Temperature Calibration Kit *1
Protective Display Cover (5 pcs)

*1 Temperature calibration using the optional Temperature Calibration Kit may be necessary depending on the measurement sample and the measurement conditions. Temperature calibration makes it possible to control the drying temperature of the measurement sample more accurately.

Warning

- Use this balance to heat samples to evaporate moisture for measurement.
- The built-in heater will be hotter than the set temperature.
- Samples must not be measured if there is a risk of an explosion or fire, or a dangerous chemical reaction from heating.

Sample Output from Optional Printer

[Graph Format (GRP)]

```

Maker : SHIMADZU CORP
Model : MOC-120H
S/N : D207300000
ID : ABCD-123
Sample Code : B-20
Date/Time : 2007.08.08/15:07
Unit : Dry Base Moist.
Mode : Comparo
Settling Temp. : 110C
Auto Stop Cond. : 0.05%
Pred. Tol. : 0.5

Met-Mass : 5.6892

Company name : Shimadzu Corporation
Serial no. : D207300000
Instrument ID : ABCD-123
Sample code : B-20
Measurement date/time : 15:07 Aug. 8, 2007
Measurement conditions storage area : 0
Measurement reference : Dry basis moisture ratio
Measurement mode : Comparative measurement
Drying temperature : 110 °C
Automatic ending conditions : 0.05 %
Predictive convergence range : 0.5

Un-dried mass : 5.6892 g

Time Temp. Moist.
(Lead) (C) (%)
0.0 25 0.00
0.5 60 0.50
1.0 106 5.61
1.5 110 7.64
2.0 110 9.09
2.5 110 10.21
3.0 110 11.26
3.5 110 12.29
4.0 110 12.17
4.5 110 12.53
5.0 110 12.94
5.5 110 13.23
6.0 110 13.41
6.5 110 13.54
7.0 110 13.77
7.5 110 13.91
Predicted : 14.39
8.0 110 14.06
8.5 110 14.14
9.0 110 14.22
9.5 110 14.28
10.0 110 14.40
10.5 110 14.48

Dried mass : 4.8637 g
    
```

Moisture Analyzer

MOC63u

Easy, Reliable Moisture Content Measurements

This Unit Makes Moisture Content Measurements Quick and Easy

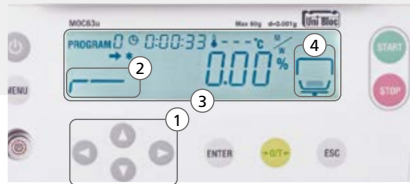
- The moisture ratio is found by heating the sample with the built-in halogen heater to drive out the moisture.
- The measurement procedure is simple. Just close the heater cover to start the measurement (automatic starting mode).
- Measurements are faster than the loss on drying method using a dryer.
- A USB connector makes connecting to a PC easy (built-in Balance Keys function).
- Equipped with the UniBloc aluminum block mass sensor.



This product is certified as Shimadzu's Eco-Products Plus. Energy Saving: Power consumption reduced by 30% as compared to a conventional Shimadzu product.

The sample pan size is a spacious 95 mm dia.

Generally, the wider, thinner, and more uniformly the sample is spread, the more precise the measurement. Uniform heating is provided by adopting a cleverly shaped reflector.



- ① A cross-shaped key layout has been adopted for excellent operability.
- ② A real-time indicator has been adopted, which blinks to show the measurement status.
- ③ The results are shown as a percentage using a backlit LCD to enhance visibility.
- ④ Graphics are provided to let you confirm the pan status in real time.

A Total of Five Modes Makes This Balance Compatible with a Variety of Sample Measurements

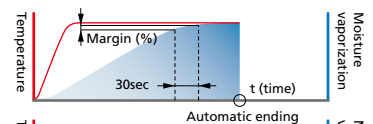
Ending Modes



The sample is easy to see!
Wide observation window

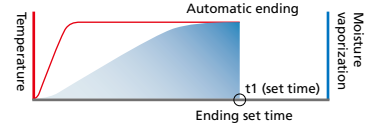
Automatic Ending Mode

This automatically ends measurement when the moisture change (% margin) over 30 seconds drops below a set value.



Timed Ending Mode

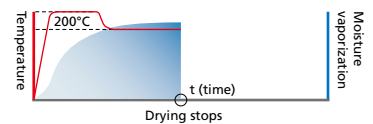
This automatically ends measurement after a preset amount of time (t1).



Alternate Drying Modes

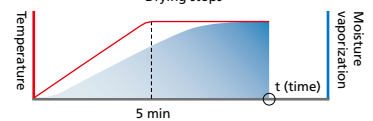
Rapid Drying Mode

The sample is dried at the highest temperature for the initial drying stage, and when the moisture has been reduced, it returns to the set temperature, shortening the measurement time.



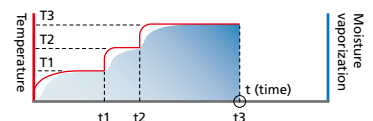
Slow Drying Mode

This gently heats samples that might form a surface film or are prone to degrading at high temperatures.



Step Drying Mode

Drying conditions are changed step by step for samples that contain a lot of moisture, such as surface water or crystallization water.



MOC63u



MOC63u

Model		MOC63u
Capacity	Max. Sample Quantity	60 g
	Min. Sample Quantity	0.02 g
Minimum Display	Mass	0.001 g
	Moisture Ratio	0.01 %
Repeatability *1		0.15 % (2 g), 0.05 % (5 g), 0.02 % (10 g)
Heat Source	Method	Halogen (straight tube)
	Power	Rated at 400 W
Temperature Settings		50 to 200 °C (1 °C interval) (up to 1 hour for settings over 180 °C)
Display		Backlit LCD
Pan Size		95 mm dia.
Dimensions (mm)		Approx. W 202 × D 336 × H 157
Weight		Approx. 4.2 kg
Rated Power		430 VA
Ambient Temperature		5 to 40 °C, relative humidity of 85 % max.
Measurement Modes		Standard drying mode (Automatic ending/timed ending)
		Rapid drying mode (Automatic ending/timed ending)
		Slow drying mode (Automatic ending/timed ending)
		Step (3-stage) drying mode (Automatic ending/timed ending)
Time Settings		1 to 240 min, or continuous (up to 12 hours)
External Output		USB
		Data I/O printer (EP-100/EP-110) output RS-232C (D-sub 9P)
Storage of Measurement Conditions		10 sets
Data Memory		100 items
Standard Accessories		Sample pans (3 aluminum pans), pan holder, windbreak, board, aluminum sheets (50), pan handler, power cable, spare fuses (2), protective display cover, hexagonal wrench

*1 The repeatability (standard deviation) value is from a standard measurement (sample: sodium tartrate dihydrate). This value is not guaranteed for all samples, environments, and measurement conditions.

Optional Accessories

Description
Electronic Printer EP-100
Electronic Printer EP-110
Protective Display Cover (5 pcs)
Aluminum Pans (Disposable) (50 pcs)
Fiberglass Sheets (For liquid sample measurements) (100 pcs)
Temperature Calibration Kit
Sample Pan (Stainless steel) (5 pcs)
Sample Pan (Aluminum) (5 pcs)
RS-232C Cable
USB Cable Set
Sample Pan Handler (Stainless steel)
Halogen Heater (For replacement) *2
Power Cable

*2 The halogen heater can be removed and replaced by the user. Note: For delivery related matters, contact your Shimadzu representative.

Warning

- Use this balance to heat samples to evaporate moisture for measurement.
- The built-in heater will be hotter than the set temperature.
- Samples must not be measured if there is a risk of an explosion or fire, or a dangerous chemical reaction from heating.

Simple Operation

Select the automatic starting mode, place the sample, and close the heater cover to start the measurements. The preparation for measurement is so simple that you do not even have to press the start key.



A Wealth of PC Connection Functions

A built-in USB connector allows connecting to a PC. It can be used in conjunction with the Balance Keys function.

For USB port connections, check the Shimadzu website or contact your Shimadzu representative.



Compatible with printers (EP-100/EP-110). Equipped with I/O port.

Built-in RS-232C interface is standard.

Equipped with USB interface. Importing data to a PC is easy.

Sample Printout

• Sample Measurement Results Output

SHIMADZU CORP.	Model	: MOC63u
TYPE MOC63u	Serial no.	: D209400009
SN D209400009	Instrument ID	: 0000
ID 0000	Sample code	: 0040
CODE 0040	Date	: Dec. 17, 2018
DATE 18-12-17	Time	: 16:27
TIME 16:27	Program no.	: 0
PNO. 0	Measurement reference	: Wet basis moisture ratio
UNIT M/W	Measurement conditions	: Automatic ending mode
MODE AUTO	Drying temperature	: 160 °C
TEMP 160C	Ending conditions	: 0.05 %
STOP 0.05 %	Mass before measurement	: 5.161 g
Wet W(g) 5.161	Progressive measurements	
TIME 00:00:00	Elapsed measurement time	: Measurement value corresponding to the measurement reference
00:02:00 4.40		
00:04:00 7.39		
*00:05:35 8.02		
Dry W(g) 4.747	Mass after measurement	: 4.747 g

Using the EP-100/EP-110

Moisture Analyzer

MOC63u Application Examples



Food Industry

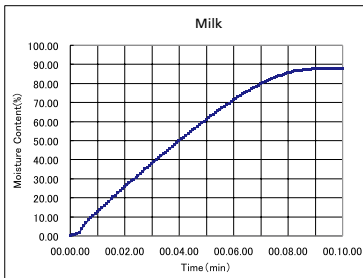
Measurement of Milk

- Fiberglass sheets for liquid measurement were used to promote liquid evaporation.
- Two measurement conditions were used, timed ending and automatic ending modes. Essentially the same average values were obtained. With samples whose principal component has a relatively high evaporation temperature and also contains moisture, the same results will be obtained regardless of the mode used.

Measurement Conditions: 140 °C/Timed 10 min

MOC63u		
	Sample Mass (g)	Moisture Content (%)
1st	1.081	87.70
2nd	1.025	87.61
3rd	1.031	87.68
Average		87.66
Standard Deviation		0.047
CV (%)		0.05

Drying Curve for Milk in Timed Ending Mode



Milk before Drying



(Before measurement) 1 g of milk was dripped on to a fiberglass sheet for liquid measurement.

Milk after Drying



(After measurement) The moisture has evaporated from the milk, and the remaining fats have yellowed slightly.



Food Industry



Pharmaceuticals and Cosmetics Industries

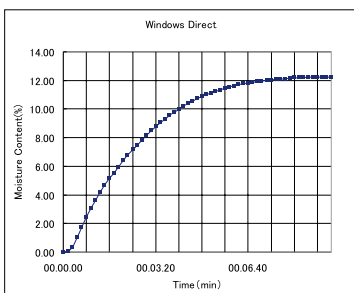
Measurement of Corn Starch

- Approx. 5 g of corn starch was added to the pan and was spread over the entire surface using the tip of a spoon.
- No change in appearance was evident after drying.
- Favorable repeatability of 1 % max. was obtained.

Measurement Conditions: 180 °C/Automatic 0.02 %

MOC63u			
	Measurement Time	Sample Mass (g)	Moisture Content (%)
1st	9:49	5.133	12.27
2nd	9:14	4.910	12.10
3rd	9:12	5.097	12.14
Average			12.17
Standard Deviation			0.09
CV (%)			0.73

Drying Curve for Corn Starch in Automatic Ending Mode



Corn Starch before Drying



(Before measurement) The sample powder was spread evenly over the pan.

Corn Starch after Drying



(After measurement) There was basically no change in appearance.

The table below summarizes moisture ratio measurements for various samples using the moisture analyzer.

Sample	Sample Quantity	Measurement Mode		Set Temperature (°C)	Measurement Time (min)	Moisture Ratio (%)	CV (%)
		Ending Conditions	Finishing Conditions (% or min)				
Dog food	1 g	AUTO	0.05 %	160	5:48	6.45	3.17
Table salt	5 g	TIME	10 min	200	10:00	0.08	6.93
Instant coffee	1 g	TIME	10 min	120	10:00	7.43	1.18
Coffee beans (raw)	5 g	AUTO	0.05 %	140	17:30	9.32	1.68
Coffee beans (roasted)	3 g	AUTO	0.05 %	140	7:06	2.68	3.73
Green tea	5 g	AUTO	0.05 %	120	9:05	3.76	0.41
Corn starch	5 g	AUTO	0.02 %	180	9:25	12.17	0.73
Sugar (granulated sugar)	5 g	AUTO	0.05 %	160	1:02	0.13	0.01
White rice	6 g	AUTO	0.05 %	200	13:55	14.48	0.42
Mayonnaise	1 g	TIME	10 min	160	10:00	20.61	0.46
Orange juice	1 g	AUTO	0.05 %	140	10:09	88.89	0.09
Milk	1 g	AUTO	0.05 %	140	7:30	87.36	0.04
Chocolate	3 g	AUTO	0.01 %	140	6:18	2.36	1.49
Rolled oats	6 g	AUTO	0.05 %	200	10:05	12.65	0.14
Tomato ketchup	2.5 g	AUTO	0.1 %	140	19:47	69.40	0.16
Frozen sweets	2.5 g	TIME	12 min	140	12:00	84.53	0.22
Dried mangoes	5 g	AUTO	0.05 %	120	28:27	6.62	12.10
Palm oil	2.5 g	TIME	5 min	120	5:00	0.41	3.70
Hand soap	1 g	AUTO	0.05 %	200	21:36	88.89	0.39
Lipstick	1 g	TIME	3 min	100	3:00	0.73	9.37
Plastic (PMMA pellet)	10 g	TIME	25 min	100	25:00	0.13	4.56
Photocopier paper	1 g	AUTO	0.05 %	200	1:50	7.84	0.71
Sodium tartrate dihydrate	5 g	TIME	15 min	160	15:00	15.80	0.04
Detergent (powdered)	5 g	AUTO	0.05 %	160	13:08	9.79	1.59
Solid soap	3 g	TIME	16 min	200	16:00	9.09	1.66
Water-based paint	1 g	AUTO	0.05 %	200	9:27	52.39	0.75
Sludge cake	2 g	AUTO	0.05 %	200	21:31	81.55	0.40
Potting soil	5 g	AUTO	0.05 %	120	15:30	33.40	2.16
Sawdust	4 g	AUTO	0.05 %	160	8:27	34.38	0.91
Baked sweets	3 g	RAPID	Step 1 3.0 % Step 2 0.1 %	Step 1 200 Step 2 110	5:10	7.6	30.26
Dengakumiso	5 g	RAPID	Step 1 2.0 % Step 2 0.1 %	Step 1 200 Step 2 110	7:45	39.4	2.79
Rice Seasoning	3 g	RAPID	Step 1 2.0 % Step 2 0.01 %	Step 1 200 Step 2 110	3:35	3.1	83.87
Boiled fish paste	5 g	RAPID	Step 1 1.0 % Step 2 0.01 %	Step 1 200 Step 2 105	21:30	73.8	0.14
Sake lees	3 g	RAPID	Step 1 1.5 % Step 2 0.01 %	Step 1 200 Step 2 105	21:30	55.8	4.30
Salted rice malt	5 g	RAPID	Step 1 2.0 % Step 2 0.05 %	Step 1 200 Step 2 115	14:20	46.2	0.82
Soy sauce	5 g	RAPID	Step 1 1.0 % Step 2 0.01 %	Step 1 200 Step 2 105	10:40	68.2	0.19
Miso	5 g	RAPID	Step 1 2.0 % Step 2 0.05 %	Step 1 200 Step 2 115	15:22	50.8	1.79
Sardine dumplings	5 g	RAPID	Step 1 0.5 % Step 2 0.02 %	Step 1 200 Step 2 115	23:20	72.1	0.29
Plastic (ABS pellet)	5 g	TIME	12 min	150	12:00	0.27	4.33

Note 1: Measurement times, moisture ratios, and CV (%) values are aggregated from three data cycles.

Note 2: The CV (%) is the standard deviation divided by the average value, multiplied by 100 to represent it as a percent.

Electronic Printers

EP-100/EP-110

Enhanced Support for
ISO/GLP/GMP

- Built-In Clock
- Affordably Priced

EP-100



- Enhanced Visibility for OLED Display
- Includes Functionality for Preventing Date Alterations

EP-110



EP-100/110 Shared Functionality

- **Built-In Clock** Date/time can be printed even for balances without a clock function.
- **Customized Printing** In addition to weight measurement values, print items can be added to the end.
- **Easy Communication Settings** Includes functionality (automatic setting function) that automatically sets communication settings based on the given balance.
Note: This function is disabled for ELB series models and MOC63u moisture analyzers.
- Titles for measurement values can be customized for printing.

Compatible Balance Models

AP, AU, AT-R, AT, U, TX, TXB, BX/BW-K, BL, and ELB series, and MOC63u moisture analyzers.

Note: The automatic setting function cannot be used with models that do not include the PRINT key, such as ELB series balances and MOC63u moisture analyzers.

Specifications

Model	EP-100	EP-110
Display	—	OLED 128 × 64 Dot Matrix Display Easy-to-understand fluorescent dot matrix display
Protected Date Setting	—	Password protectable (six-character)
Printing	Paper for printing: Regular paper (does not fade with age) Method: 8-pin reciprocating impact dot matrix Speed: Approx. 1.7 lines/sec. Printer head life: 1 million lines Character size: Approx. W1.7 × H2.6 mm	
Interface	USB B-Type female, RS-232 (D-sub 9-pin male)	
Power Supply	AC adapter: Input 100 to 240 V AC, 50/60 Hz; Output 12 V DC/1500 mA Power consumption: 8 W (while printing) Standby power: 0.5 W (when not printing)	
Battery	—	1500 to 2500 mAh capacity rechargeable nickel-metal hydride (NiMH) batteries can be used (four AA cells). Note: Dry cell batteries cannot be used.
Installation Environment	Temperature: 5 to 45 °C; Humidity: 10 to 80 % No condensation	

Maintenance Parts

Description
Recording Paper
Labeling Paper Rolls
Ink Ribbon
AC Adapter
Connection Cable

EP-110 Function

Supports GLP/GMP Using Password Protection-Based Date/Time Alteration Prevention

Powered by Rechargeable Batteries

Eliminating the need for an AC adapter connection, the printer can be used as a portable device. It also means the printer can be used in locations without a power supply outlet, such as within a fume hood. Note: Dry cell batteries cannot be used (compatible with nickel metal hydride batteries).

Status Display with Enhanced Visibility for OLED Display

The OLED display makes it easier to determine the measurement mode-based status. The OLED display also ensures visibility even in dark locations.



(Printout Samples)

Normal Mode

Statistical Calculation Mode

Item	Normal Mode	Statistical Calculation Mode
Manufacturer Information	Shimadzu Corporation	Shimadzu Corporation
Device Name	Model: ATR220	Model: ATR220
Serial No.	S/N: D23452456	S/N: D23452456
Sample Name (ID)	ID:	ID:
Date	Date: 2014-00-10	Date: 2014-00-10
Measurement Start Time	Start Time: 22:23:51	Start Time: 22:26:24
Measurement Values	No.001 10.0000 g No.002 10.0001 g No.003 10.0002 g	-----[STAT]----- No.001 10.0000 g No.002 10.0001 g No.003 10.0002 g
Measurement End Time	End Time: 22:23:58	-----[RESULT]----- N= 3 T= 30.0021 g MAX= 10.0002 g MIN= 10.0000 g RNG= 0.0002 g MEAN= 10.00070 g SD= 0.00010 g CV= 0.0010 %
Signature Field	Signature:	Signature:
		End Time: 22:26:55

Output Items

Item	Symbol	Remarks
Title (Header)		Manufacturer information, device name, serial number (S/N), date, and measurement start time
Number of samples	N	
Total value	T	
Maximum value	MAX	
Minimum value	MIN	
Range	RNG	= MAX - MIN
Mean value	MEAN	= T / N
Standard deviation	SD	$\sqrt{\sum(Xi - MEAN)^2 / (N - 1)}$
Coefficient of variation	CV	(SD / MEAN x 100)%
Data suffix (footer)		Measurement end time and signature field

Specific Gravity Analyzer

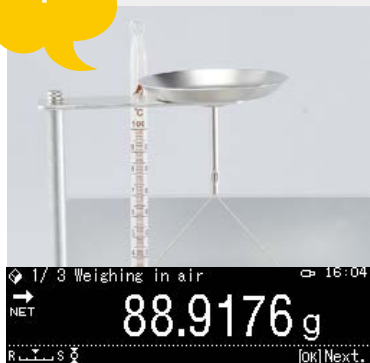
AP series

Attach Optional Kit for
Use as a Specific Gravity Analyzer

When combined with an optional specific gravity measurement kit, balances can be used to measure specific gravity. Operations are simplified by a text-based navigation function. By using sinkers, the specific gravity of liquid can be measured as well. This allows easily measuring the specific gravity of metals, rubbers, plastics, and other materials.



SMK-601 specific gravity measurement kit



First measure the in-air weight.



Then place it in the container filled with water, as instructed on the screen.



The specific gravity value is displayed using simple steps.

AP Series

Model	W Series						X Series			Y Series			
	AP225W	AP135W	AP125WD	AP225WD	AP124W	AP224W	AP324W	AP124X	AP224X	AP324X	AP124Y	AP224Y	AP324Y
Capacity	220 g	135 g	120 g / 52 g	220 g / 102 g	120 g	220 g	320 g	120 g	220 g	320 g	120 g	220 g	320 g
Minimum Display	0.01 mg		0.1 mg / 0.01 mg					0.1 mg					
Pan Size (mm)							Approx. ø91						
Dimensions	Approx. W212 x D411 x H345 mm (incl. power supply unit)						Approx. D212 x D367 x H345 mm						
Weight	Approx. 7.9 kg						Approx. 7.0 kg			Approx. 6.5 kg			
Required Power Supply							AC 100 V 270 mA 50/60 Hz						

Specific Gravity Measurement Kit

Model	SMK-601
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Note: The optional liquid density sinker is required for liquid density measurements.

Optional Accessories

Description
Liquid Density Sinker
Petri Dish, Square

Specific Gravity Analyzer

AU series

Measures a Variety of Gravity Values with the Immersion Method

Attach the optional SMK-401 Specific Gravity Measurement Kit to a balance in the AU series, and set the balance to specific gravity measurement mode. You can then use the balance as a specific gravity analyzer, capable of automatically calculating and displaying specific gravity values.

Liquid density can also be measured by using an optional sinker.

Various balances are available, including a semi-micro (0.01 mg) model. Choose the model best suited to the sample amount and required precision in your application.

Two kinds of weighing pans as standard.

For standard sample



For floating sample



AUW Series + SMK-401



AU Series

Model name	AUW-D Series		AUW Series			AUX Series			AUY Series	
	AUW220D	AUW120D	AUW320	AUW220	AUW120	AUX320	AUX220	AUX120	AUY220	AUY120
Capacity	220 g/82 g	120 g/42 g	320 g	220 g	120 g	320 g	220 g	120 g	220 g	120 g
Minimum Display	0.1 mg/0.01 mg		0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Repeatability	0.1 mg/0.05 mg	0.1 mg/0.02 mg	0.15 mg	0.1 mg	0.1 mg	0.15 mg	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Pan Size (mm)	Approx. 80 dia.									
Body Dimensions	Approx. W217 × D356 × H338 mm									
Weight	Approx. 7 kg									

Specific Gravity Measurement Kit

Description
SMK-401

Optional Accessories

Description
Liquid Density Sinker
Petri Dish, Square

Specific Gravity Analyzer

AT-R series

Measures a Variety of Specific Gravity Values with the Immersion Method

Attach the optional SMK-501 Specific Gravity Measurement Kit to a balance in the AT-R series, and set the balance to specific gravity measurement mode. You can then use the balance as a specific gravity analyzer, capable of automatically calculating and displaying specific gravity values.

Liquid density can also be measured by using an optional sinker.

Various balances are available. Choose the model best suited to the sample amount and required precision in your application.



SMK-501 Specific Gravity Measurement Kit



AT-R Series + SMK-501



AT-R Series

Model	ATX324R	ATX224R	ATX124R	ATX84R	ATY324R	ATY224R	ATY124R	ATY64R
Capacity	320 g	220 g	120 g	82 g	320 g	220 g	120 g	62 g
Minimum Display	0.1 mg							
Pan Size (mm)	Approx. 91 dia.							
Dimensions	Approx. W213 × D356 × H338 mm							
Weight	Approx. 6.2 kg				Approx. 6.0 kg			

Specific Gravity Measurement Kit

Description
SMK-501

Optional Accessories

Description
Liquid Density Sinker
Petri Dish, Square

Specific Gravity Analyzer

UP series

Measures a Variety of Gravity Values with the Immersion Method

Attach the optional SMK-101A/102 Specific Gravity Measurement Kit to a balance in the UP series, and set the balance to specific gravity measurement mode. You can then use the balance as a specific gravity analyzer, capable of automatically calculating and displaying specific gravity values.

Liquid density can also be measured by using an optional sinker.

Various balances are available. Choose the model best suited to the sample amount and required precision in your application.

The large submersible pan makes it easy to measure bulky samples.



UP Series + SMK-101A



UP Series Balances (large pan type)

Model						Models with built-in calibration weights				
	UP2202Y	UP4202Y	UP6202Y	UP4201Y	UP8201Y	UP2202X	UP4202X	UP6202X	UP4201X	UP8201X
Capacity	2200 g	4200 g	6200 g	4200 g	8200 g	2200 g	4200 g	6200 g	4200 g	8200 g
Minimum Display	0.01 g					0.01 g				
Pan Size (mm)	Approx. 170 x 180					Approx. 170 x 180				

UP Series Balances (small pan type)

Model								Models with built-in calibration weights						
	UP223Y	UP423Y	UP623Y	UP823Y	UP1023Y	UP422Y	UP822Y	UP223X	UP423X	UP623X	UP823X	UP1023X	UP422X	UP822X
Capacity		420 g	620 g	820 g	1020 g	420 g	820 g		420 g	620 g	820 g	1020 g	420 g	820 g
Minimum Display		0.001 g					0.01 g			0.001 g			0.01 g	
Pan Size (mm)		Approx. 108 x 105								Approx. 108 x 105				

Specific Gravity Measurement Kit

Model	SMK-101A for large pan ^{*1*2}	SMK-102 for small pan ^{*1*3}


Optional Accessories

Description
Liquid Density Sinker for SMK-101A/102

*1 The optional liquid density sinker is required for liquid density measurements.

*2 For UP-X/UP-Y series large-pan (170 x 180 mm) types. The actual capacity is 100 g less than the capacity of the balance.

*3 For UP-X/UP-Y series small-pan (108 x 105 mm) types. The actual capacity is 290 g less than the capacity of the balance. Cannot be attached to the UP223X/UP223Y.

In addition to the above-mentioned, balances with the  mark are equipped with a specific gravity calculation function, so they can be used for specific gravity measurement.

Specific Gravity Analyzer

UW/UX series

Measures a Variety of Specific Gravity Values with the Immersion Method

Attach the optional SMK-101/102 Specific Gravity Measurement Kit to a balance in the UW/UX series, and set the balance to specific gravity measurement mode. You can then use the balance as a specific gravity analyzer, capable of automatically calculating and displaying specific gravity values.

Liquid density can also be measured by using an optional sinker.

Various balances are available. Choose the model best suited to the sample amount and required precision in your application.

The large submersible pan makes it easy to measure bulky samples.



UW/UX Series + SMK-101



UW/UX Series Balances (large pan type)

Model	Models with built-in calibration weights					Models with built-in calibration weights				
	UX2200H	UX4200H	UX6200H	UX4200S	UX8200S	UW2200H	UW4200H	UW6200H	UW4200S	UW8200S
Capacity	2200 g	4200 g	6200 g	4200 g	8200 g	2200 g	4200 g	6200 g	4200 g	8200 g
Minimum Display	0.01 g			0.1 g		0.01 g			0.1 g	
Pan Size (mm)	Approx. 170 × 180					Approx. 170 × 180				

UW/UX Series Balances (small pan type)

Model	Models with built-in calibration weights						Models with built-in calibration weights							
	UX220H	UX420H	UX620H	UX420S	UX820S	UX820H	UX1020H	UW220H	UW420H	UW620H	UW420S	UW820S	UW820H	UW1020H
Capacity		420 g	620 g	420 g	820 g	820 g	1020 g		420 g	620 g	420 g	820 g	820 g	1020 g
Minimum Display		0.001 g		0.01 g		0.001 g			0.001 g		0.01 g		0.001 g	
Pan Size (mm)		Approx. 108 × 105							Approx. 108 × 105					

Specific Gravity Measurement Kit

Model	
	SMK-101 for large pan ^{*1*2}
	SMK-102 for small pan ^{*1*3}


Optional Accessories

Description
Liquid Density Sinker for SMK-101/102

*1 The optional liquid density sinker is required for liquid density measurements.

*2 For UW/UX series large-pan (170 × 180 mm) types. The actual capacity is 100 g less than the capacity of the balance.

*3 For UW/UX series small-pan (108 × 105 mm) types. The actual capacity is 290 g less than the capacity of the balance. Cannot be attached to the UW/UX 220H.

In addition to the above-mentioned, balances with the  mark are equipped with a specific gravity calculation function, so they can be used for specific gravity measurement.

Animal Balances

UP series

Quick, Stable Measurements of Animal Weight

Attach an optional animal bucket to a UP series balance, and set the unit to animal mode. The balance can now be used as a user-friendly animal balance.



Bucket for small animals

Deep round bucket

Rectangular bucket



Clock-CAL

This automatically calibrates the balance at pre-specified times (such as before starting work, during lunch, or after work hours).



Internal Calibration

The balance has built-in motor-driven calibration weights. Sensitivity can be calibrated whenever needed with a single key press.



Built-in Animal Measurement Mode

- When the animal is unloaded, residual weight from excretions and other materials is automatically subtracted and the display is set to zero. The next animal can be loaded without pressing the TARE button, which increases efficiency.
- Thanks to the specially developed animal measurement software, the weight of moving animals is measured quickly and stably.

UP-X Series



UP-Y Series



UP-X/UP-Y Series (balance)

Model	Standard models					Models with built-in calibration weights				
	UP2202Y	UP4202Y	UP6202Y	UP4201Y	UP8201Y	UP2202X	UP4202X	UP6202X	UP4201X	UP8201X
Capacity	2200 g	4200 g	6200 g	4200 g	8200 g	2200 g	4200 g	6200 g	4200 g	8200 g
Minimum Display	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g	0.01 g	0.01 g	0.01 g	0.1 g	0.1 g

Bucket

Small Animal Bucket	Shape: round / Size: bottom 110 dia. x top 200 dia. x height 130 (mm)
Deep Round Bucket	Shape: round / Size: bottom 155 dia. x top 195 dia. x height 200 (mm)
Rectangular Bucket *1	Shape: rectangular / Size: bottom 250 x 210; top 290 x 250; height 150 (mm)

*1 The rectangular bucket can only be attached to the UP8201X and UP8201Y.
Note: Can also be used with the UW/UX Series.

Three movement levels can be selected corresponding to the animal movement.

Animals can be measured whether they are docile or extremely active.

When the animal is loaded and the stability mark is displayed, the weight is output automatically.

Needless operation is eliminated to increase efficiency.

When the animal is unloaded, residual weight from excretions and other materials is automatically subtracted and the display is set to zero.

The next animal can be loaded without pressing the TARE button, which increases efficiency.

Animal Balances

Quick, Stable Measurements of Animal Weight

BW-K/BX-K series

Attach an optional animal bucket to a BW-K/BX-K series balance, and set the unit to animal mode. The balance can now be used as a user-friendly animal balance.



Built-in Animal Measurement Mode

- Models with a range of capacities are available. Ideal for medium weight measurements of rabbits and small dogs.
- Thanks to the specially developed animal measurement software, the weight of moving animals is measured quickly and stably.
- When the animal is unloaded, residual weight from excretions and other materials is automatically subtracted and the display is set to zero. The next animal can be loaded without pressing the TARE button, which increases efficiency.



Medium bucket set



Small bucket set

BW-K Series



BX-K Series



BW-K/BX-K Series (balance)

Model	Models with built-in calibration weights					Standard models				
	BW12KH	BW22KH	BW32KH	BW32KS	BW52KS	BX12KH	BX22KH	BX32KH	BX32KS	BX52KS
Capacity*1 *2	12 kg	22 kg	32 kg	32 kg	52 kg	12 kg	22 kg	32 kg	32 kg	52 kg
Minimum Display	0.1 g	0.1 g	0.1 g	1 g	1 g	0.1 g	0.1 g	0.1 g	1 g	1 g

Bucket

Small Bucket (mainly suited to rabbits)	Shape: rectangular / Size: bottom 305 × 215; top 335 × 245; height 215 (mm)
Medium Bucket (mainly suited to small dogs)*3	Shape: rectangular / Size: bottom 335 × 245; top 445 × 295; height 345 (mm)

*1 When an animal bucket is attached, the capacity will be reduced about 2 kg from the value indicated.

*2 When an animal bucket is attached, the capacity will be reduced about 6 kg from the value indicated.

*3 The bucket cannot be attached to the BW12KH or BX12KH.

Shared Options for the UP-X/UP-Y & UW/UX & BW-K/BX-K

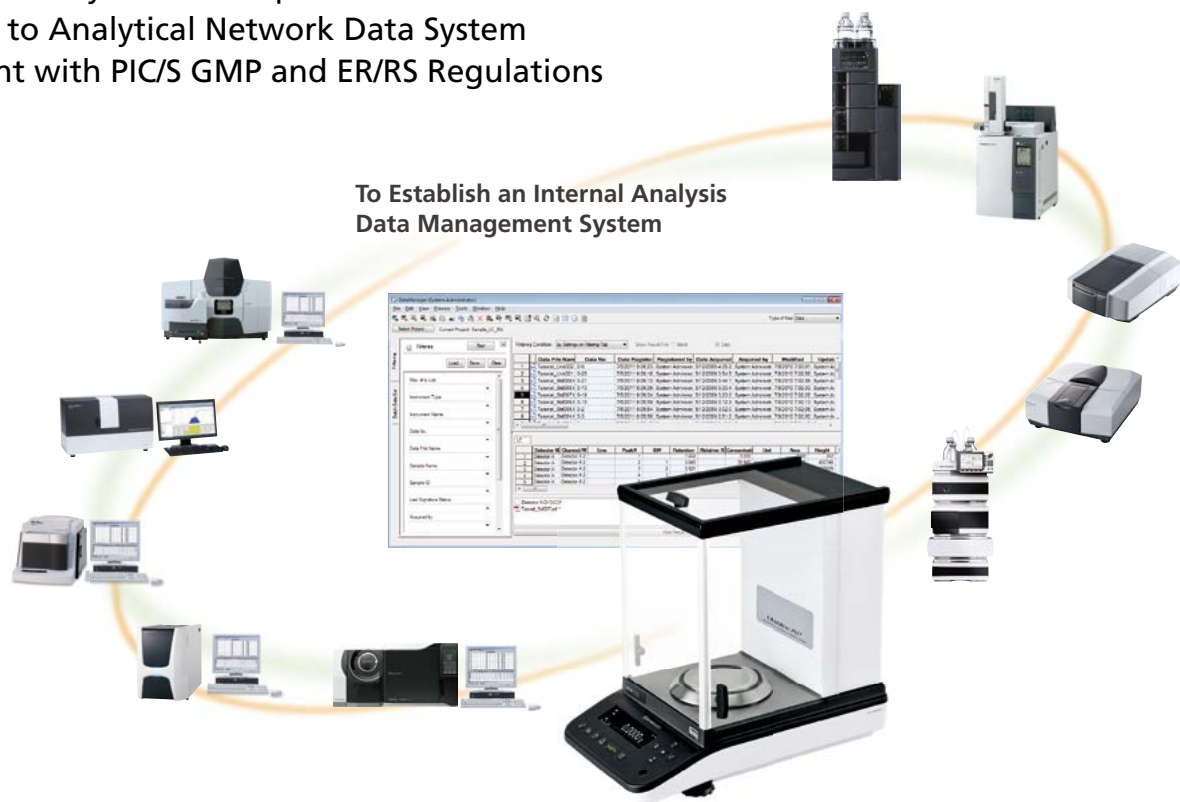
Description
Electronic Printer EP-100
Electronic Printer EP-110
RS-232C Cable (1.5 m)
USB-Serial Conversion Kit



LabSolutions Balance

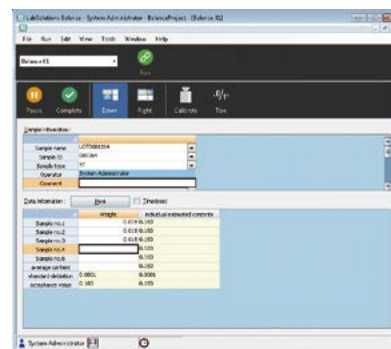


Integrate Analysis Data Acquired from Balances to Analytical Network Data System Compliant with PIC/S GMP and ER/RS Regulations



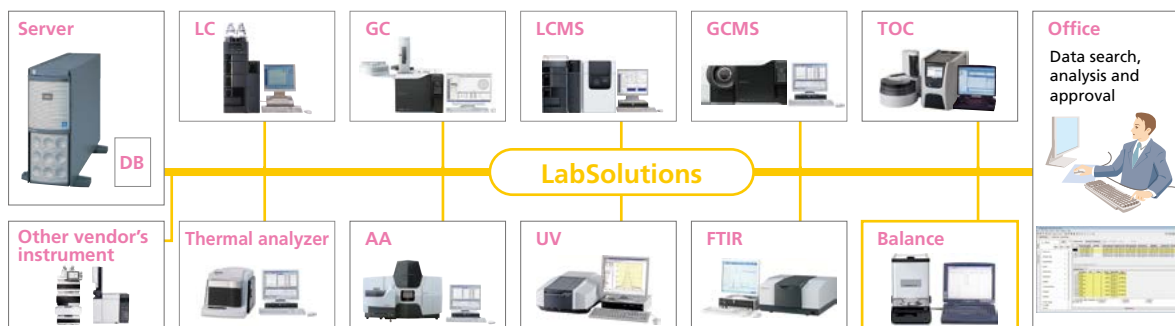
Improves Operational Efficiency and Data Reliability

- Eliminate manual entry; all the weighing data are saved automatically in a safe database without transcription mistakes.
- Reports appropriate for weighing methods, such as the mass variation test, drying weight loss test and particle size test, can be created automatically after the measurement. In addition, customized reports featuring such information as system conformance, content uniformity and elution tests together with the analysis results obtained by HPLC, etc. can be created.



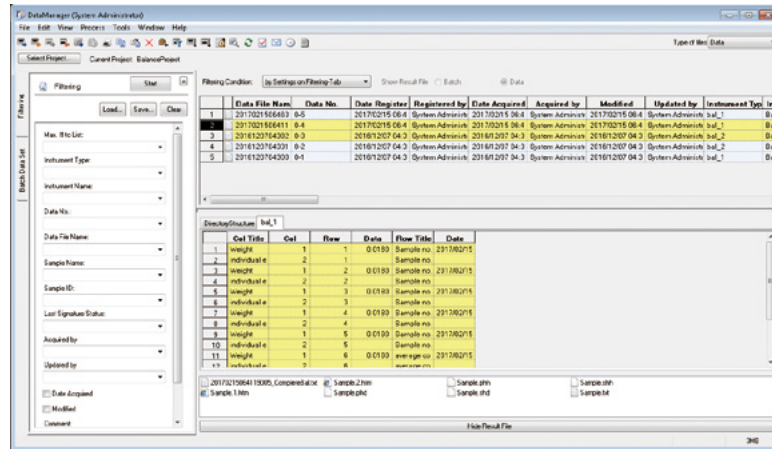
Main Window of LabSolutions Balance

Integrated Management of Analytical Data on Network System Using LabSolutions



Compliant with the Latest Data Integrity Guidance (U.S. FDA 21 CFR Part 11)

- Weighing results can be automatically saved in the database together with other information, including sample ID, operator name, operation date and series number of instrument used. This enables quick data searching based on sample information.
- It allows setting up user authority to ensure only the authorized user can create a template for weighing.
- It prevents improper manipulation or unintended overwriting and deletion of data. In addition, measurement results and all the operation histories and reasons will be saved in the database as log files.

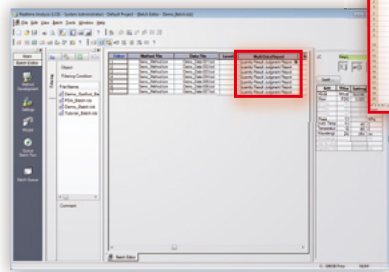


LabSolutions Data Manager

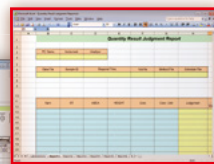
Integrated Report Creation Function Combines Analysis Results from HPLC and Weighing Results from Balance

Creation of Report Template
It enables creating the report by reading sample data and confirming the sample report at the same time.

Select Report Template



Batch Analysis Window



Report template formats can be freely customized.



Automatically print reports and create PDF files.

Note: Multi-data report creation (optional) is necessary to use this function.

Specifications

OS	Windows® 7 Professional SP1 (32 bit/64 bit), Windows® 10 Pro
Compatible Instruments	Shimadzu AP, AU, AT-R, AT, UP and UW/UX series
Other Functions	Controls up to 2 balance units, generation of PDF files, interface supporting linkage to LIMS system (option)

Accessories for Shimadzu Balances

	AP	AUW-D AUW AUX AUY	ATX-R ATY-R	ATX ATY	UP-X UP-Y	UW UX	TX	TXB	BL	ELB	BW-K BX-K	MOC- 120H	MOC63u
EP-100 													
EP-110 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Printer for MOC-120H 												✓	
IFB-102A-UNC 	Built-in	Built-in	Built-in	✓	Built-in	Built-in	Built-in	Built-in	✓	✓	Built-in	Built-in	Built-in
I/O-RS cable 	Built-in	Built-in	Built-in	✓	Built-in	Built-in	Built-in	Built-in	✓	✓	Built-in	Built-in	Built-in
AKB-301 Application keyboard 		✓			✓	✓					✓		
Windbreak WBC-102 for UW/UX small-pan type 					✓	✓							
Large windbreak WBC-502 for UW/UX Series 					✓	✓							
USB conversion kit with RS-232C cable		✓		✓	✓	✓	✓	✓	✓	✓	✓	*1	✓
Foot switch for print FSB-102PK 		✓			✓	✓					✓		
Foot switch for TARE FSB-102TK 		✓			✓	✓					✓		
SMK-101A 					✓								
SMK-101						✓							
SMK-102					✓	✓							
SMK-201 for ELB large-pan model										✓			
Specific gravity measurement kit SMK-401 		✓											
SMK-501			✓										
SMK-601	✓												

*1 USB-serial adapter and RS-232C cable for MOC are needed.

Optional accessories list

Balances	Optional accessories
AP Series	Static Electricity Remover STABLO-AP Ionizer
	Electronic Printer EP-100 / EP-110
	Label Roll Paper for EP-100/110 (10 Rolls)
	Specific Gravity Measurement Kit SMK-601
	Display Protective Cover (Set of 5)
	USB Cable
	RS-232 Cable
	AC Adapter (Standard Accessory)
	Internal Windbreak Plate
	RS-IO Interface Cable
	AP Holder (Standard Accessory for AP225W)
AUW-D / AUW / AUX / AUY Series	Electronic Printer EP-100 / EP-110
	Foot Switch FSB-102TK (For taring)
	Foot Switch FSB-102PK (For printing)
	Specific Gravity Measurement Kit SMK-401
	Application Keyboard AKB-301
	RS-232C Cable, for IBM PC/AT Compatibles (25P-9P, Null modem, 1.5 m)
ATX-R / ATY-R Series	In-use Protective Cover (5 pcs)
	Static Electricity Remover STABLO-AP Ionizer
	Electronic Printer EP-100 / EP-110
	USB Cable Set
	SMK-501 Specific Gravity Measurement Kit
	AP Holder
ATX / ATY Series	Protective Cover (5 pc set)
	AC Adapter (provided as standard with the main unit)
	Electronic Printer EP-100 / EP-110
	IFB-102A-UNC
	USB Conversion Kit
TX / TW / TXB / TXC / TWC Series	In-use Protective Cover (5 pcs)
	RS-232C Cable
	I/O-RS Cable
BL Series	Electronic Printer EP-100 / EP-110
	In-use Protective Cover (5 pcs)
	Simple Windbreak
	Lid for Simple Windbreak
ELB Series	IFB-102A-UNC
	Electronic Printer EP-100 / EP-110
	RS-232C Interface IFB-102A-UNC
	In-use Protective Cover (5 pcs)
BW-K / BX-K Series	Specific Gravity Measurement Kit SMK-201 (Cannot be used with small-pan models)
	Electronic Printer EP-100 / EP-110
	RS-232C Interface IFB-102A (for multiple connections)
	Foot Switch FSB-102PK (For printing)
	Application Keyboard AKB-301

Balances	Optional accessories
UP Series	Static Electricity Remover STABLO-AP Ionizer
	Electronic Printer EP-100 / EP-110
	RS-232C Cable 25P-9P (1.5 m)
	USB-Serial Replacement Kit
	Application Keyboard AKB-301
	Windbreak Set *1
	Windbreak Set (for large pan) *2
	Glass Windbreak WBC-102
	Large Size Windbreak WBC-502
	In-use Protective Cover (3 pcs) (For Large-Pan Models with 0.01 g Min. Display Value)
	In-use Protective Cover (5 pcs) (For Large-Pan Models with 0.1 g Min. Display Value)
	In-use Protective Cover (5 pcs) (For Small-Pan Model)
	In-use Protective Cover (5 pcs) (For Display and Key Part)
	Animal Bucket Set (for Large-Pan Models with 0.01 g Minimum Display Value)
	Animal Bucket Set (for Large-Pan Models with 0.1 g Minimum Display Value)
	Specific Gravity Measurement Kit SMK-101A (For Large-Pan Model) (Up to approximately 2 kg for weighing capacity)
	Specific Gravity Measurement Kit SMK-102 (For Small-Pan Model)
	Remote Display RDB-201
Remote Display RDB-202	
Relay Output Interface IFB-RY1	
RY1 Connection Cable	
AC Adapter *3	
UW / UX Series	Electronic Printer EP-100 / EP-110
	RS-232C Interface IFB-102A (for multiple connections)
	Small Size Windbreak (for models with capacity of 300 to 620 g only) (Std Acc. for models with readability of 1 mg)
	Glass Windbreak (for models with capacity of 220 to 820 g only)
	Large Size Windbreak (for all models)
	Specific Gravity Measurement Kit SMK-101 (for models with capacity of 2200 g and up only)
	Specific Gravity Measurement Kit SMK-102 (for models with capacity of 420 to 820 g only)
	In-use Protective Cover (5 pcs)
	Foot Switch FSB-102PK (For printing)
	Foot Switch FSB-102TK (For taring)
	RS-232C Cable, for IBM PC/AT Compatibles (25P-9P, Null modem, 1.5 m)
	RS-232C Cable, for multiple connections (25P-25P, Null modem, 1.5 m)
	Application Keyboard AKB-301
Remote Display Unit RDB-201 with operation keys	
Remote Display Unit RDB-202	
Angle Adjuster and Wall Hook for Remote Display	
Stand for Remote Display (1-m high)	
MOC63u	Electronic Printer EP-100 / EP-110
	In-use Protection Cover for Display (5 pcs)
	Aluminum Sheet
	Fiberglass Sheet
	Temperature Calibration Kit
	Sample Pan (SUS)
	RS-232C Cable
	USB Connection Cable
Halogen Heater for Replacement	

*1 Included standard with small-pan models with 0.001 g minimum display value.

*2 Included standard with large-pan models with 0.01 g minimum display value.

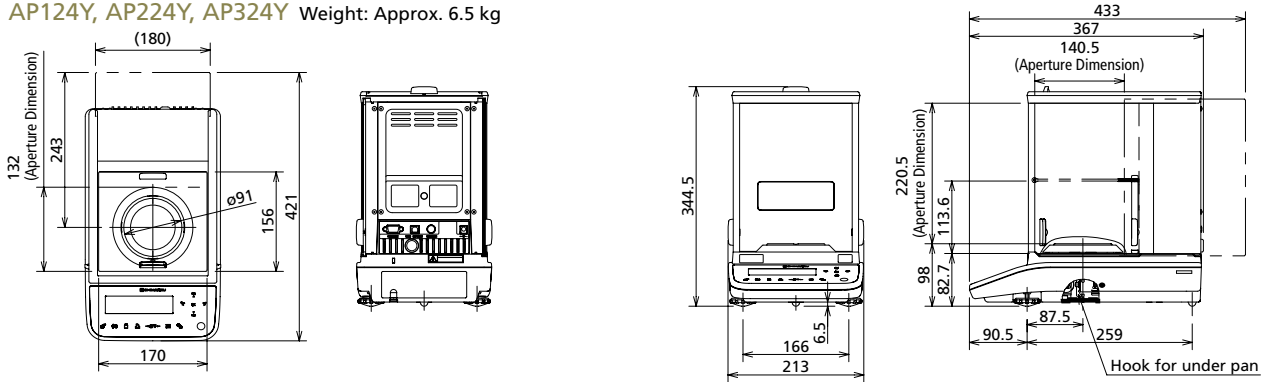
*3 Included standard with main unit.

Physical Dimensions

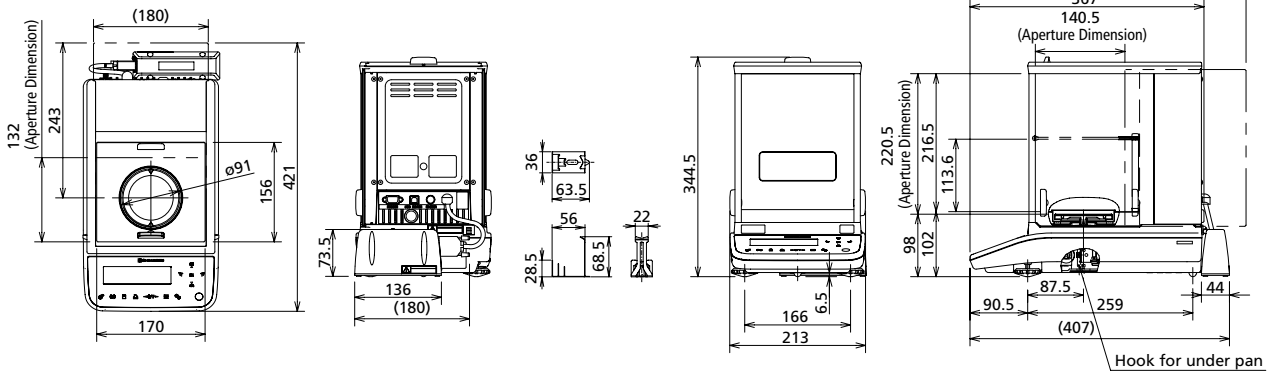
AP Series

AP124W, AP224W, AP324W, AP124X, AP224X, AP324X Weight: Approx. 7.0 kg

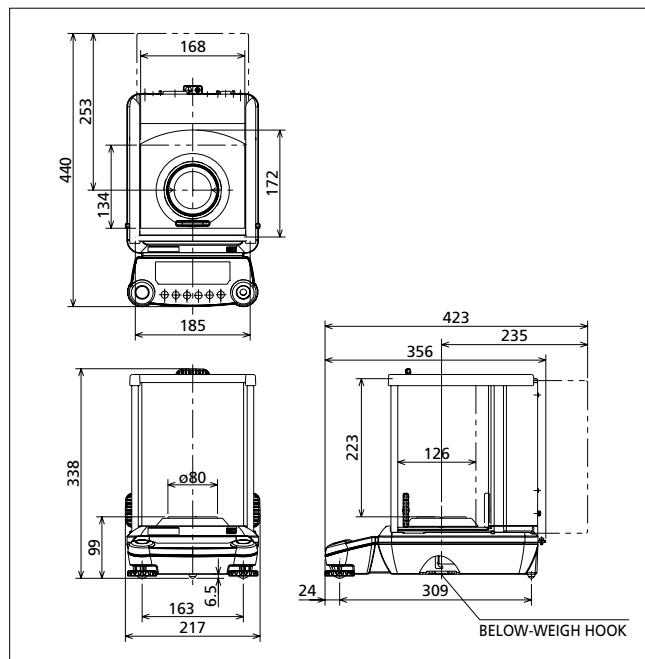
AP124Y, AP224Y, AP324Y Weight: Approx. 6.5 kg



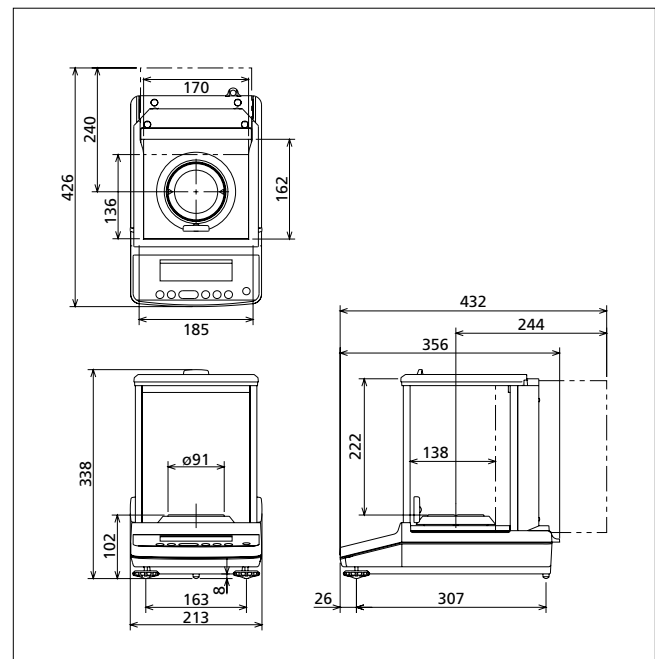
AP225W, AP135W, AP125WD, AP225WD Weight: Approx. 7.9 kg



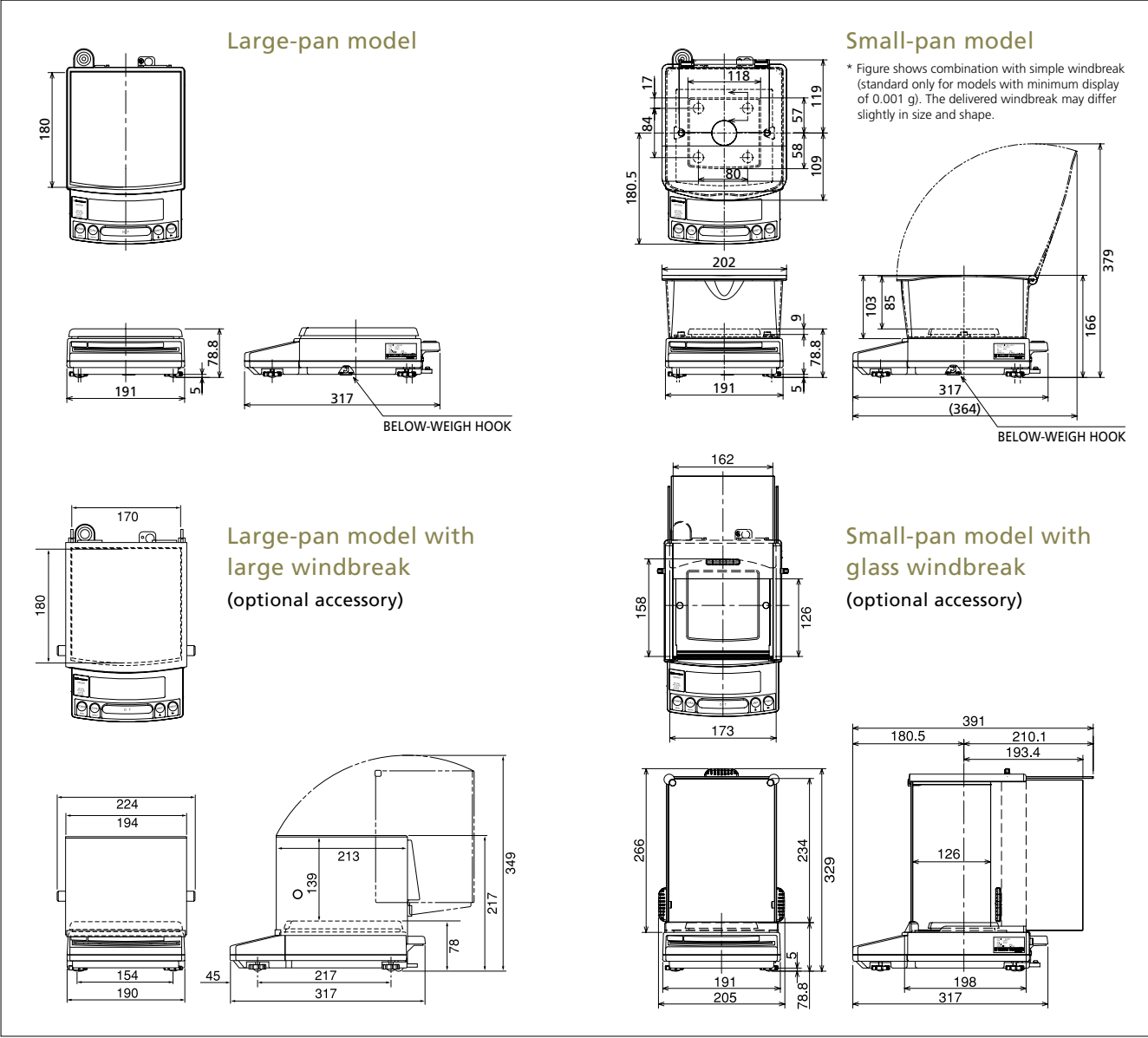
AUW-D/AUW/AUX/AUY Series



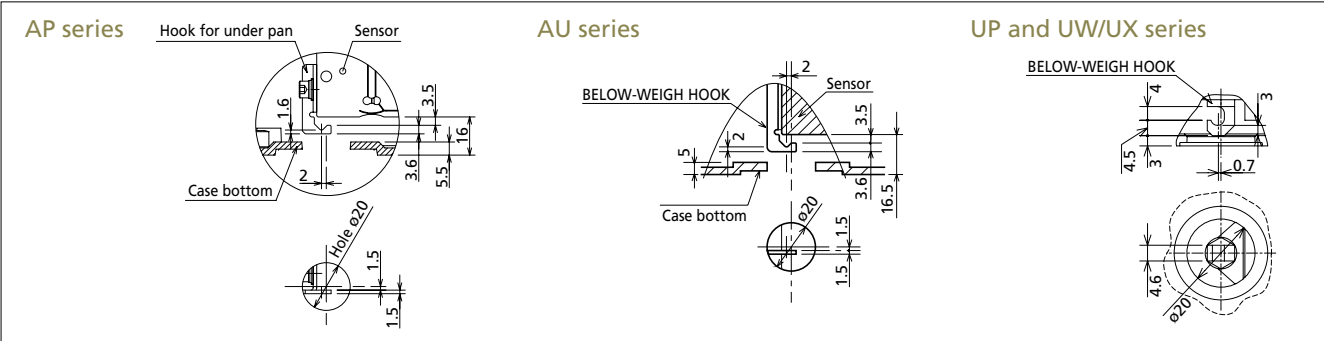
AT-R and ATX/ATY Series



UP and UW/UX Series

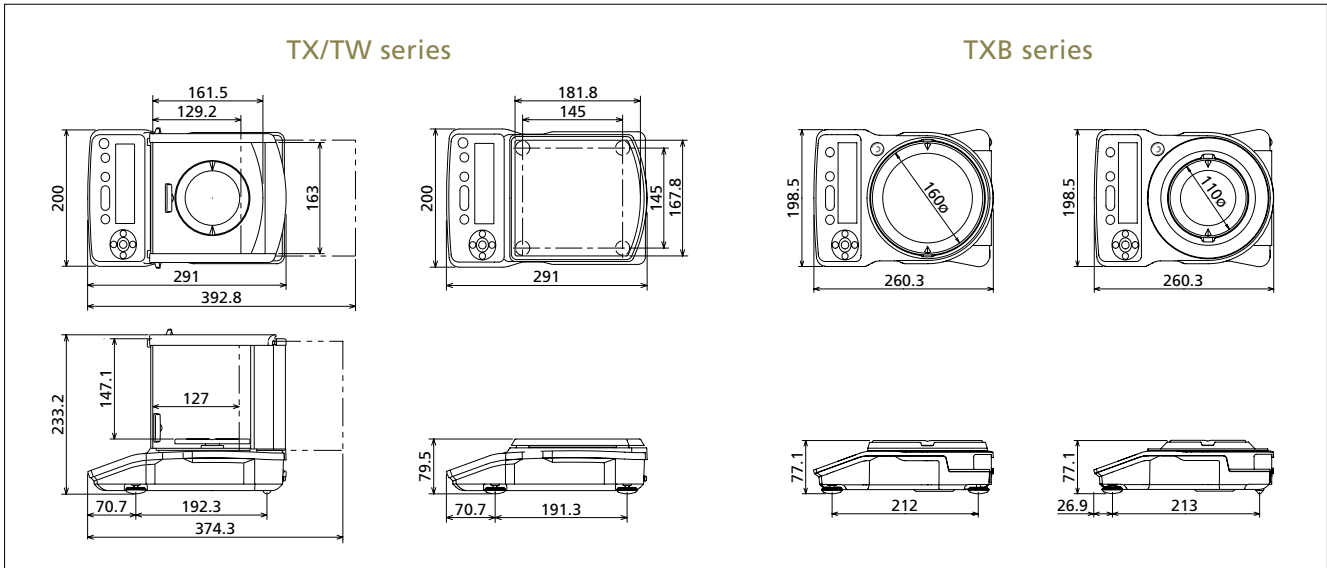


Below-weigh Hook

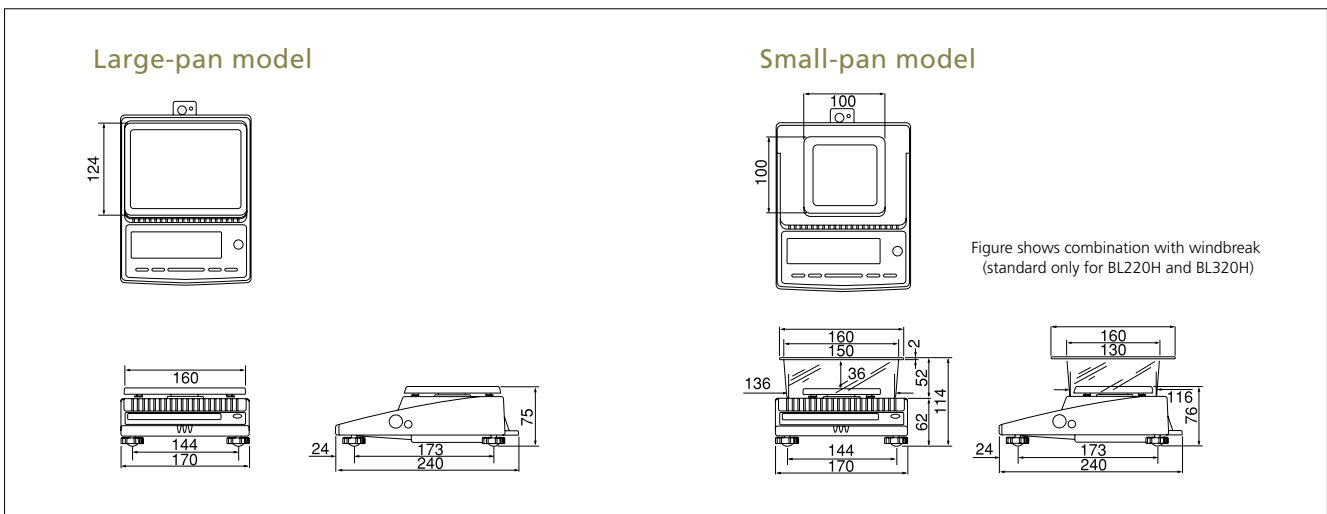


Physical Dimensions

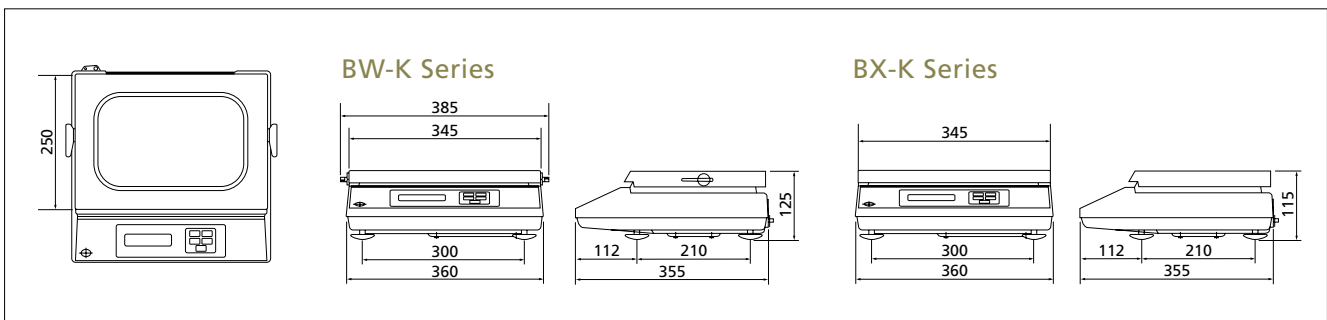
TW/TX/TXB/TWC/TXC Series



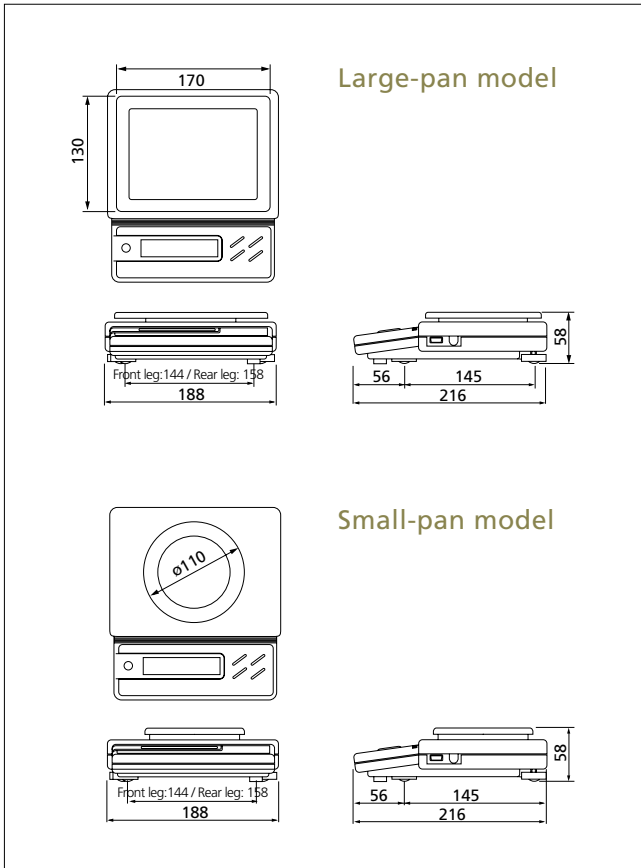
BL Series



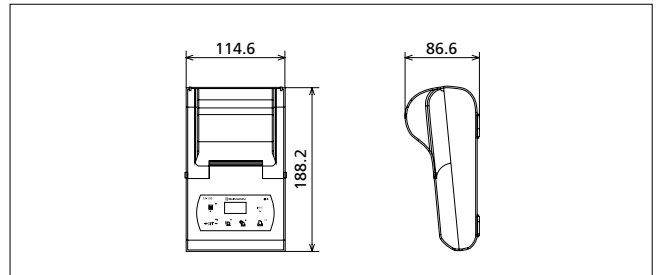
BW-K/BX-K Series



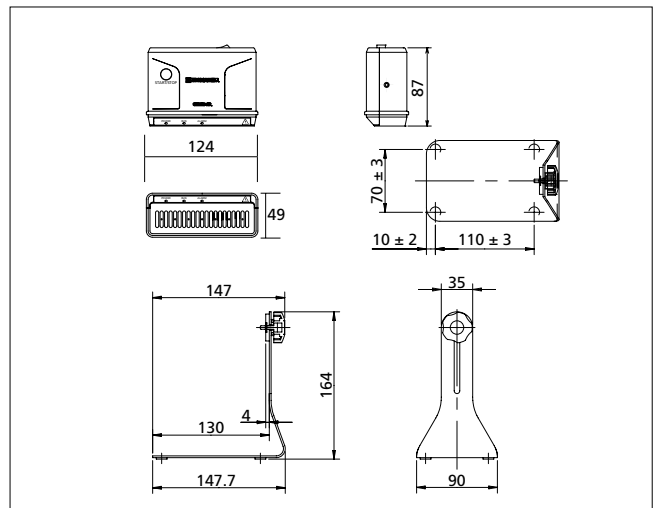
ELB Series



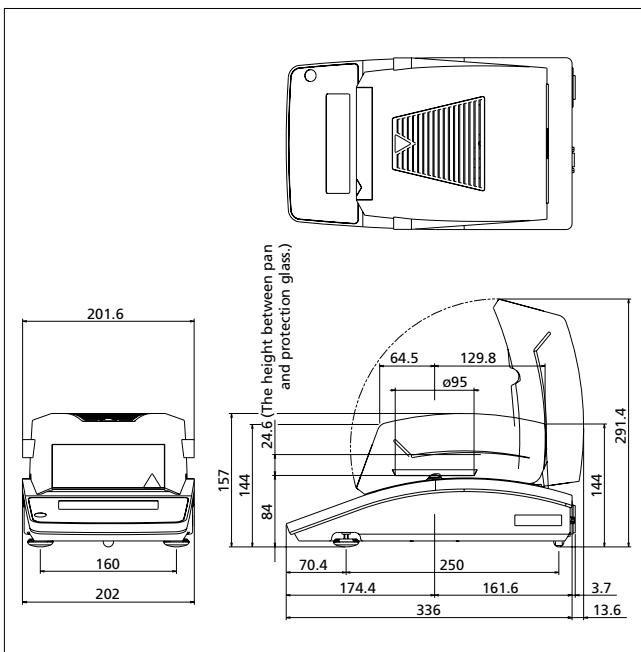
EP-100/EP-110



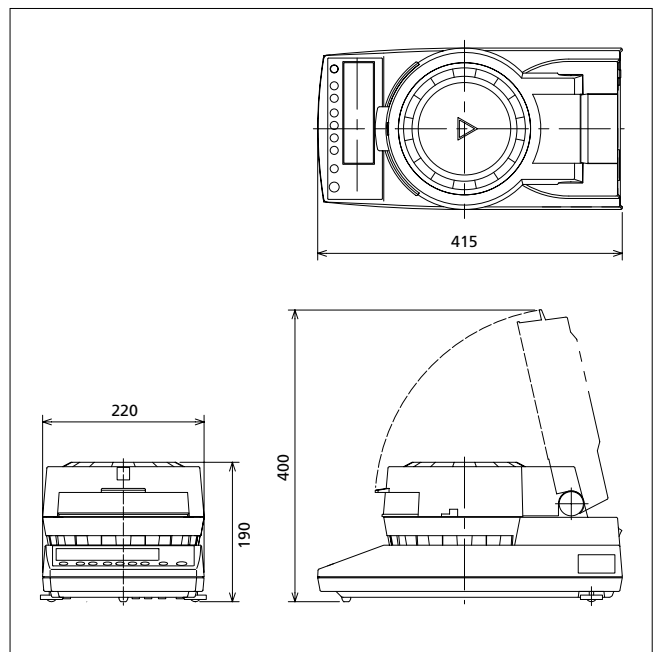
STABLO-AP



MOC63u



MOC-120H



Shimadzu Electronic Balances Demonstration Movies



[https://www.youtube.com/playlist?
list=PLCPY11zjvhZPmTi_xW1oGJeSul-YR6qaV](https://www.youtube.com/playlist?list=PLCPY11zjvhZPmTi_xW1oGJeSul-YR6qaV)

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