

ELECTRONIC BALANCES

Weighing Technology



 **SHIMADZU**

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 **SHIMADZU**
Solutions for Science
since 1875

SHIMADZU : WEIGHING EXPERT SINCE 1918

1875 ■ Establishment of SHIMADZU CORPORATION

1920 ■ 1918 Commence of Tortion Balance and Top-pan Balance production

1930 ■ 1930 *Model.5* Chemical Balance

1940 ■ 1939 Large-capacity Balance

1950 ■ 1950 *DODIQ* Direct-Reading Balance

1958 *Type L* Direct-Reading Balance

1960 ■ 1960 *AL-3* Automatic Direct-Reading Balance

1965 *AL-7* Automatic Direct-Reading Balance

1967 *LU-T1100* Top-loading Direct-Reading Balance

1970 ■ 1970 *Digibalance D-1003* Electronic Balance

1970 *AL-8* Automatic Direct-Reading Balance (All-digital display)

1976 *NL-200P* Direct-Reading Balance

1973 *C-160* Direct-Reading Carat Balance

1980

1981 *EB-2800M* Electronic Animal Balance

1985 *AEL-200* Electronic Analytical Balance (Full-range electro-magnetic)

1981 *AEL-160* Electronic Analytical Balance

1985 *PSC* Full-automatic calibration based on temperature change detection

1990

1993 *AEM-5200* Micro Balance

2000

2000 SHIMADZU Balances for 21st Century



Shimadzu Corporation was established in 1875 in Kyoto, Japan, as 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 the market in 1925. Ever since, continuous improvement of Shimadzu balances has contributed to the development of industry and research.

In early days, precision weighing was a time-consuming practice performed only by experienced operators. Placing the sample and small masses on pans hung from a beam and reading a scale with a moving indicator was arduous and fatiguing. Shimadzu keeps removing such difficulties from weighing work. The introduction of **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. Users saved two thirds of their weighing time, and never wanted to go back to conventional balances. Shimadzu then added **top-loading direct reading balance** with Roberval's mechanism in 1959. These instruments set the standards in laboratories of many clients until recent years.

Shimadzu continued to pioneer new technologies. As early as 1971, Shimadzu released its first **electronic balance, Digibalance**, which marked a major turnabout in precision weighing concepts. This was the very beginning of what is taken for granted today: weighing is simply plugging in the balance, placing sample, and reading the display. Six years later (1977), the application of **microprocessors to electronic balances** further enhanced weighing performance. The compact **ED Series** provided substantial improvement in sensitivity, resolution, and stability.

Shimadzu, with continuous focus towards customer satisfaction, keeps introducing user-friendly instruments and features into the market. The temperature-based **full-automatic calibration** in 1985, the **first one-piece forcecell (OPF)** in 1989, the high-sensitivity **AEM-5200 Micro Balance** in 1993, and the unique **Windows™ Direct** feature perfectly suited for computerized laboratory of the new century, are just part of Shimadzu's achievements.



Shimadzu's new generation of balances set the laboratory standard for weighing to a new level. They offer exactly the right performance and most convenient features that you need for everyday use in your laboratory.

When thinking of its long history of producing weighing instruments, there is no question that Shimadzu knows how to weigh. This fact is reflected in every detail of our products which users might not even notice. Accuracy and comfort of weighing found in today's Shimadzu balances could not have been achieved without decades of ceaseless efforts.

Weighing accuracy still remains as the main theme in development of newer electronic balances. Nevertheless, Shimadzu's attention towards customer satisfaction is not paid only on such basic subjects.

Our offer includes a variety of unique functions and features which perfectly fulfill your specific needs. Regardless of your field, you will find the solution readily offered by Shimadzu.

There is no compromise in seeking accuracy, therefore it is a matter of course that Shimadzu offers choice of automatic calibration functions, which eliminates the needs of constant attention to ambient temperature change. But thoughtful consideration of customer needs doesn't stop at just introducing automatic systems. When you newly introduce Shimadzu balances in your laboratory or factory, you will be pleased that they can be calibrated with the exact weight value of your own calibration masses.

In industrial scenes, quick response and piece counting function are already taken for granted. Shimadzu goes beyond this again. Our offer to make the operation as smart as possible has left only the most comfortable part of the task for the users. Checkweighing the product and recording the result is now completed only by placing the sample on the pan.

Once you experience the ease of data transmission into your own application software with WindowsDirect function, you may even find your task fun. Surprisingly enough, this award-winning feature is offered as a standard in our major series. All that you need is a simple RS-232C cable to enjoy the extendable benefit.

History and innovation keep Shimadzu Electronic Balances the most user-friendly instruments.





Features and Symbols

ELIMINATE CALIBRATION WORK AND WEIGHT MAINTENANCE BY OPERATOR

- PSC Perfect Self Calibration**
The balance self-calibrates when it detects temperature changes that would affect accuracy. Operator is released from constant attention to surrounding conditions.
- Clock-CAL**
Fully automated feature initiates self-calibration at set time intervals, using motor-driven internal calibration weight. Up to 3 automatic calibrations per day may be pre-set to coincide with work schedules or to meet specific quality goals.
- Motor-CAL**
Calibration can be made any time with a simple key-touch operation.

GLP, GMP, AND ISO9000 CONFORMANCE

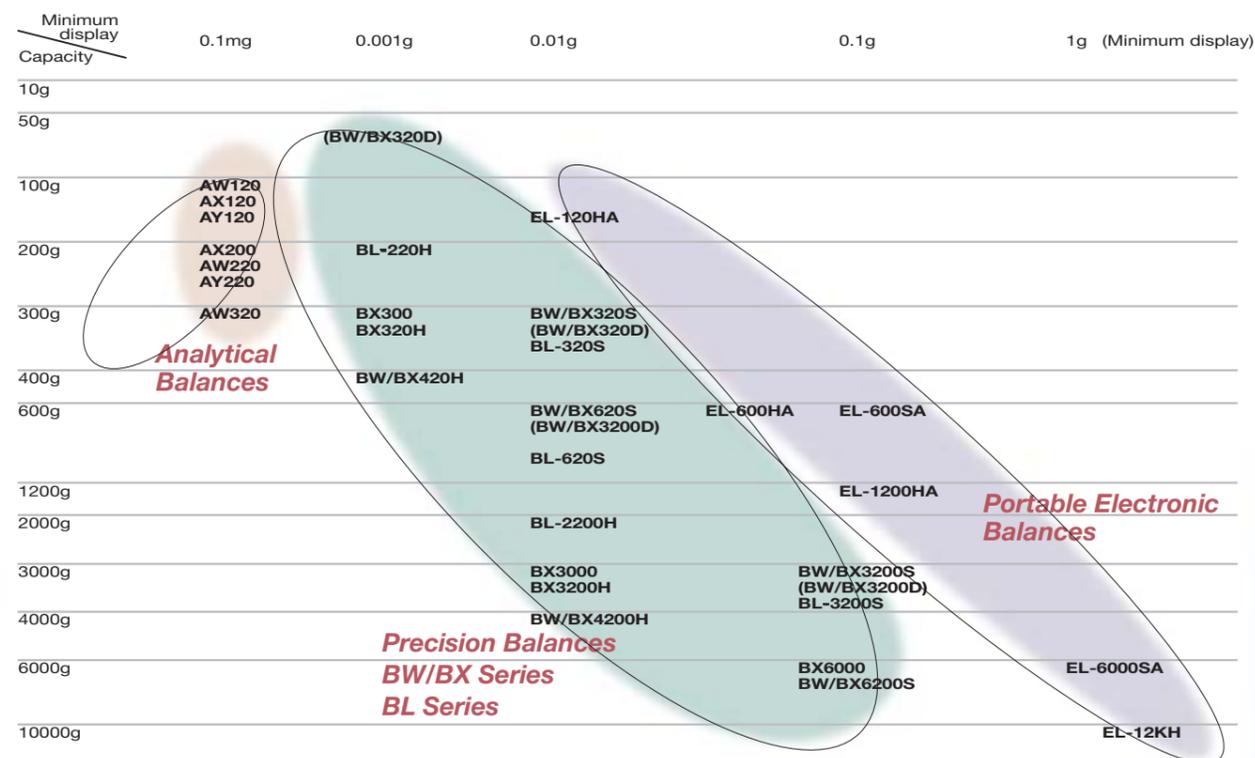
- Built-in Clock**
With optional printer connected to the balance, calibration reports which meet with the requirements of GLP, GMP, and ISO9000 can be produced. Date and time can be readily displayed.

FOR VARIOUS APPLICATIONS

- Windows™ Direct**
Shimadzu balances (AW/AX/AY Series and BW/BX Series) communicate directly with Windows™ applications without additional software, just with a cable.
- Built-in RS-232C Interface**
RS-232C interface is installed as standard.
- Piece Counting Mode**
Piece counting function is installed as standard.
- Analog Bar Graph Display**
The remaining capacity can be seen at a glance.
- Specific Gravity Measurement**
Software for specific gravity measurement is pre-installed. Simply add optional specific gravity kit for efficient measurements.
- Comparator Display**
Best for fill-in weighing and checkweighing. Signal output is also available for data communication.

OTHER FEATURES

- All-metal Body**
All the structural parts are made of metal for high durability of components and quality of exterior case.
- Auto Door**
Access to the weighing chamber by key-touch.



ANALYTICAL BALANCES AW/AX/AY Series



Four decimal sensitivity and integral draft shield define the basic analytical balance. The new line of Shimadzu analyticals go beyond this definition with beautiful design and powerful features. Shimadzu's eighty years of experience in balance production is reflected in the thoughtfully designed weighing chamber. It is spacious enough to place samples with ease, regardless of their shape. Doors open wide in three directions. Extra room allows samples to align with the chamber temperature before measurement. The level gauge is installed at the best visible position, and the all-metal structure ensures high durability and quality of exterior case. We know that even these seemingly small considerations contribute to accuracy and efficiency. In addition to these physical features, various advantages are offered from constant advancement.



In precision weighing, attention to the environment where the balance is used is a critical issue. For accurate results, sensitivity adjustment with calibration weights is required even upon a small change in ambient temperature. It had been a big part of weighing task but somehow taken for granted. Shimadzu gave a perfect solution to scientists as early as in 1985. Fully automated calibration system based on temperature detection removed a considerable load off them. Saved time and efforts as well as always accurate measurement certainly contributed to further progress in science and industries. It is no surprise that Shimadzu today offers a choice of automatic calibration functions in the newest analytical balances.

The demands on conformity to international standards hasn't ever been higher. If your balance is a Shimadzu, however, you are supported completely by its ideal features. Calibration records can be automatically printed out with date and time, which are obtained from the built-in clock.

Data handling by the computer is no longer a special measure these days. Shimadzu made it the handiest ever. Imagine how easy it is if you need only a cable and no software installation to transmit data from the balance. Shimadzu's unique Windows Direct function opened the door of digital data processing for everyone. Note that this feature also perfectly meets the demands for data security because there is no possibility of illegal alteration in transmitting data.

Shimadzu balances are ready for building any automated system, too. Bi-directional communication by software enables commands and settings to be made by the computer.

Those who wish to use the balance in their specific application fields will find the solution already prepared by Shimadzu. The standard features Shimadzu added to accurate weighing performance cover most imaginable application use. Piece counting, carat and various weighing units, and specific gravity measurement software are pre-installed. All Shimadzu analytical balances are also available for use as legal measuring instruments.



PRECISION BALANCES BW/BX Series



Shimadzu's history of producing electronic balances has reached as long as 30 years. Since introduction of the first model into the market, Shimadzu kept improving and adding innovative features to our electronic balances. All our experience and knowledge are integrated in the newest BW/BX Series.

Efforts have been paid to ensure weighing accuracy and comfort of use. The choice of calibration methods for ensuring accuracy include fully automatic calibration made according to pre-set timings. The rugged all-metal housing keeps the exterior quality against chemical corrosion, and protects the sensitive mechanism.

The straightforward design presents elegance as well as sense of reliability and stability. The liquid crystal display was specially designed for the balance and large-sized clear figures are visible even from a low angle.

In addition to these features, various useful functions are readily installed in this standard top-loading balance.



We believe it is our responsibility to ensure the balances always used with accuracy. Therefore, it is no wonder that we have eliminated all the elements which may discourage our customers to conduct necessary calibrations.

BW Series, which has a motor-driven calibration weight, requires you only a key operation to initiate calibration or setting times of fully-automated calibrations. With BX Series, users just follow the instruction shown in the display for span calibration. Shimadzu made it possible for you to register and use any amount of calibration weight within a designated range, so that you do not have to purchase a new calibration weight, nor worry about data coherence with your existing instruments.

As information and commodities fly around the world, there is increasingly strong demands for conformity to international standards. Weighing is not an exception. Shimadzu gives customers a complete support by the calibration record function. If you activate this function, the balance will send out the calibration record every time automatically. Optional printer is available for direct printing. Date and time are administrated at the balance side, by the built-in clock.

Transmitting data from measuring devices to the computer is becoming fairly common these days. However, no one else ever offered any handier way to do it before. If you think of the additional cost of the software as well as the possibility of trouble you may encounter as you install it into your computer, you might hesitate to connect the balance to the computer. Shimadzu's unique Windows Direct function removes such concerns. By simply connecting an RS-232C cable and setting Windows and the balance, you can jump the data directly to the cursor position of any Windows application.

Those who suffer from validation demands on every software they use will find an additional benefit in this feature. There is no possibility of illegal data alteration nor human error in transmission because it does not involve any software. BW/BX Series are also ready for bi-directional communication by software. Every application command can be sent from the computer.

Comprehensive support for industrial use is another feature of these balances. Checkweighing and autoprnt functions, for example, will bring a remarkable saving of workforce. The operator only has to place the product on the pan for checkweighing and data storing. In case you wish to use other units than gram, just press the unit key to switch between them. Pre-register your favorite units only, so that you will not be bothered by unnecessary key touches during unit switching. All these functions enhancing productivity is pre-installed in BW/BX Series balances.



PRECISION BALANCES BL Series



Although “reducing price” was the major concept when BL Series was developed, this does not mean there is compromise in performance. Sophisticated electro-magnetic mechanism, which is the same system used in analytical balances, offers you superb accuracy and efficiency altogether.

Very fast response and stability cause no frustration even in a repeating operation, which enhances productivity significantly.

Pre-installed piece counting function, various weighing units, and a convenient analog display are also offered without additional cost.



PORTABLE BALANCES EL Series



Adopting the simple strain-gauge load cell, EL Series perfectly meets the demands for low cost and handiness. Now it is available in an extended capacity range. Even when developing these relatively low resolution balances, Shimadzu does not compromise in the basic performance. The internal resolution has enough margin to ensure the specified accuracy at all time.

The low-profile, elegantly-colored housing will fit any laboratory, factory, trading, and educational scenes.

Piece counting, percent, unit conversion, and specific gravity measurement functions are pre-installed just as higher precision models.

Optional built-in battery enables you to hand-carry it even to a location without power supply.mm

APPLICATIONS

Precision weighing capability can be utilized in various applications.



Piece Counting

Switching to piece counting mode is simple key-touch. You can choose from several numbers of sample pieces for teaching.



Animal Weighing

Animal weighing mode is pre-installed in BW/BX Series balances.



Specific Gravity Measurement Kit

Specific gravity measurement software is pre-installed. Additional kit will make the operation fairly efficient.

Electronic Printer

Electronic printer can be also used for print-out of weighing data and calibration record meeting the requirements of GLP/GMP/ISO. Printer itself also incorporates various statistic functions.



Windows® Direct Function

Only Shimadzu offers data transmission to computer which requires no software. This unique feature is available as standard in AW/AX/AY and BW/BX Series. Just add an RS-232C cable to enjoy the unlimited benefit.



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