Premium-Level Micro/Semi-Micro Balances

A&D Borealis

BA-T/BA Series

ISO 9000 CERTIFIED

Sophisticated Weighing at a Touch

A&D Company, Ltd.

Discover Precision

www.aandd.jp

Supreme Precision, Optimizing Your Weigh

Come experience premium weighing solutions with outstanding ease of use and maintenance. In addition to promising fully reliable results, A&D Borealis BA-T/BA series provides exceptional efficiency and time savings to improve your daily tasks and routines while meeting various laboratory requirements. An ideal choice if you seek superior professional quality and need nothing but the best!

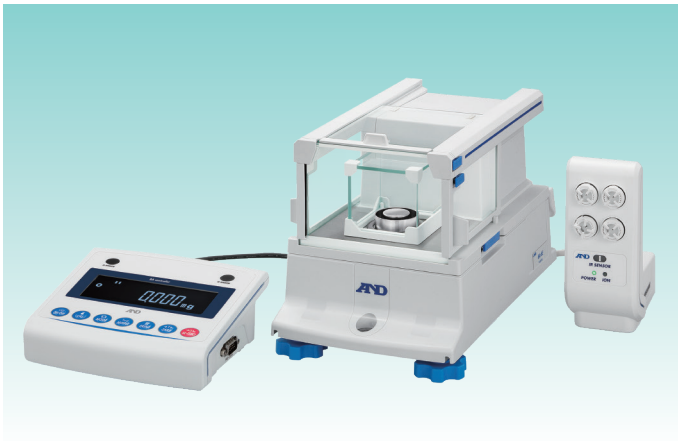
BA-T series

0.001 mg models (micro balances)

0.01 mg models (semi-micro balances)

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).

BA series



0.001 mg models (micro balances)

0.01 mg models (semi-micro balances)

The BA series has a standard reverse-backlit LCD, and is suitable for users who only require core functionality. The 0.001 mg models are equipped with an external ionizer as standard.

Operating a balance should never feel difficult, even when weighing micrograms

Automatic opening/closing of the breeze break doors

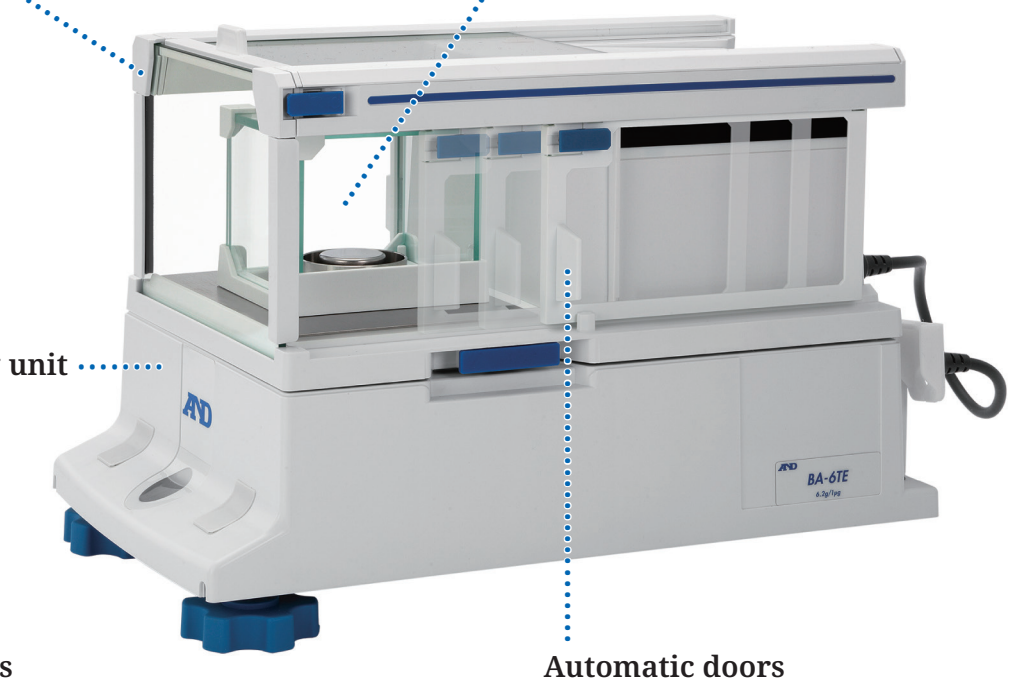
The side doors of the breeze break can be opened/closed using the non-contact IR sensors on the display unit (or optional foot switches) for smooth, efficient access to the weighing chamber. For the actuator, A&D adopt a pump and air cylinder mechanism,♦ which is much quieter and more durable than conventional motor actuators.

♦ Patented

Breeze break unit
The top door can be oriented so that the handle is positioned to the rear instead of the front, making it easier for you to see inside.

Inner breeze break for 0.001 mg models♦
The open side can be easily turned around.

♦ Patent pending



Weighing unit

IR sensors
For the BA-T series, the IR sensors can also be used for contactless operation of the RE-ZERO or PRINT command.

Automatic doors
The opening distance can be set to full, half, or your preferred distance. You can also open/close the doors manually if preferred (no damage to the actuator will be caused).

Touch screen and user navigation (for the BA-T series)

The touch screen enables intuitive operations while making it easy to enter numbers, change settings, etc. You can operate it even if you are wearing thick gloves as it responds to pressure (i.e. resistive touch screen).

Display unit
Four frequently used keys are provided as physical keys for quick access.

Multiple languages (for the BA-T series)

For users with various backgrounds, the display language can be set to English, French, German, Italian, Dutch, Spanish, Portuguese, Russian, Korean, Chinese, or Japanese.

Innovative design that makes cleaning the balance simple and effortless

Easily separable glass panes

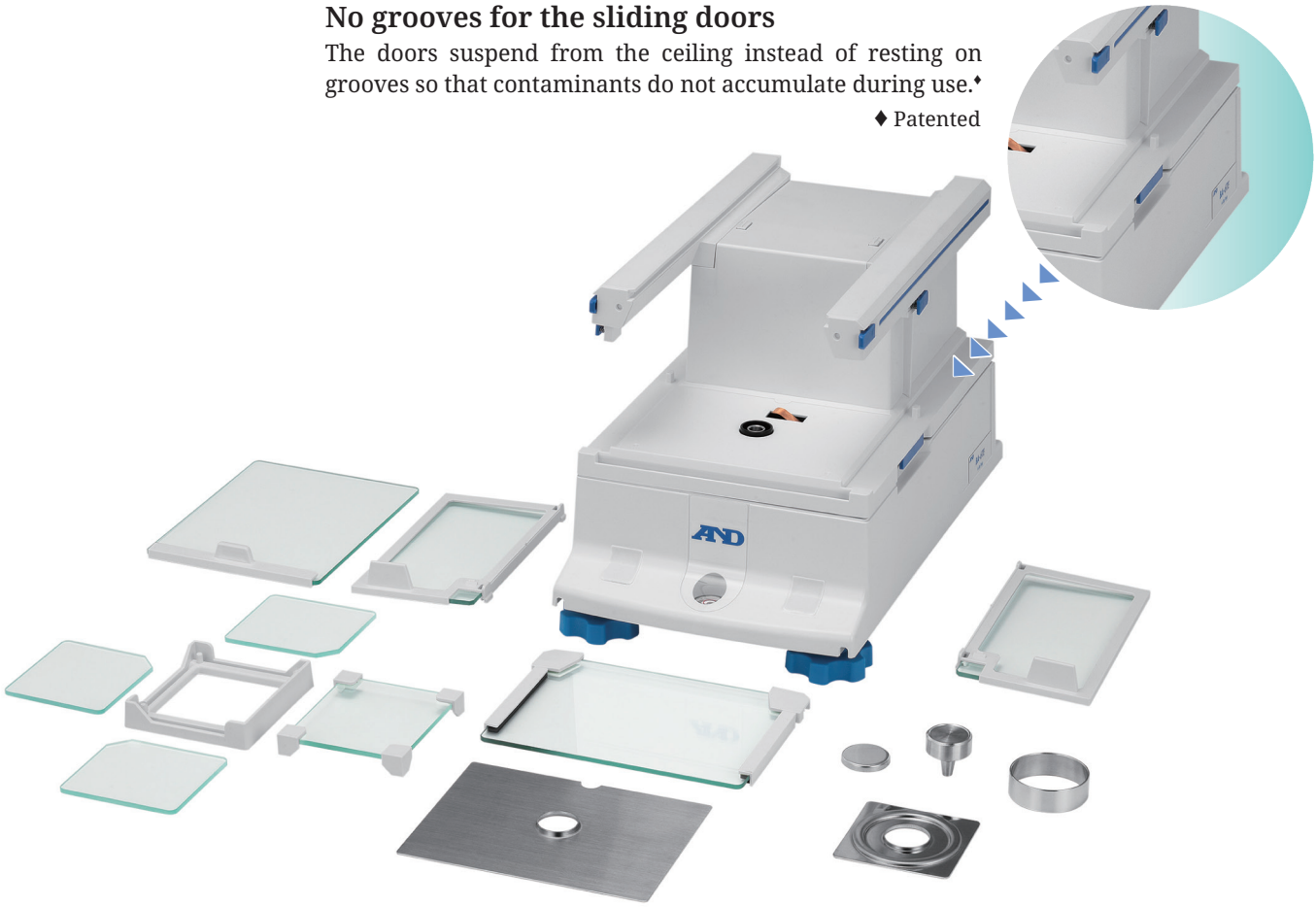
Each glass pane of the breeze break can be easily separated for thorough cleaning/disinfection thanks to the unique clip system.♦

♦ Patent pending

No grooves for the sliding doors

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

♦ Patented



Detachable breeze break unit

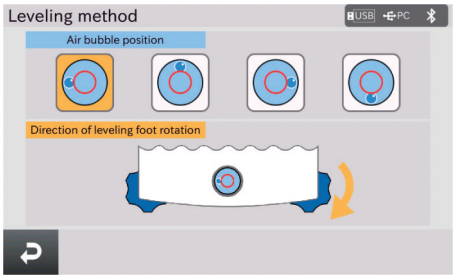
The breeze break unit itself can also be easily detached from the weighing unit by pulling out the two side fasteners.♦ This allows for fast, simple cleaning as well as replacement in case of failure.

♦ Patented

How peak weighing performance can be assured at all times

On-screen leveling assist (for the BA-T series)

The touch screen provides a visual instruction on which leveling foot (feet) to rotate in which direction(s) depending on the position of the air bubble on the level indicator (available as part of the daily check function described later).



AD-Just – Automatic self sensitivity adjustment

The balance can be set to calibrate and adjust its sensitivity automatically using its internal weight according to the set execution condition (i.e. temperature change, preset time or interval) when there is nothing on its weighing pan. An indicator (message for the BA-T series) blinks to give notice before the adjustment starts.

Internal repeatability test

It is also possible to have the balance test and calculate repeatability (standard deviation) using its internal weight to quickly assess the performance under a given environment. For the BA-T series, the repeatability measurement mode can be immediately accessed by pressing [P-TEST] on the screen, which enables repeatability testing using an external weight as well as the internal weight.

Impact shock detection (ISD)

The ISD function detects impact loads applied to the weighing sensor and indicates their strength in five levels from 0 to 4. Level 3 and Level 4 are also accompanied by a beep sound. Using this as reference, you will be able to reduce impact loads in future weighing, and thereby avoid measurement errors as well as potential damage to the weighing sensor.

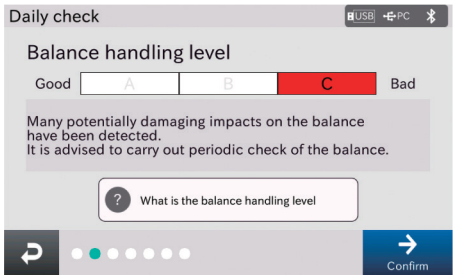
Impact load: Level 4

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

Smart routine check (SRC) (for the BA-T series)

The SRC function displays the balance handling level, or how adequately it has been used, in three levels based on the number and strength of impact 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.

♦ Patent pending



Balance handling level judged to be C (bad)

The balance recommends you to perform performance (periodic) check and verify that no error has been caused if it is judged to have been handled badly.

External ionizer for instant static removal

With the provided ionizer,*1 you can easily ensure that your sample (and container) is completely free from destabilizing static electricity. Since a DC method is adopted, no fan is needed to deliver ions, and therefore no breeze is caused (except for minimal ionic wind), enabling static removal without disturbing even extremely fine powders.

The ionizer draws power via the balance. For seamless weighing workflows, it can be installed next to the balance and activated for a set duration by hovering your hand over the embedded IR sensor right before a sample is placed inside the breeze break.

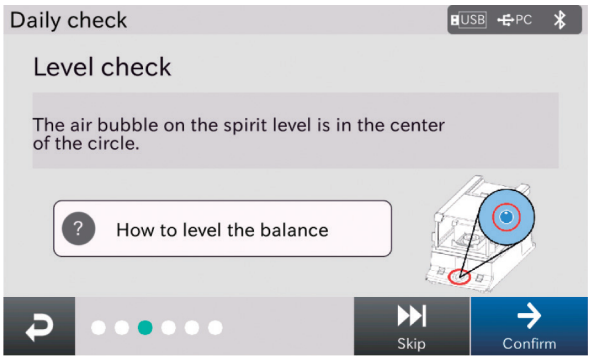
∗1 Optional for the BA-225/225D/125D

Antistatic treatment
The glass panes of the breeze break are coated with transparent evaporated metal to block outside static electricity.

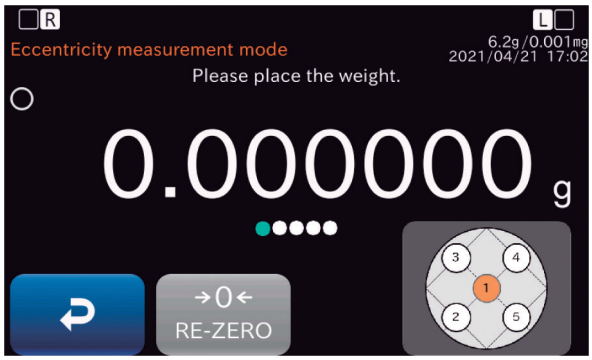
Helps meet diverse compliance and security needs

Daily/periodic balance check support (for the BA-T series)

The balance aids in the application of standard operating procedures (SOP) for quality and performance verifications without trouble. The daily check is conducted to confirm that the balance is in good condition, whereas the periodic check is conducted to regularly inspect the balance basic performance. No comprehensive knowledge or experience is required to implement these checks. Simply follow the displayed procedures step-by-step (or skip items that are not needed for your laboratory).



Daily check item: Level check
Other daily check items include external condition check, weighing pan check, and accuracy check.

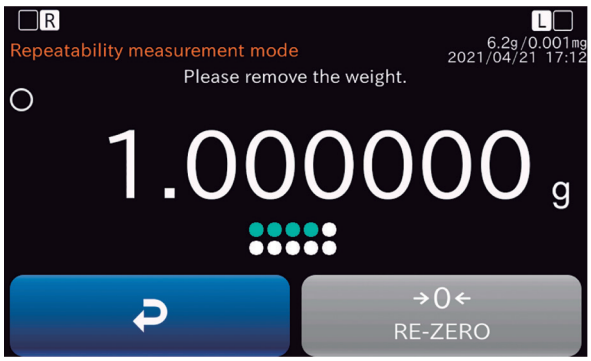


Periodic check item: Eccentricity measurement
Other periodic check items include the calibration test, sensitivity adjustment, repeatability measurement (with pre-loading), and sensitivity test.

It is possible to set the balance to remind you of these checks as you prefer. Meanwhile, the results can be printed out or saved to a USB flash drive in a PDF report format for documentation and compliance.

Minimum weight setting and alert*2

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*3 the minimum weight.



Repeatability measurement for minimum weight setting

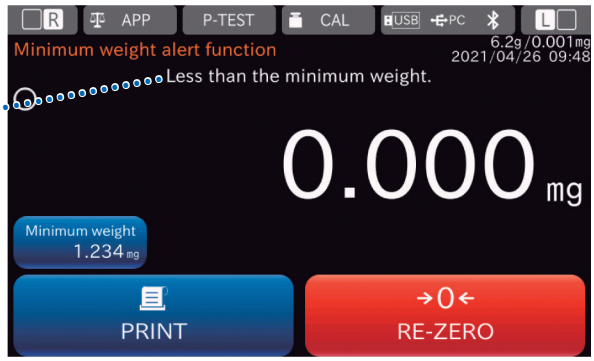
The minimum weight is determined from the standard deviation of 10 repeated weighing results. The detailed calculation data can be output for your records.

*2 Unit of minimum weight setting is mg.
*3 By a tolerance of either 0.1% in accordance with the United States Pharmacopeia (USP), Chapter 41, or 1%, depending on your laboratory requirements

To ensure that the measured sample amount meets the minimum weight requirement, the balance can keep displaying an alert (message for the BA-T series) until the sample amount reaches the value set as the minimum weight. It is also possible to set the balance to disable output of weighing data smaller than the minimum weight.

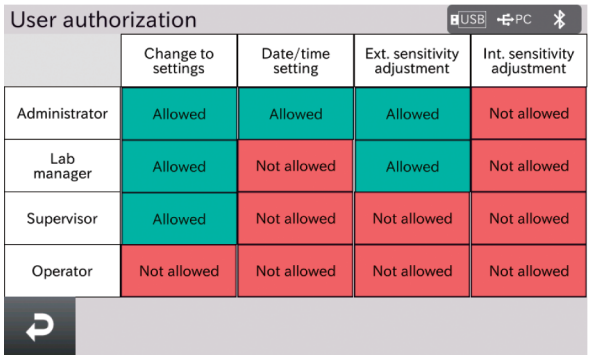
Minimum weight alert

You can select whether to include values near zero for comparison with the minimum weight.



Advanced user access control (for the BA-T series*4)

To prevent unauthorized changes from being made to balance settings/data, users can be classified into four levels (i.e. administrator, lab manager, supervisor, and operator), and the administrator can determine the extent of rights (i.e. change to settings, date/time setting, external sensitivity adjustment, and internal sensitivity adjustment) for each level.



	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

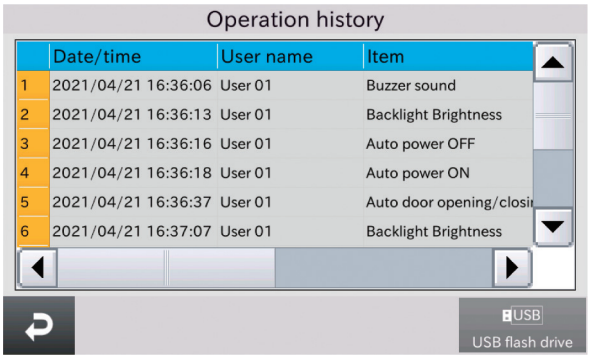
The administrator can register users as either lab managers or supervisors with usernames and passwords. Up to 100 users can be registered, including the administrator.*5

*4 For the BA series, the administrator can set passwords for up to 10 additional users. Similar (albeit simpler) user rights management is also possible using the function selection switches for these users as well as the administrator.
*5 Operators do not need a password.

History information (for the BA-T series)

The balance can display/save to a USB flash drive*6 log-in/log-out history, operation (changes to settings) history, sensitivity adjustment history, and impact shock detection (ISD) history with date, time, username and other necessary information for later reference.

*6 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.



Operation history

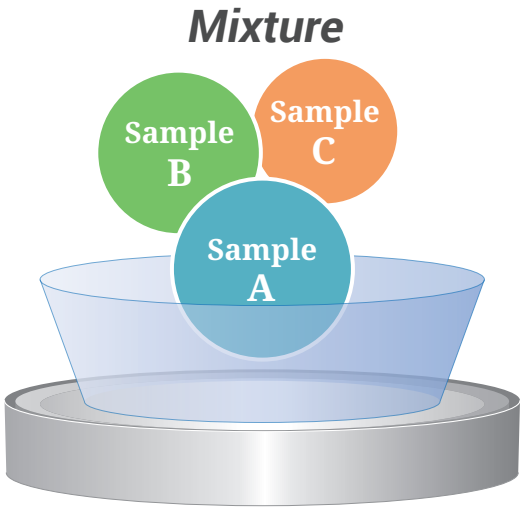
GLP/GMP/GCP/ISO compliant output

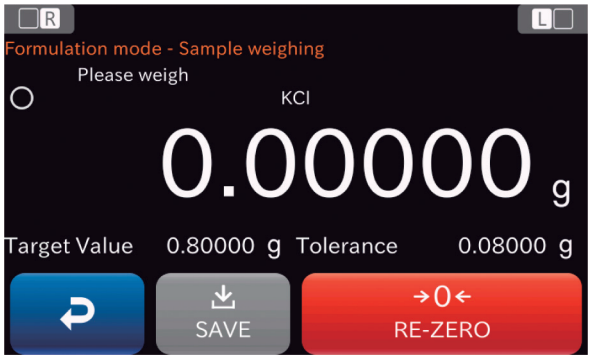
Data necessary to comply with GLP/GMP/GCP/ISO can be added to sensitivity adjustment reports, calibration test reports, and series of weighing results.

Specialized application functions — Let the balance do the work for you to avoid human errors

Formulation mode (for the BA-T series)

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 in the balance for easy creation or selection/change of recipes.



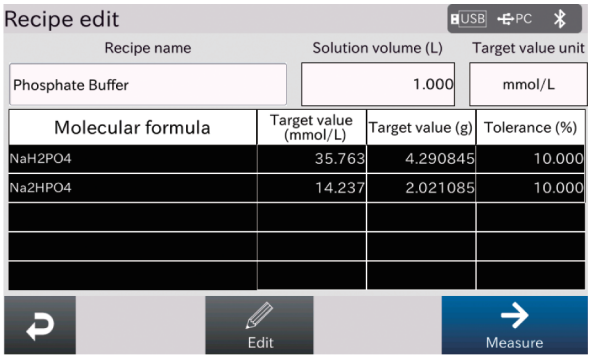


Weighing screen in formulation mode

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).

HPLC mode (for the BA-T series)

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 quantity 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 performs conversion between molar concentration and weight, which is a common source of error when manually calculated.



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 typically used to make buffer solutions are already registered with their molecular weight information by A&D by default. In addition to those samples, up to 30 samples (and 300 recipes as with the formulation mode) can be registered in the balance.

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.

Communication interfaces and connectors

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***7

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®***7*8

⑥ **Ethernet (TCP/IP)***7

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 breeze break doors.

⑧ **Connector for AC adapter**

*7 For the BA-T series only
*8 The Bluetooth® function (GATT/HOGP) is currently enabled for the US, Canada and Japan only.

Specifications

Common

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 refresh rate		5 times/sec or 10 times/sec
Units of measure[*i]		mg (milligram), g (gram), oz (ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), gr (grain), pcs (counting mode), and % (percent mode)
Percent mode	**Minimum 100% reference mass**	10.0 mg
	% readability	0.01%, 0.1%, 1% (depends on the reference mass stored)
Power supply / consumption		AC adapter / approx. 36 VA

BA-T series

		BA-6TE	BA-6DTE	BA-225TE	BA-225DTE	BA-125DTE
Capacity		6.2 g	2.1 g / 6.2 g[*ii]	220 g	51 g / 220 g[*ii]	51 g / 120 g[*ii]
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)[*iii]		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[*iv] **(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[*v]		Approx. 5 g		Approx. 100 g		
Display unit		5-inch WVGA, TFT LCD color touch screen (resistive type) with two IR sensors				
Display language		English, French, German, Italian, Dutch, Spanish, Portuguese, Russian, Korean, Chinese, Japanese				
Counting mode	**Minimum unit mass**	0.1 mg				
	Number of samples	10 to 100 pieces				
Communication interface		RS-232C (D-Sub 9P), USB-A, USB-B (mini B), Ethernet (TCP/IP), External key input × 2, Bluetooth®[*vi]				
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				
	Weighing unit + breeze break unit	173 (W) × 305 (D) × 204 (H) mm		173 (W) × 305 (D) × 284 (H) mm		
	External ionizer	68 (W) × 129 (D) × 162 (H) mm				
Net weight	**Display unit + weighing unit + breeze break unit**	6.2 kg		6.7 kg		
	External ionizer	0.4 kg				
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				

BA series

		BA-6E	BA-6DE	BA-225	BA-225D	BA-125D
Capacity		6.2 g	2.1 g / 6.2 g*ii	220 g	51 g / 220 g*ii	51 g / 120 g*ii
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)*iii		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*iv (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*v		Approx. 5 g		Approx. 100 g		
Display unit		Reverse backlit LCD (main characters: 11 segments, 17.8 mm height)				
Display language		English, French, German, Italian, Dutch, Spanish, Portuguese, Russian, Korean, Chinese, Japanese				
Counting mode	Minimum unit mass	0.1 mg				
	Number of samples	10, 25, 50 or 100 pieces				
Communication interface		RS-232C (D-Sub 9P), USB-B (mini B), External key input × 2				
Applicable weights for calibration test/sensitivity adjustment		5 g, 2 g, 1 g		200 g, 100 g, 50 g, 20 g, 10 g		100 g, 50 g, 20 g, 10 g
Weighing pan size		Ø25 mm		Ø85 mm		
External dimensions	Display unit	182 (W) × 138 (D) × 73 (H) mm				
	Weighing unit + breeze break unit	173 (W) × 305 (D) × 204 (H) mm		173 (W) × 305 (D) × 284 (H) mm		
	External ionizer	68 (W) × 129 (D) × 162 (H) mm		N/A		
Net weight	Display unit + weighing unit + breeze break unit	6.2 kg		6.7 kg		
	External ionizer	0.4 kg		N/A		
Standard accessories		External ionizer × 1*vii, 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** Either tael (Singapore/HK jewelry/Taiwan) or tola can be added upon request.
***ii** Smart range function: Automatically switches between the precision and standard ranges. Changes back to full precision range when the RE-ZERO (tare) operation is implemented.
***iii** Repeatability can worsen depending on the environmental conditions and operator skills.
***iv** Pursuant to the United States Pharmacopeia (USP), Chapter 41
***v** The mass of the internal weight may change over time due to on-site environmental conditions and/or degradation with age.
***vi** The Bluetooth® function (GATT/HOGP) is currently enabled for the US, Canada and Japan only.
***vii** For the 0.001 mg models

For both series

- Internal Weight
- Bi-directional/ Quick USB
- RS-232C Interface
- User Access Control
- GLP Compliant
- Date & Time
- Counting with ACAI
- Percentage Function
- Auto Power ON
- Auto Power OFF
- Underhook
- Universal Flexi Coms
- Static Eliminator*viii

For the BA-T series only

- Touch Screen
- USB Host Interface
- Ethernet (TCP/IP) Interface
- Bluetooth® Interface*vi
- Statistical Calculation

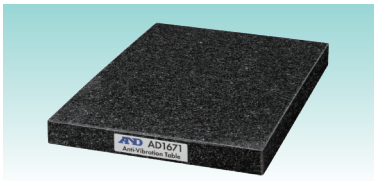
For the BA series only

- Reverse Backlit LCD
- Data Memory Function

***vi** The Bluetooth® function (GATT/HOGP) is currently enabled for the US, Canada and Japan only.
***viii** Optional for the BA-225/225D/125D

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

Demonstration videos available!

A&D Borealis BA-T/BA Series
http://link.aandd.jp/Borealis

A&D Company, Ltd.

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A&D Engineering, Inc. (USA)
URL: andonline.com

A&D Australasia Pty Ltd. (Australia)
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A&D Instruments India (P) Ltd. (India)
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A&D Scientech Taiwan Ltd. (Taiwan)
URL: aandd.com.tw

A&D Instruments Thailand Ltd. (Thailand)
URL: thai.andprecision.com

★BA-T-ADCC-02-PR3-22b