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Radwag AS 60/220.R2 Plus

Radwag AS 60/220.R2 Plus Analytical Balance User Manual

Model: AS 60/220.R2 Plus | Brand: Radwag

1. Introduction

This manual provides comprehensive instructions for the proper installation, operation, and maintenance of your Radwag AS 60/220.R2 Plus Analytical Balance. To ensure accurate measurements and prolong the lifespan of your device, please read this manual thoroughly before use and keep it for future reference.

The Radwag AS 60/220.R2 Plus is a high-precision analytical balance designed for laboratory applications requiring accurate mass determination. It features a dual-range capacity of 60g/220g with a readability of 0.001g, internal calibration, a backlit LCD display, and multiple connectivity options.

2. Safety Information

Observe the following safety precautions to prevent injury and damage to the balance:

- Operate the balance only in a stable, level environment free from vibrations, drafts, and extreme temperature fluctuations.
- Do not expose the balance to corrosive chemicals, excessive moisture, or direct sunlight.
- Ensure the power supply matches the specifications indicated on the balance. Use only the provided power adapter.
- Avoid placing objects heavier than the maximum capacity on the weighing pan.
- Do not attempt to open or repair the balance yourself. Refer all servicing to qualified personnel.
- Keep the balance clean and free from dust and debris.

3. Components Overview

Familiarize yourself with the main components of the AS 60/220.R2 Plus Analytical Balance.



Figure 3.1: Front view of the Radwag AS 60/220.R2 Plus Analytical Balance, showing the display, control panel, weighing pan, and draft shield.

- **Weighing Pan:** The platform where samples are placed for weighing.
- **Draft Shield:** Glass enclosure to protect the weighing pan from air currents.
- **LCD Display:** Backlit screen showing weighing results, units, and operational status.
- **Control Panel:** Buttons for various functions such as On/Off, Tare, Units, Calibration, and navigation.
- **Leveling Feet:** Adjustable feet to ensure the balance is perfectly level.
- **Level Indicator:** Bubble level to assist in proper leveling.



Figure 3.2: Rear view of the balance, highlighting the various communication ports including RS232, USB-A, USB-B, and Ethernet for Wi-Fi module.

4. Setup

4.1 Unpacking

Carefully remove the balance and all accessories from the packaging. Retain the original packaging for potential future transport or storage.

4.2 Placement

Place the balance on a sturdy, level, and vibration-free surface. Ensure the location is free from drafts, direct sunlight, heat sources, and strong electromagnetic fields. Maintain a stable ambient temperature.

4.3 Assembly

1. Place the weighing pan support onto the balance.

2. Carefully place the weighing pan onto the support.
3. Assemble the glass draft shield components around the weighing pan. The dual-CLICK system allows for tool-free assembly and disassembly.

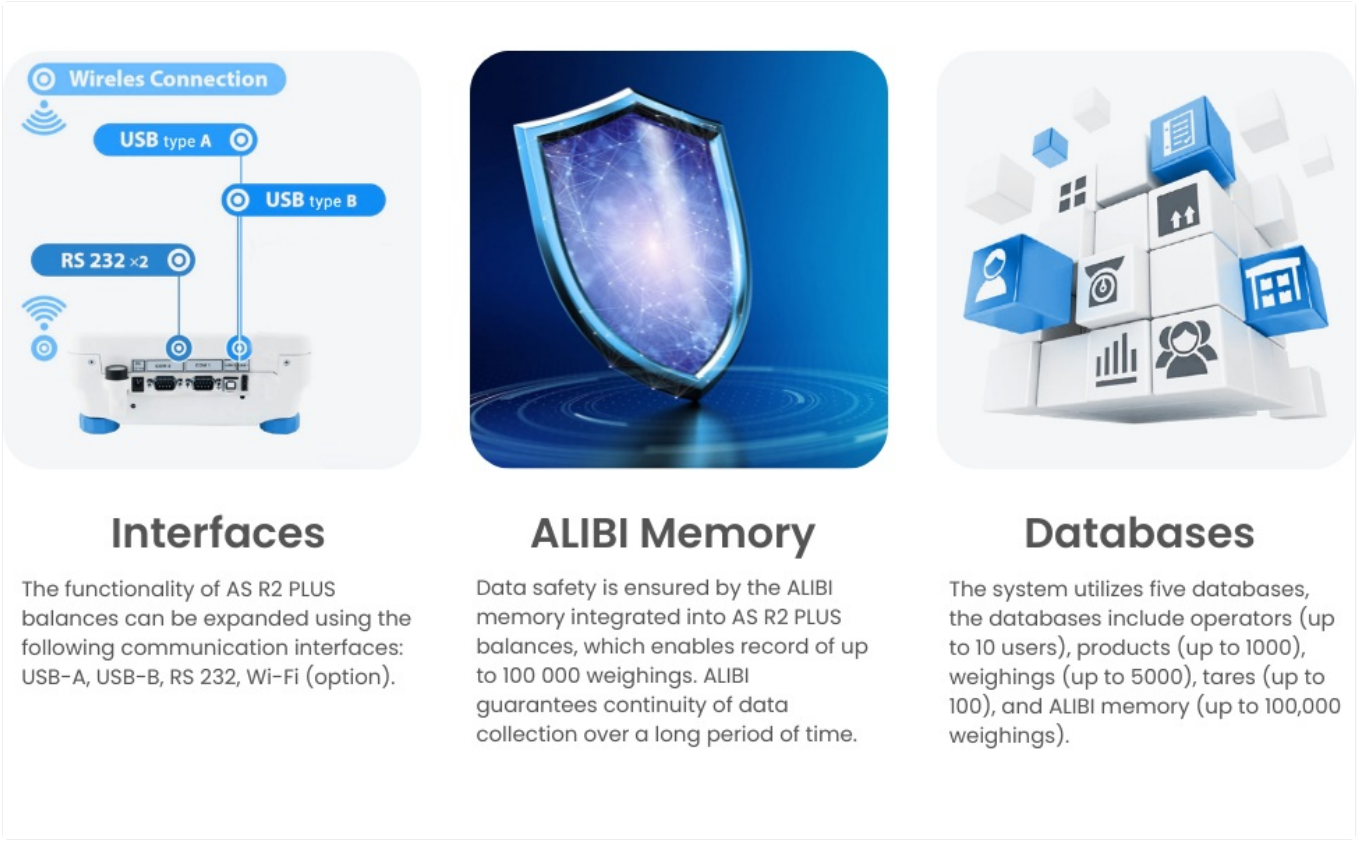

Figure 4.1: Illustration of the ergonomic mechanical design, showing the spacious weighing chamber and tool-free assembly of the draft shield.

4.4 Power Connection

Connect the provided power adapter to the balance and then to a suitable power outlet. Allow the balance to warm up for at least 30 minutes after connecting power for optimal stability and accuracy.

4.5 Leveling System

The balance must be perfectly level for accurate measurements. Use the adjustable leveling feet and the built-in level indicator (bubble level) to achieve a level position. Adjust the feet until the bubble is centered within the indicator.

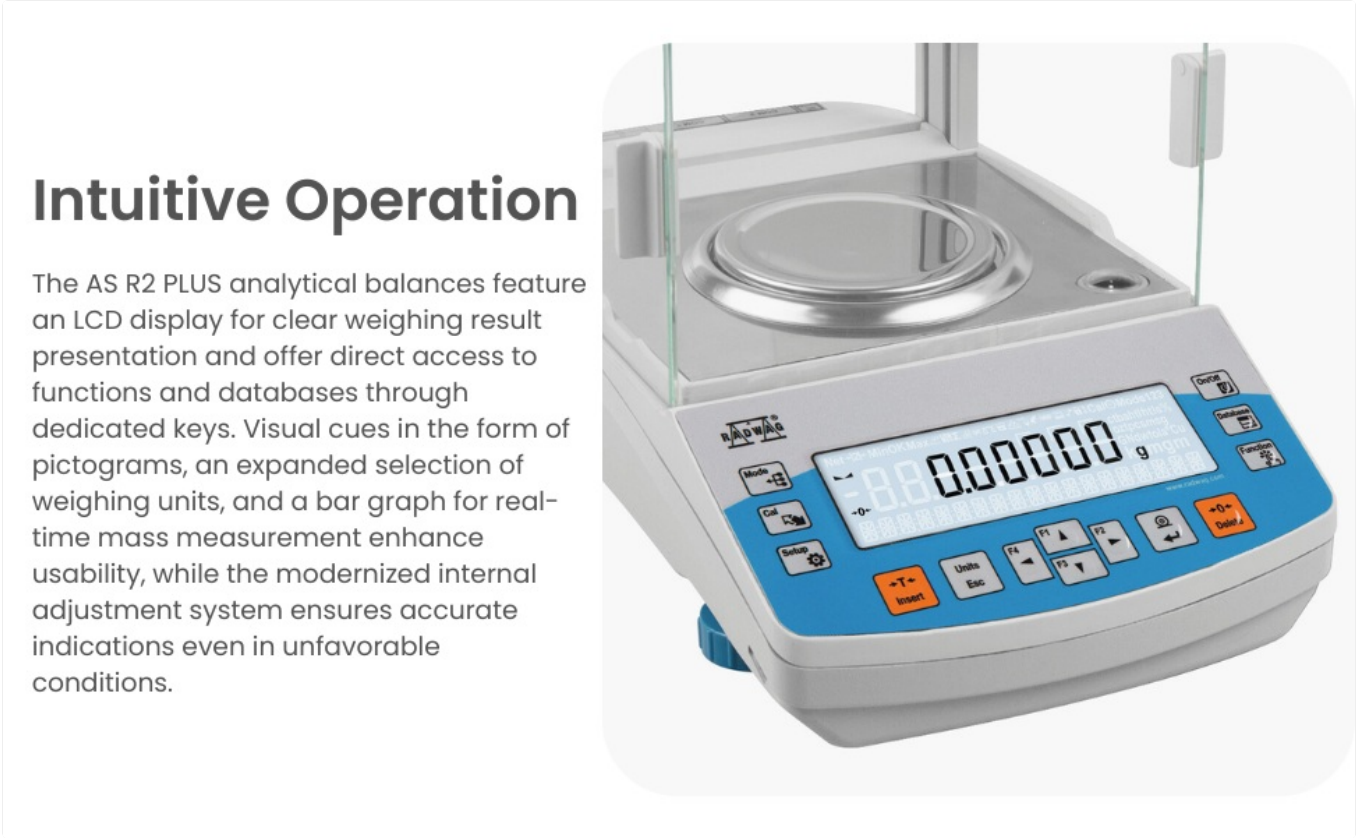

Figure 4.2: Diagram illustrating the leveling device located at the front of the weighing chamber, simplifying the leveling process with two adjustable supporting points.

5. Operation

5.1 Powering On/Off

- **To Power On:** Press the **On/Off** button. The balance will perform a self-test.
- **To Power Off:** Press and hold the **On/Off** button until the display turns off.

5.2 Basic Weighing

1. Ensure the balance is level and stable.
2. Press the **Zero** button to set the display to zero before placing any sample.
3. Carefully place the item to be weighed on the center of the weighing pan.
4. Wait for the reading to stabilize. The stable reading will be displayed.
5. **Tare Function:** To weigh a sample in a container, place the empty container on the pan and press the **Tare** button. The display will return to zero. Then add the sample to the container, and the display will show the net weight of the sample.



Figure 5.1: Display and control panel, illustrating the clear weighing result presentation and direct access to functions via dedicated keys.

5.3 Internal Calibration

The AS 60/220.R2 Plus features internal calibration, which ensures accuracy without external weights. It is recommended to perform internal calibration regularly, especially after moving the balance or significant temperature changes.

1. Ensure the weighing pan is empty and the draft shield is closed.
2. Access the calibration menu (refer to the on-screen prompts or specific button combination, typically a dedicated**Cal** or **Function** button).
3. Select "Internal Calibration" and confirm. The balance will automatically perform the calibration process using its internal weights.
4. Wait for the calibration to complete and the balance to return to weighing mode.

5.4 Changing Weighing Units

Press the **Units** button to cycle through available weighing units (e.g., grams, milligrams, ounces). The currently selected unit will be displayed on the screen.

5.5 Connectivity

The balance offers various interfaces for data transfer and peripheral connection:

- **2x RS232:** For connecting to printers or computers.
- **2x USB-A:** For connecting USB devices like flash drives or keyboards.
- **USB-B:** For connecting to a computer.
- **Wi-Fi (optional):** For wireless data transfer and printing.



Figure 5.2: Diagram showing the various communication interfaces available on the balance, including USB-A, USB-B, RS232, and Wi-Fi connection points.

Your browser does not support the video tag.

Video 5.1: This video demonstrates the use of a Radwag Wi-Fi Thermal Printer with Radwag balances, showcasing how to easily print measurement data wirelessly. The video highlights the printer's setup and its compatibility with various Radwag balance models, including the R2 series.

5.6 Database Functions

The balance system includes databases for managing operational data:

- **Operators:** Up to 10 users can be registered.
- **Products:** Up to 1000 product entries.
- **Weighings:** Stores up to 5000 weighing records.
- **Tares:** Up to 100 tare values.
- **ALIBI Memory:** Ensures data safety and continuity for up to 100,000 weighings.

6. Maintenance

6.1 Cleaning

Regular cleaning is essential for maintaining accuracy and hygiene.

- Always disconnect the balance from the power supply before cleaning.
- Use a soft, damp cloth with a mild, non-abrasive cleaning agent. Do not use harsh chemicals or solvents.
- Remove the weighing pan and draft shield components for separate cleaning.
- Ensure no liquid enters the balance housing.
- Dry all components thoroughly before reassembly and use.

6.2 Care and Storage

- When not in use, keep the draft shield closed to protect the weighing system.
- Store the balance in a clean, dry, and temperature-controlled environment.
- Avoid dropping or subjecting the balance to sudden shocks.

7. Troubleshooting

This section addresses common issues you might encounter. For problems not listed here, contact Radwag customer support.

Problem	Possible Cause	Solution
Balance does not power on.	No power supply; faulty power adapter.	Check power cable connection; ensure outlet is functional; try a different power adapter if available.
Inaccurate or unstable readings.	Not level; drafts; vibrations; temperature fluctuations; needs calibration.	Level the balance; close draft shield; move to a stable location; allow warm-up time; perform internal calibration.
Display shows "OVERLOAD".	Weight exceeds maximum capacity.	Remove excess weight immediately.
Communication error with peripheral.	Incorrect cable; incorrect settings; driver issue.	Verify cable connections; check communication settings on both devices; install necessary drivers.

8. Specifications

Key technical specifications for the Radwag AS 60/220.R2 Plus Analytical Balance:

- **Model:** AS 60/220.R2 Plus
- **Max Capacity:** Dual Range: 60g / 220g
- **Readability (d):** 0.001g
- **Readability (e):** 0.001g
- **Pan Size:** 90 mm diameter
- **Class:** I (NTEP - Legal For Trade)
- **Display:** Backlit LCD
- **Calibration:** Internal Automatic Calibration
- **Interfaces:** 2x RS232, 2x USB-A, USB-B, Wi-Fi (optional)
- **Product Dimensions:** 14 x 8 x 14 inches
- **Weight:** 15 Pounds
- **Special Features:** Automatic Zero Tracking (AZT), Initial Zero Setting Mechanism (IZSM), Semi-Automatic Zero (Push Button), Multiple Tare Memories, Programmable Tare, Semi-Automatic Tare (Push Button), Single Range, Multi-Range, Power Saving Feature (Sleep Mode).
- **Temperature Range:** 10°C to 40°C (50°F to 104°F)

NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:
Non-Computing Scale
Digital, Electronic
Model: AS xx.X2 PLUS Series and AS xx.R2 PLUS Series
n_{max}: 60 000 to 310 000 (See Table Page 2)
e_{min}: 0.001 g (See Table Page 2)
Capacity: 60 g to 310 g (See Table Page 2)
Accuracy Class: I

Submitted By: Contact Info. Updated October 2022
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Standard Features and Options

- Automatic Zero Tracking (AZT)
- Initial Zero Setting Mechanism (IZSM)
- Semi-Automatic Zero (Push Button)
- Multiple Tare Memories
- Programmable Tare
- Semi-Automatic Tare (Push Button)
- Single Range
- Multi-Range
- Automatic Internal Calibration
- Semi-Automatic Internal Calibration (Push Button)
- AC Power
- Power Saving Feature (Sleep Mode)
- Liquid Crystal Display
- Touch Screen Display (AS X2 PLUS only)
- RS 232 Communication Port
- USB Communication Ports
- Ethernet Communication Port
- WiFi

Temperature Range: 10° C to 40° C (50° F to 104° F)

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Hal Prince
Chairman, NCWM, Inc.

Craig VanBuren
Committee Chair, NTEP Committee
Issued: August 19, 2020

1135 M Street, Suite 110 / Lincoln, Nebraska 68508

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Figure 8.1: Page 1 of the NTEP Certificate of Conformance for Radwag AS xx.R2 PLUS series, detailing standard features and options.

Radwag USA, LLC
Non-Computing Scale / AS xx.X2 PLUS Series and AS xx.R2 PLUS Series

Model	Capacity	e (g)	d (g)	n_{max}	Pan Size (mm) Max. Diameter	Class
AS 62.X2 PLUS AS 62.R2 PLUS	62 g	0.001 g	0.00001 g	62 000	90 mm	I
AS 120.X2 PLUS AS 120.R2 PLUS	120 g	0.001 g	0.00001 g	120 000	90 mm	I
AS 60/220.X2 PLUS AS 60/220.R2 PLUS	60/220 g	0.001 g	0.00001 g / 0.0001 g	60 000 / 220 000	90 mm	I
AS 82/220.X2 PLUS AS 82/220.R2 PLUS	82/220 g	0.001 g	0.00001 g / 0.0001 g	82 000 / 220 000	90 mm	I
AS 110.X2 PLUS AS 110.R2 PLUS	110 g	0.001 g	0.0001 g	110 000	100 mm	I
AS 160.X2 PLUS AS 160.R2 PLUS	160 g	0.001 g	0.0001 g	160 000	100 mm	I
AS 220.X2 PLUS AS 220.R2 PLUS	220 g	0.001 g	0.0001 g	220 000	100 mm	I
AS 310.X2 PLUS AS 310.R2 PLUS	310 g	0.001 g	0.0001 g	310 000	100 mm	I

Application: For use in general purpose weighing applications.

Identification: The required information appears on a self-destructive label located on the left side of the unit base. Other required information appears on the front of the unit, "The Counting Feature Not Legal for Trade" or "Counting Feature for Prescription Filling Only", with the Minimum Piece Weight (MPW) and the Minimum Sample Size (MSS).

Sealing: The device is physically sealed by applying a pressure sensitive, tamper proof seal over the enclosure screw located on the bottom of the unit.

Test Conditions: Three units, models AS 310.X2 PLUS, AS 60/220.R2 PLUS and AS 82/220.R2 PLUS, were submitted for evaluation. The emphasis of the evaluation was on device design, performance, operation, marking requirements, compliance with influence factors, and verifying that the indicated piece count value complies with the tolerances in Table T.N.3.10. Several increasing/decreasing load and shift tests were conducted. The scales were tested over a temperature range of 10° C to 40° C (50° F to 104° F). A load of approximately one-half capacity was applied to the scales at least 100,000 times with the scale being tested periodically during this time. Tests were conducted using 100V AC and 130V AC power supplies.

Figure 8.2: Page 2 of the NTEP Certificate of Conformance, providing a table of capacities and readabilities for various AS xx.R2 PLUS models, including the 60/220.R2 PLUS.

9. Warranty and Support

Radwag products are manufactured to high-quality standards. This product is covered by a manufacturer's warranty against defects in materials and workmanship. For specific warranty terms, duration, and conditions, please refer to the warranty card

included with your product or contact Radwag customer support.
For technical assistance, troubleshooting, or service inquiries, please visit the official Radwag website or contact your local distributor. Ensure you have your model number and serial number available when seeking support.
You can find more information and support at the Radwag Store on Amazon.

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

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