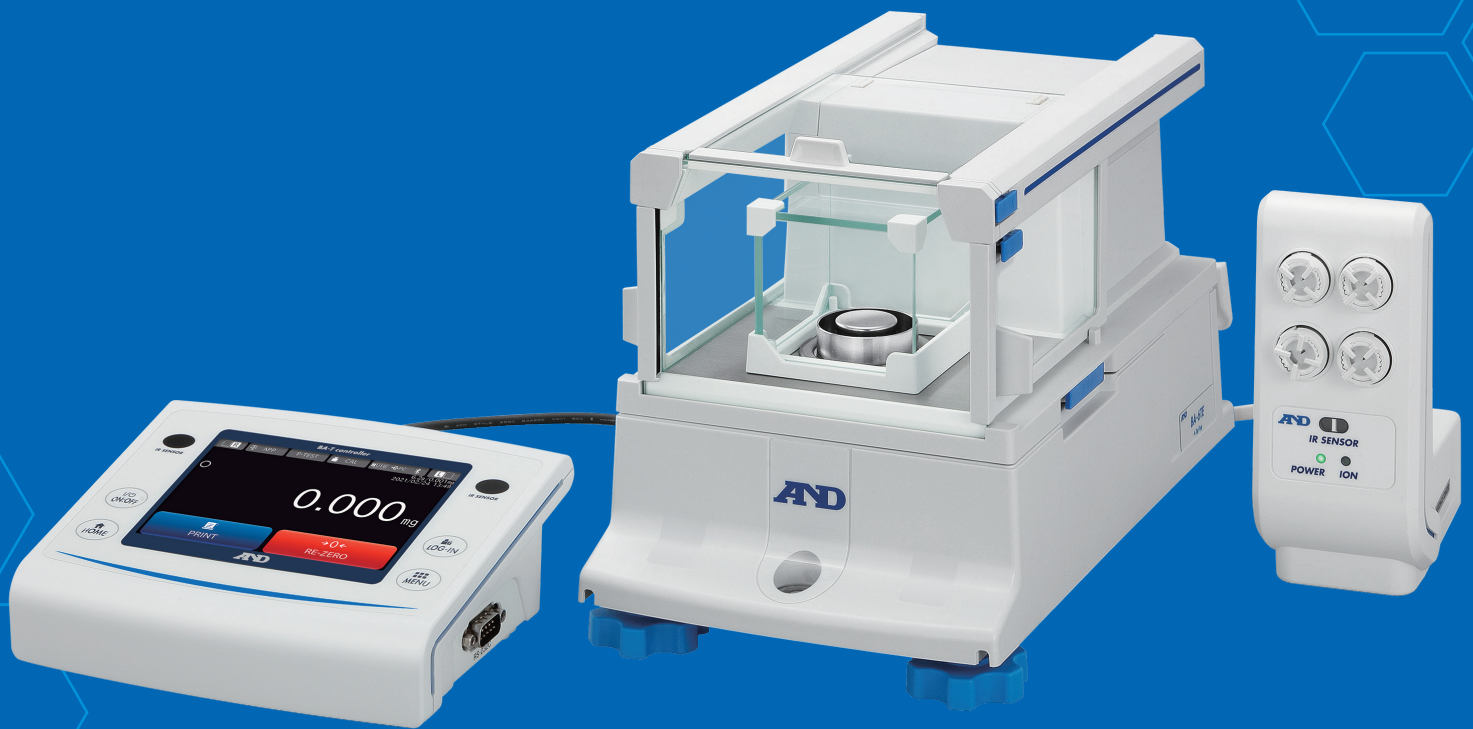# A&D
BOREALIS
BA-T Series

Premium
Micro/Semi-Micro Balances
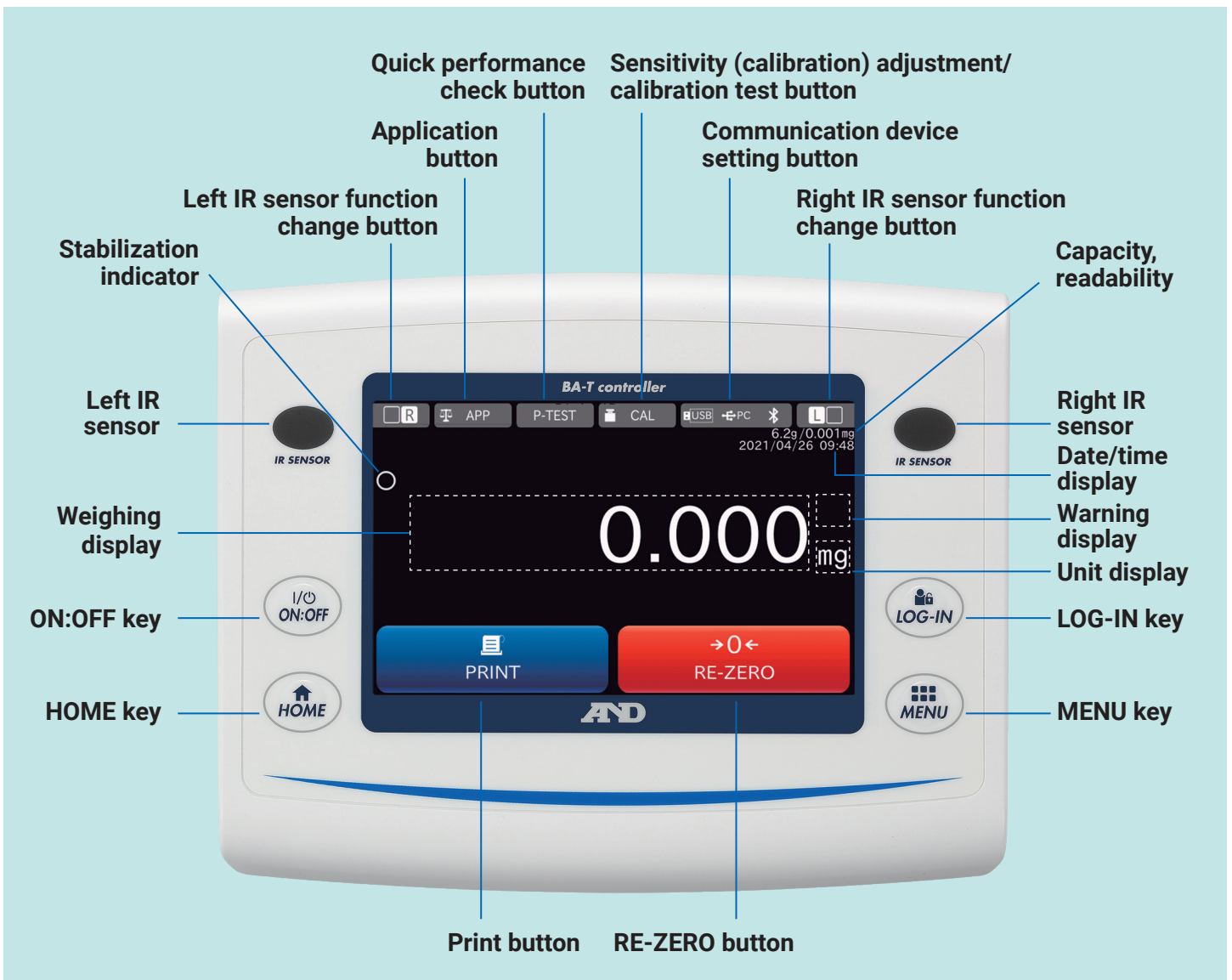

A&D Weighing

BA-T series

With a 5-inch wide color touch screen, the BA-T series brings maximum operability, enhanced functionality and a broader range of solutions. All models come standard with an external ionizer (static eliminator).

0.001 mg models (micro balances)

0.01 mg models (semi-micro balances)

Quick performance check button

Sensitivity (calibration) adjustment/ calibration test button

Application button

Communication device setting button

Left IR sensor function change button

Right IR sensor function change button

Stabilization indicator

Capacity, readability

Left IR sensor

BA-T controller

R APP P-TEST CAL USB PC

6.2g/0.001mg
2021/04/26 09:48

Right IR sensor

Date/time display

Weighing display

0.000 mg

Warning display

Unit display

ON:OFF key

I/U ON:OFF

LOG-IN

LOG-IN key

PRINT

→0← RE-ZERO

HOME key

HOME

MENU

MENU key

Print button

RE-ZERO button

Effortless microgram weighing thanks to the following features

Automatic opening/closing of the breeze break doors

The side doors of the breeze break can be opened/closed using the non-contact IR sensors on the display unit (or optional foot switches) for smooth, efficient access to the weighing chamber which improves repeatability by eliminating human contact with chamber doors. Utilizing a new and patent pending actuator technology, the BA draft shield operates quieter and smoother than conventional systems.

Draft Shield

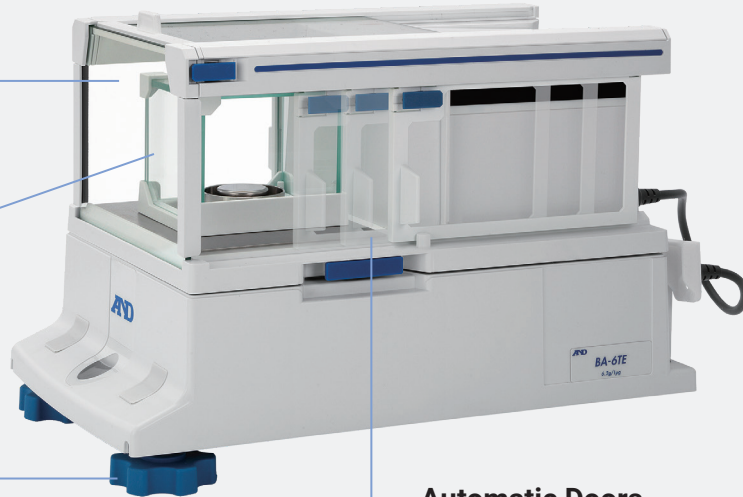Flexible door positioning ensures maximum visibility to the weighing chamber.

Inner Draft Shield for 0.001 mg models

For an extra level of stability and protection.

*Patent pending

Easy Leveling Feet

Effortless leveling due to the front level indicator, 2 adjustable feet (opposed to 4) and on-screen leveling assist.

Automatic Doors

Set the opening distance to full, half, or to a preferred distance.

Touchscreen and user navigation

The resistive touchscreen enables intuitive operation while making it easy to enter numbers, change settings, etc. even while wearing thick gloves.

IR sensors

Programmable and touchless IR sensors enhance stability and engage functions such as auto doors, print and zero

Display Unit

5" TFT, LCD, resistive color touch screen with 2 x IR sensors , multi language display and four quick access keys for easier navigation.

Innovative design makes cleaning the balance simple and effortless
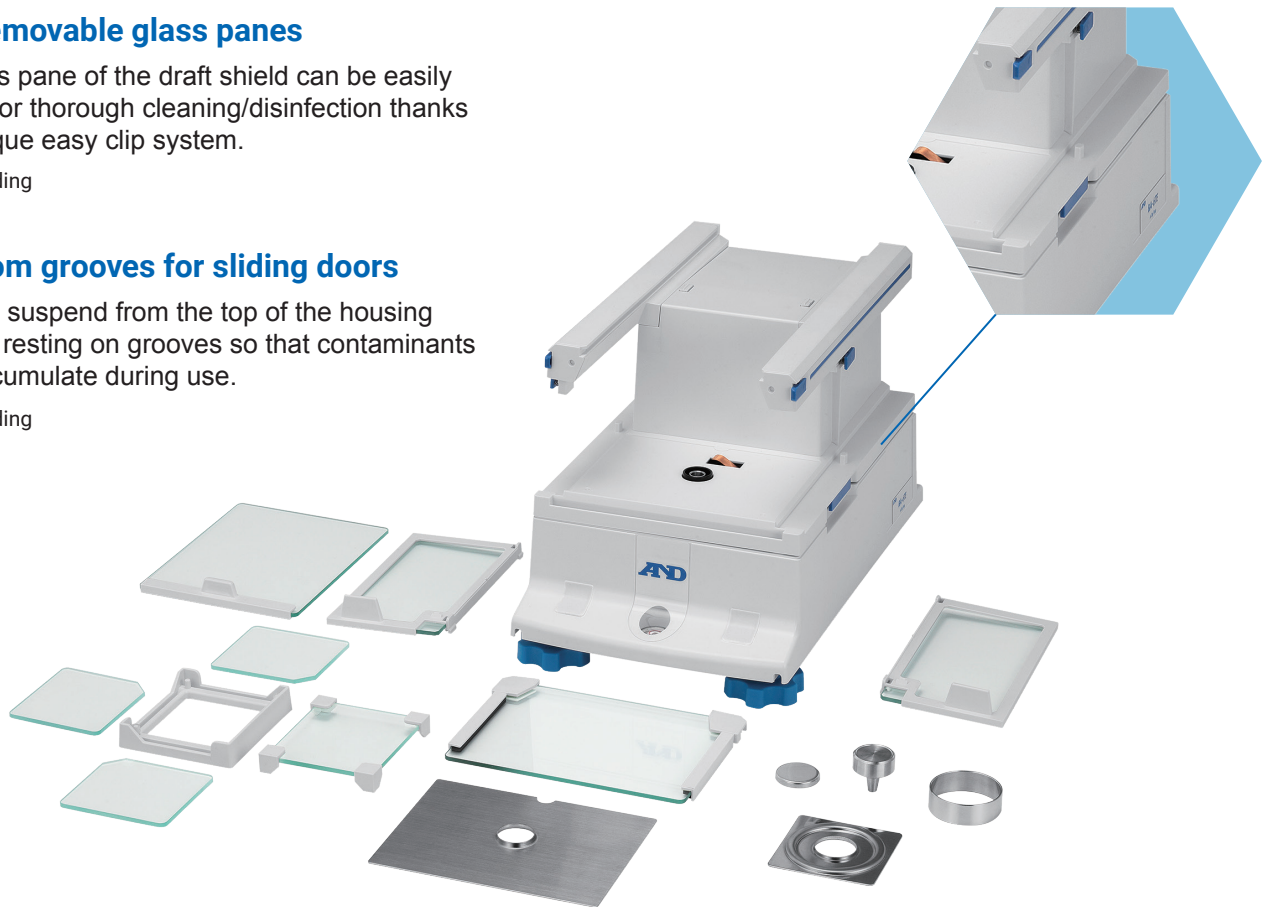
Easily removable glass panes

Each glass pane of the draft shield can be easily removed for thorough cleaning/disinfection thanks to the unique easy clip system.

*Patent pending

No bottom grooves for sliding doors

The doors suspend from the top of the housing instead of resting on grooves so that contaminants do not accumulate during use.

*Patent pending

Detachable draft shield

The draft shield unit itself can be easily removed from the weighing unit by pulling out the two side fasteners. This allows for fast, simple cleaning as well as replacement in case of damage.
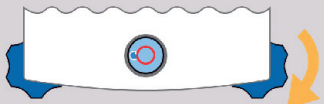
*Patent pending

Leveling method

Air bubble position

Direction of leveling foot rotation

On-screen leveling assist

The touch screen provides a visual instruction on which leveling foot to rotate in which direction(s) depending on the position of the air bubble on the level indicator.

AD-Just Automatic self sensitivity (calibration) adjustment

The balance can be set to adjust automatically using its internal weight according to the set execution condition (i.e. temperature change, preset time or interval) when there is nothing on the weighing pan to ensure consistent measurement results. An indicator blinks to give notice before the adjustment starts.

Internal repeatability test

The balance can test and calculate repeatability (standard deviation) using its internal weight to quickly assess the performance under a given environment.


Impact shock detection (ISD)

The ISD function detects impacts applied to the weighing sensor and indicates their severity in five levels from 0 to 4. Level 3 and Level 4 are also accompanied by a beep alert. ISD helps to reduce impact loads in future weighing, and thereby avoid measurement errors as well as potential damage to the weighing sensor and to diagnose potential negative environmental influences.

Impact loads of Level 3 and Level 4 are saved in the Impact Shock Detection History log. If there is a problem with the balance, the log can be used to check how the balance was used.

Smart routine check (SRC)

The SRC function displays the balance handling level, in three levels based on the number and strength of impacts loads received by the weighing sensor (available as part of the daily check function described later). This allows you to assess and manage risk related to poor handling, and helps improve balance operating skills.

The balance recommends you to perform performance (periodic) check if it is judged to have been handled badly.
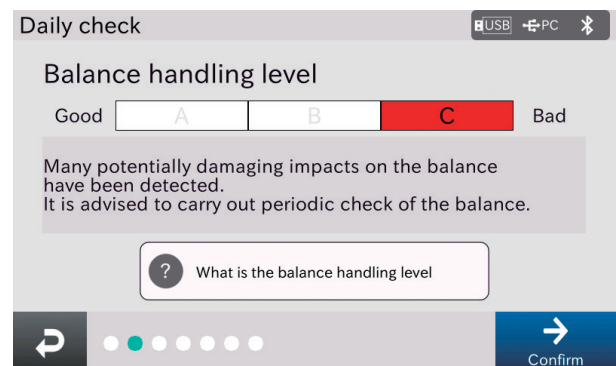
Balance handling level judged to be C (bad)

External ionizer for instant static removal

With the provided ionizer, you can easily ensure that your sample is free from destabilizing static electricity. The fanless ionizer will not disturb the sample and ensures maximum stability.

The ionizer is powered by the balance which minimizes clutter and eliminates the need for a second receptacle.

Antistatic treatment

Both the interior and exterior glass panes of the draft shield are coated to help block static electricity
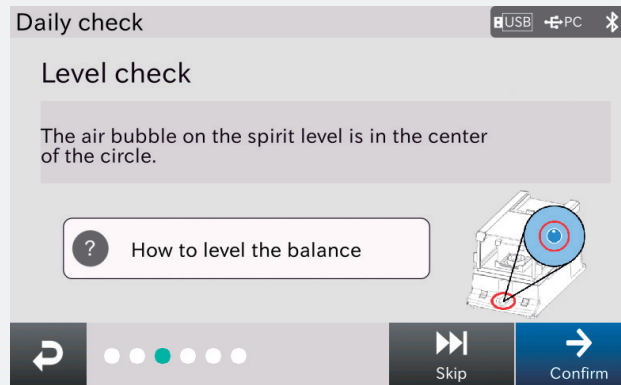
316 stainless steel load pan

Die cast aluminum housing with anti-static ABS cover

IR sensor

Daily/periodic balance check

The balance can perform a daily or periodic diagnostic check to confirm leveling, environmental conditions and accuracy. The intuitive interface guides users through the checking process, eliminating the need for a manual or specific training.
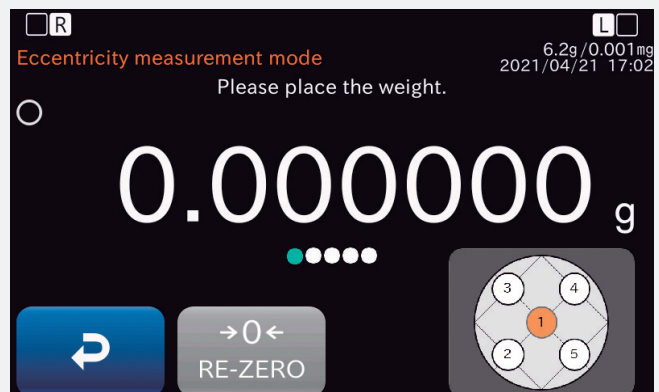
Daily check

USB PC

Level check

The air bubble on the spirit level is in the center of the circle.

? How to level the balance

Skip   Confirm

Daily Check Items

Level check (image shown), external condition check, weigihng pan check and accuracy check.

Periodic Checks

Eccentricity measurement (image shown), calibration test, sensitivity (calibration) adjustment, repeatability measurement and sensitivity test.

R   L
                                              6.2g / 0.001mg
Eccentricity measurement mode   2021/04/21 17:02
Please place the weight.

0.000000 g

→0←
RE-ZERO

3   4
1
2   5

Diagnostic results can be printed or saved to USB for further analysis and traceability.

Minimum weight setting and alert*1

You can set the minimum weight for the balance either by direct key input or performing a repeatability test, from which the balance automatically calculates*2 the minimum weight.
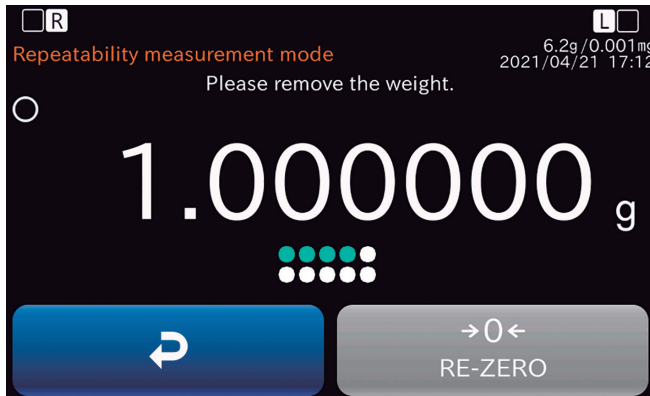

Repeatability measurement for minimum weight setting

The minimum weight is determined from the standard deviation of 10 repeated weighing results. The detailed results data can be output for your records.

Minimum weight alert

To ensure that the measured sample amount meets the minimum weight requirement, the balance can display an alert until the sample amount reaches the minimum weight. You can also choose to set the balance to disable the output of weighing data less than than the minimum weight.
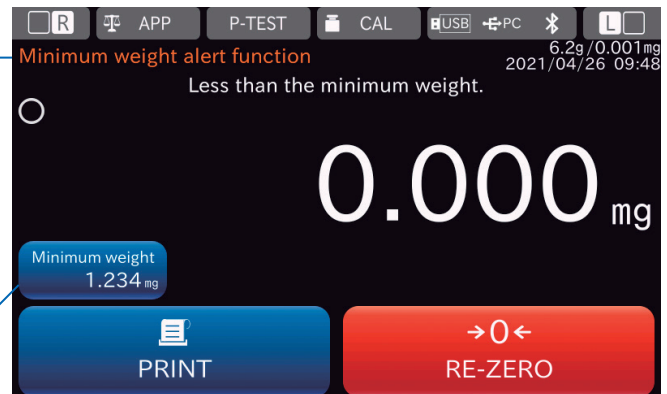
Minimum weight requirement (optional)

Advanced user access control

The BA provides complete administrative control by offering 4 separate authorization levels. This ensures that each user only has access to what's required to perform their daily tasks.

The administrator can register users as lab managers, supervisors or operators. Lab managers and supervisors are registered with usernames and passwords while operators do not require a password to login. Up to 100 users can be registered.*3

User authorization

	Change to settings	Date/time setting	Ext. sensitivity adjustment	Int. sensitivity adjustment
Administrator	Allowed	Allowed	Allowed	Not allowed
Lab manager	Allowed	Not allowed	Allowed	Not allowed
Supervisor	Allowed	Not allowed	Not allowed	Not allowed
Operator	Not allowed	Not allowed	Not allowed	Not allowed

User rights management

*1 Unit of minimum weight setting is mg.
*2 By a tolerance of either 0.1% in accordance with the United States Pharmacopeia (USP), Chapter 41, or 1%, depending on your laboratory requirements
*3 Operators do not need a password.

Change audit log

The balance can display/save to a USB flash drive*4 log-in/log-out history, operation (changes to settings) history, sensitivity (calibration) adjustment history, and impact shock detection (ISD) history with date, time, username and other necessary information for later reference.

GLP/GMP/GCP/ISO compliant output

Data necessary to comply with GLP/GMP/GCP/ISO can be added to sensitivity (calibration) adjustment reports, calibration test reports, and series of weighing results.
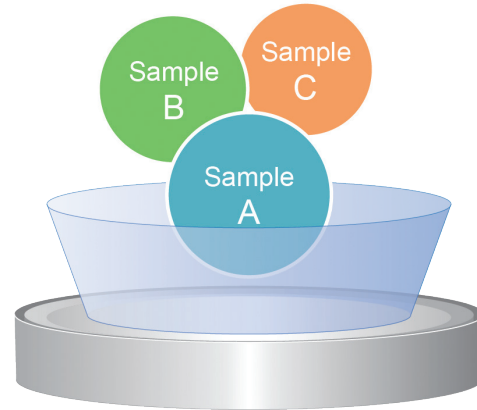
	Date/time	User name	Item
1	2021/04/21 16:36:06	User 01	Buzzer sound
2	2021/04/21 16:36:13	User 01	Backlight Brightness
3	2021/04/21 16:36:16	User 01	Auto power OFF
4	2021/04/21 16:36:18	User 01	Auto power ON
5	2021/04/21 16:36:37	User 01	Auto door opening/closir
6	2021/04/21 16:37:07	User 01	Backlight Brightness

USB flash drive

Operation history

Specialized application functions

Formulation mode

The formulation mode enables quick, accurate weighing of multiple samples to mix according to a set recipe, allowing for setting the target value (g) and tolerance (%) for each sample. Up to 150 samples and 300 recipes can be registered for easy creation or selection/change of recipes.

Sample B

Sample C

Sample A

Sample Name

Formulation mode - Sample weighing

Please weigh

KCl

0.00000 g

| Target Value | 0.80000 g | Tolerance | 0.08000 g |

SAVE

→0← RE-ZERO

Target

Tolerance

Weighing screen in formulation mode

On-screen instructions guide you to weigh each designated sample to the target range. The [SAVE] key to proceed to the next step becomes active only when the weight is in the target range, which prevents errors (either Below Tolerance or Above Tolerance is displayed while it is outside the target range).

*4 The balance stores up to 1,000 data (which is then overwritten in order from the oldest data) for each history. It can only display the latest 100 data but save all data to a USB flash drive in CSV format.

HPLC mode

The HPLC mode is dedicated to preparing buffer solutions for high-performance liquid chromatography (HPLC). In addition to weight (g), it enables you to set the target of each sample in terms of molar concentration (mol/L or mmol/L). From the molecular weight of the sample and the volume of the buffer solution to be made, the balance automatically converts between molar concentration and weight, to eliminate the potential for human error.

Recipe edit		🔲USB ◄🖥PC ✳
Recipe name	Solution volume (L)	Target value unit
Phosphate Buffer	1.000	mmol/L

Molecular formula	Target value (mmol/L)	Target value (g)	Tolerance (%)
NaH2PO4	35.763	4.290845	10.000
Na2HPO4	14.237	2.021085	10.000

↩   ✏ Edit   → Measure

Recipe edit screen in HPLC mode

You can simply have the balance calculate/display the weights to be measured even if the sample quantities are specified by molar concentration.

Currently, 13 samples that are commonly used to make buffer solutions are already registered with their molecular weight information by A&D by default. In addition up to 30 samples (and 300 recipes as with the formulation mode) can be registered.
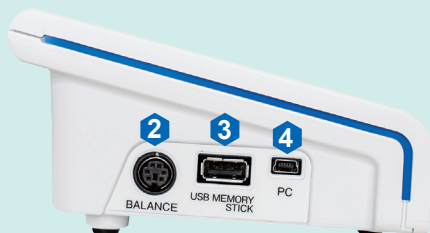
Both formulation and HPLC mode results show the measured quantity and tare value for each sample, which can be printed out or saved to a USB flash drive in CSV format.

Standard communication interfaces and connectors

The large variety of standard communication interfaces allows for easy integration into virtually any existing system.

Right side

Left side

Rear side

1. **RS-232C (D-Sub 9P)**

2. **Connector for the cable to the weighing unit**

3. **USB-A for USB flash drives**

4. **USB-B (mini-B) for connection with a PC**
   Using internal settings, you can toggle between Quick USB (HID) mode, which allows you to send weighing data to an application (e.g. spreadsheet) on a PC, and Virtual COM (CDC) mode for bi-directional communication. A USB cable (1.8 m) is supplied as standard.

5. **Bluetooth**[®*5]

6. **Ethernet (TCP/IP)**

7. **External key input (jack socket) × 2**
   Separately sold foot switches can be connected to these sockets to operate the RE-ZERO, PRINT commands, or the automatic draft shield doors.

8. **Connector for AC adapter**

*5 The Bluetooth® function (GATT/HOGP) is currently enabled for the US, Canada and Japan only.

Specifications

	BA-6TE	BA-6DTE	BA-225TE	BA-225DTE	BA-125DTE
Capacity	6.2 g	2.1 g / 6.2 g[*i]	220 g	51 g / 220 g[*i]	51 g / 120 g[*i]
Readability	0.001 mg	0.001 mg / 0.01 mg	0.01 mg	0.01 mg / 0.1 mg	0.01 mg / 0.1 mg
Repeatability (standard deviation)[*ii]	0.0010 mg (for 1 g) 0.0030 mg (for 6 g)	0.0025 mg (for 1 g) 0.01 mg (for 6 g)	0.015 mg (for 50 g) 0.03 mg (for 200 g)	0.025 mg (for 50 g) 0.1 mg (for 200 g)	0.030 mg (for 50 g) 0.1 mg (for 100 g)
Minimum weight[*iii] (typical)	1.8 mg	4.0 mg	20 mg	32 mg	50 mg
Linearity	±0.010 mg	±0.010 mg / ±0.02 mg	±0.15 mg	±0.2 mg	±0.2 mg
Stabilization time (typical when set to FAST)	Approx. 10 secs	Approx. 10 secs / 10 secs	Approx. 7 secs	Approx. 7 secs / 3 secs	Approx. 7 secs / 3 secs
Internal weight[*iv]	Approx. 5 g		Approx. 100 g		
Sensitivity drift	±2 ppm/°C (10 to 30 °C/50 to 86 °F, when automatic self sensitivity adjustment is OFF)				
Operating environment	5 to 40 °C (41 to 104 °F), 85%RH or less (no condensation)				
Display unit	5-inch WVGA, TFT LCD color touch screen (resistive type) with two IR sensors				
Display refresh rate	5 times/sec or 10 times/sec				
Units of measure	mg (milligram), g (gram), oz (ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), gr (grain), pcs (counting mode), and % (percent mode)				
Counting mode — Minimum unit mass	0.1 mg				
Counting mode — Number of samples	10, 25, 50 or 100 pieces				
Percent mode — Minimum 100% reference mass	10.0 mg				
Percent mode — % readability	0.01%, 0.1%, 1% (depends on the reference mass stored)				
Communication interface	RS-232C (D-Sub 9P), USB-A, USB-B (mini B), Ethernet (TCP/IP), External key input × 2, Bluetooth®[*v]				
Applicable weights for calibration test/sensitivity adjustment	Any weight between 1 and 5 g		Any weight between 10 and 200 g		Any weight between 10 and 100 g
Weighing pan size	Ø25 mm		Ø85 mm		
External dimensions — Display unit	182 (W) × 138 (D) × 73 (H) mm				
External dimensions — Weighing unit + breeze break unit	173 (W) × 305 (D) × 204 (H) mm		173 (W) × 305 (D) × 284 (H) mm		
External dimensions — External ionizer	68 (W) × 129 (D) × 162 (H) mm				
Net weight — Display unit + weighing unit + breeze break unit	6.2 kg		6.7 kg		
Net weight — External ionizer	0.4 kg				
Power supply / consumption	AC adapter / approx. 36 VA				
Standard accessories	External ionizer × 1, Three sizes of aluminum analytical pans × 10 each[*vii], Filter weighing pan (Ø50 mm) × 1[*vii], Tweezers for calibration weight × 1, Micro spatula × 1				

i. Smart range function: Automatically swithces between the precision and standard ranges. Changes back to full precision range when the RE-ZERO (tare) operation is implemented.
ii. Repeatability can vary depending on the environmental conditions
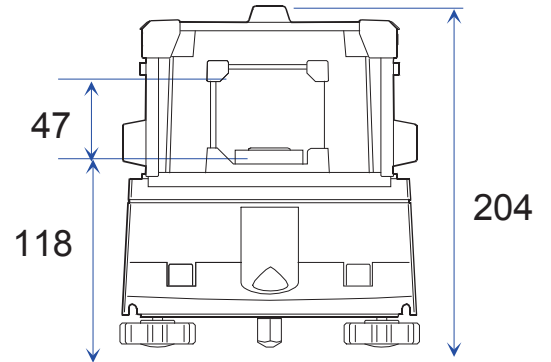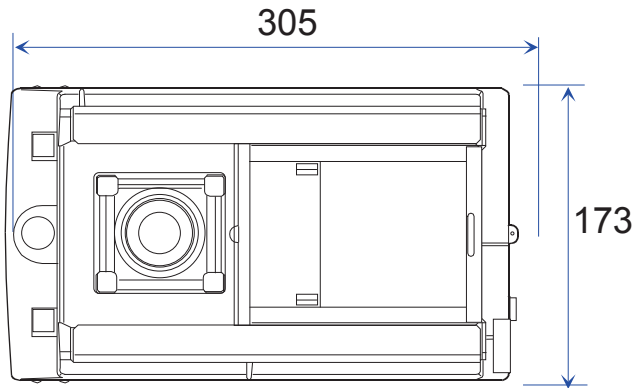iii. Pursuant to the United States Pharmacopeia (USP) Chapter 41
iv. The mass of the internal weight may change over time due to on-site environmental conditions and/or degradation with age.
v. The Bluetooth® function is currently enabled for the US, Canada and Japan only.
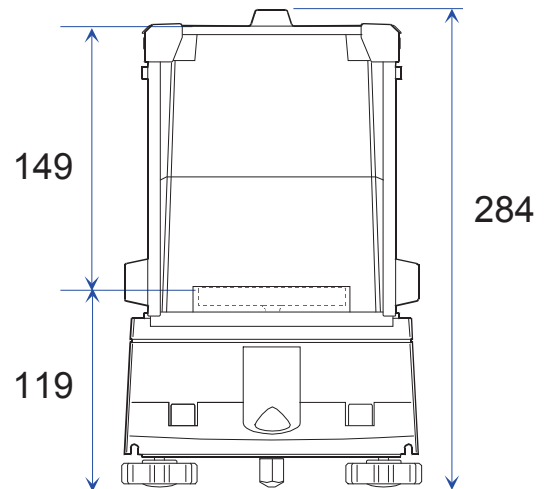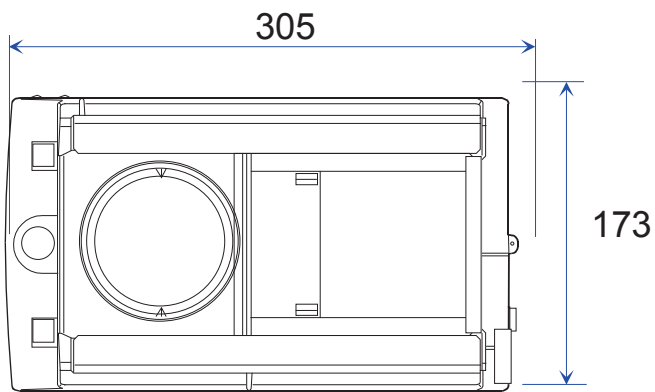
Dimensions

BA-6TE / BA-6DTE

Unit: mm

BA-225TE / BA-225DTE / BA-125DTE

Unit: mm

Accessories

AD-1671	**Anti-vibration table for balances**
AD-1672/AD-1672A	**Tabletop breeze break (large)**
AD-1684A	**Electrostatic field meter**
AD-1687	**Weighing environment logger**
AD-1688	**Weighing data logger**
AD-8127	**Compact printer**
AX-BAT-31	**Display cover for the BA-T series (5 pcs)**
AX-BA-31	**Display cover for the BA series (5 pcs)**
AX-ION-25	**External ionizer** Also provided as standard for the BA-T series and the 0.001 mg models of the BA series
AX-BM-NEEDLESET	**Discharge electrode units for the ionizer** **(a set of 4 pcs)**
AX-IR-SWITCH	**External IR switch** Can be added to the ionizer if you prefer not to put a hand or sample close to the IR sensor of the ionizer.
AX-SW137-PRINT	**Foot switch for PRINT (with connector)**
AX-SW137-REZERO	**Foot switch for RE-ZERO (with connector)**

AD-1671
460 (W) × 400 (D) × 71 (H) mm

AX-ION-25
with AX-IR-SWITCH

Foot switches

Standard functions

Intrinsic Safety | External Calibration | Optimizing Unit Weights | Auto Power Off | Normal Battery | Percentage Function | Comparator Function