



FZ(-WP)/FX(-WP) Series

Compact, Durable Analytical/Precision Balances

Introducing A&D Weighing's Fortis Series Analytical/Precision Balances

Using A&D Weighing's new Compact Super Hybrid Sensor (C-SHS), the Fortis (FX/FZ) series sets the standard for compact, portable, high-performance weighing in a variety of environments and applications. The series features IP65 ratings; compact, rotary breeze break; internal overload protection; and a variety of connection and measurements modes to suit your workflow.

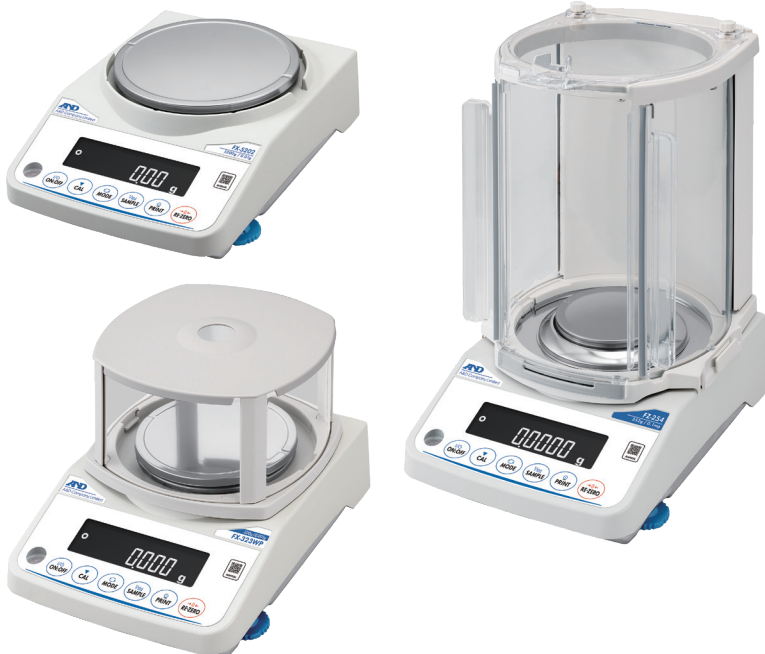


Product Features

- Compact Super Hybrid Sensor (C-SHS) for a smaller, more portable footprint
- IP65 Rated for dustproof and waterproof performance in all environments (WP Models Only)
- Internal Overload Protection guards the sensor from adverse effects of static overloading
- Various Application Modes including parts counting, % weighing, comparator with buzzer, underhook, and density
- Air Pump Controlled Internal Weight for sensitivity adjustment

User Benefits

- Small Footprint to fit anywhere in your workplace
- Lightweight Portability to allow you to take the scale anywhere you need measurements
- Underhook Weighing to enable hanging measurements
- Multiple Connection Modes including RS-232 and USB (Standard) and Ethernet and Bluetooth® (Optional)
- LCD Display with clear, white backlight and easy-to-read character height



Compact and Durable for Research and Industrial Applications

Compact Super Hybrid Sensor (C-SHS)

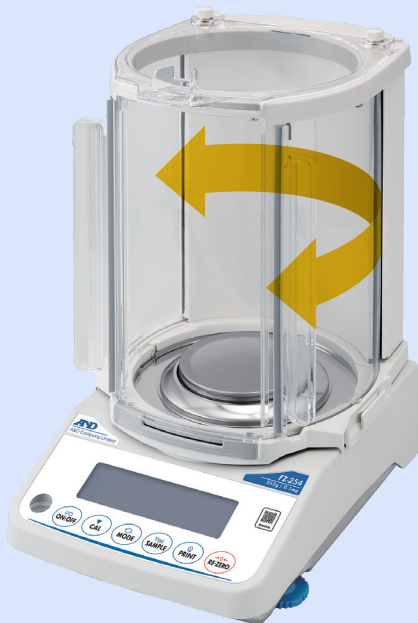
With a smaller weighing sensor than traditional EMFC, Fortis is designed to be the most compact and portable balance possible, maximizing usefulness in even the smallest of spaces, including those in in-line systems.

Meanwhile, Fortis' structure has been upgraded to deliver faster stabilization and higher resolution for efficient, precise weighing.

Large Rotary Breeze Break (for 0.0001 g Models)

Unlike conventional analytical balances, A&D Fortis requires no extra space at the rear for accessing the weighing chamber, as the doors simply rotate behind the balance. Moreover, the breeze break can be easily removed from the balance allowing fast, simple cleaning and use in confined spaces such as gloveboxes and controlled environment cabinets.

The antistatic-coated plastic is also shatter-resistant and meets glass-free requirements for food/drug production lines.



Rotary sliding doors



Easily-removable breeze break

IP65 Dust and Waterproof (FZ-WP/FX-WP)

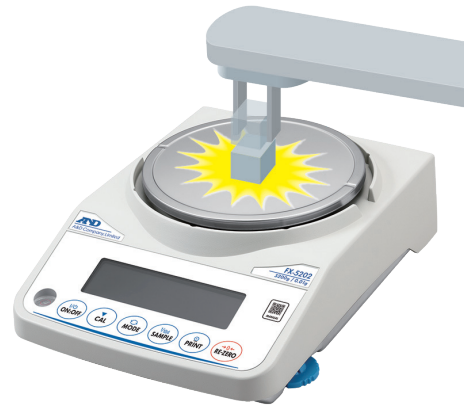
The FZ-WP/FX-WP series, which are IP65-rated, permit no ingress of dust, and can withstand water projected from any direction, as defined by the IEC/EN standard 60529. This makes the balance highly suitable for work with liquid or powder materials, or use in dusty/wet environments, with no need to worry.



Impact Shock Detection (ISD)

Impact-Alert

ISD detects impact loads on the weight sensor and triggers an audible alert for oversized loads. This helps reduce impact, minimize measurement errors and prevent sensor damage.



New Features Exclusive to FZ Models

Air-Pump Controlled Internal Weight (FZ/FZ-WP)

For the internal sensitivity adjustment of the FZ/FZ-WP series, A&D adopted a direct-driving method with a balloon-like actuator that utilizes air pressure. It features a simple structure, high reliability and a fail-safe mechanism—the internal weight returns to the original position even if the adjustment is interrupted.

One-Touch Sensitivity Adjustment (FZ/FZ-WP)

With just one key press, the balance loads and unloads the internal weight to correct inaccuracy quickly. This is useful for daily management of balance performance, for situations where the location changes often, or for variable temperature environments.

Internal Weight Value Correction (FZ/FZ-WP)

If the internal weight value varies over time, it can be corrected either by loading an external reference weight or by manually inputting a correction value.



Connect Your Way

RS-232C (D-Sub 9-pin) Interface Standard

Allows Bi-directional serial communication with an external device, such as a printer or PLC, a 5-meter waterproof RS-232C cable (AX-KO2737-500) can be purchased separately.

USB Interface (FX-05, Standard)

The USB interface can be toggled between Quick USB mode (plug-and-play with weighing data output to a PC only) and Virtual COM mode (for bi-directional communication¹). A USB cable (1.8 m) is supplied as standard².

1. Installation of dedicated driver software is required for Windows 8.1 or earlier.

2. The FZ-WP/FX-WP series are still IP65 when the provided USB cable is connected to the USB interface

Ethernet (TCP/IP) Interface (FXi-08, Optional)

The Ethernet (TCP/IP) interface is suitable for connecting multiple balances to a PC via an Ethernet hub.³ WinCT-Plus software is also provided for free.

3. The FZ-WP/FX-WP series are not IP65 with FXi-08.

Bluetooth® Interface (GXA-27, Optional)

Bluetooth® interface allows wireless communication between the balance and a Bluetooth-enabled device, such as PC, smartphone, or tablet computer⁴. For smartphones/tablet computers, a communication app “A&D WeiV” is available as a free download.

4. Please contact your local A&D representative to find out whether GXA-27 is certified for compliance with Bluetooth communication laws in your country.

Options

FXi-08 ^{5/6}	Ethernet (TCP/IP) interface
FXi-09 ^{5/6}	Built-in rechargeable battery
FX-10	Small breeze break
FX-11	Large breeze break
FXi-12	Animal weighing pan (for 0.01 g models)
FXi-15	Carrying case (for 0.001/0.01 g models)
GXA-27 ⁵	Bluetooth® interface
AD-1654	Density determination kit
AD-1683A	Static eliminator
AD-1684A	Electrostatic field meter
AD-1687	Weighing environment logger
AD-1688	Weighing data logger
AD-1689	Tweezers for calibration weight
AD-8129TH	Compact thermal printer
AD-8526	RS-232C/Ethernet (TCP/IP) converter
AD-8527	Quick USB adapter
AD-8541-PC	Bluetooth® dongle for PC
AD-8552EIP	RS-232C to EtherNet/IP converter
AD-8920A	Remote display
AD-8922A	Remote controller

AD-8923-CC	Remote controller (CC-Link)
AD-8923-BCD	Remote controller (BCD)
AX-FXi-31	Main unit cover (5 pcs)
AX-KO2737-500	Waterproof RS-232C cable (5 m)
AX-USB-9P	RS-232C/USB converter with cable



5. Only one of FX-05, FXi-08, GXA-27, or FXi-09 can be installed.

6. The FZ-WP/FX-WP series are not IP65 with FXi-08 or FXi-09

Specifications		FZ-104 FX-104	FZ-154 FX-154	FZ-254 FX-254
Capacity x Readability		102 g x 0.0001 g	152 g x 0.0001 g	252 g x 0.0001 g
Repeatability (std. deviation) ⁱⁱ		0.0001 g		0 to 200 g: 0.0001 g 200 to 250 g: 0.0002 g
Minimum weight ⁱⁱⁱ (typical)		140 mg		
Linearity		±0.0002 g		±0.0003 g
Stabilization time (typical when set to FAST)		Approx. 2 secs		
Sensitivity drift		±2 ppm / °C (10 to 30 °C / 50 to 86 °F)		
Operating environment		5 to 40 °C (41 to 104 °F), 85 % RH or less (no condensation)		
Display refresh rate		5 times / second, 10 times / second or 20 times / second		
Units of measure ^{iv}		mg (milligram), g (gram), oz (ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), gr (grain), pcs (counting mode), % (percent mode), DS (density mode), and a user-programmable unit		
Counting mode	Minimum unit mass	0.0001 g		
	Number of samples	5, 10, 25, 50 or 100 pieces		
Percent mode	Minimum 100% reference mass	0.0100 g		
	% readability	0.01%, 0.1% or 1% (depends on the reference mass stored)		
Standard communication interface		RS-232C (D-Sub 9-pin), USB		
Internal sensitivity adjustment method		Air-pump controlled, direct-driving method (for FZ only)		
Applicable weight value for sensitivity adjustment		50 g 100 g	50 g 100 g 150 g	50 g 100 g 200 g 250 g
Weighing pan size		Ø90 mm / 3.54 in		
External dimensions (WxDxH)		198 x 294 x 315 mm / 7.80 x 11.57 x 12.4 in (with the large breeze break)		
Net weight		FZ: approx. 3.9 kg / 8.6 lb, FX: approx. 3.5 kg / 7.7 lb		
Power supply / consumption		AC adapter / approx. 30 VA		
Standard accessories		Large breeze break x 1, Main unit cover x 1, AC adapter x 1		

i. Smart range function: Automatically switches between the precision and standard ranges, and recovers the full precision range as the tare operation is performed.

ii. Repeatability can worsen depending on the environmental conditions and operator skills.

iii. Pursuant to the United States Pharmacopeia (USP), Chapter 41

iv. One additional unit from tael (Singapore/HK jewelry/Taiwan/China), tola or Newton can be added upon request.

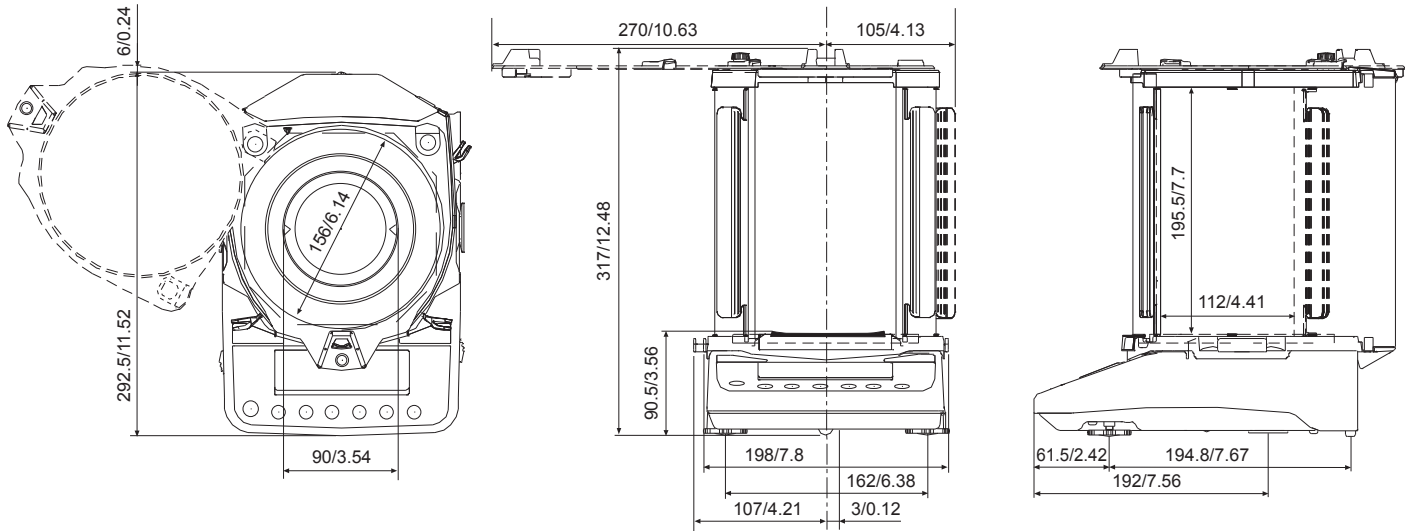
v. For the 0.001/0.01 g models of the FZ/FZ-WP series and the 0.001 g models of the FX/FX-WP series.

Specifications

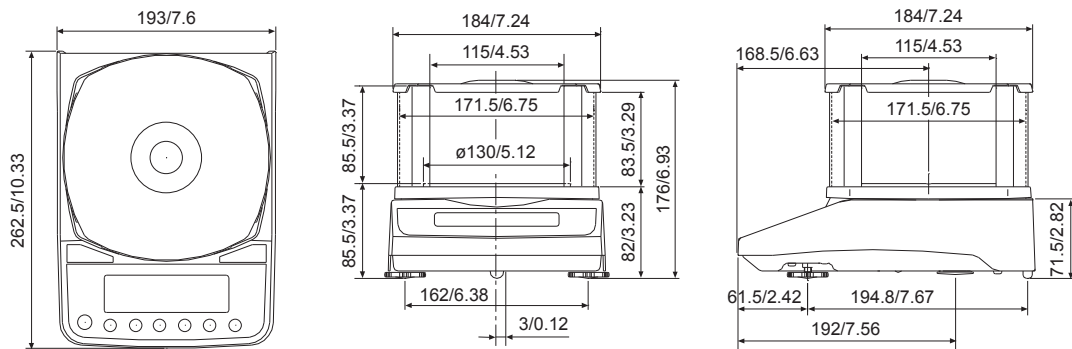
		FZ-123 FX-123 FZ-123WP FX-123WP	FZ-223 FX-223 FZ-223WP FX-223WP	FZ-323 FX-323 FZ-323WP FX-323WP	FZ-523 FX-523	FZ-1202 FX-1202 FZ-1202WP FX-1202WP	FZ-2202 FX-2202 FZ-2202WP FX-2202WP	FZ-3202 FX-3202 FZ-3202WP FX-3202WP	FZ-5202 FX-5202
Capacity x Readability		122 g x 0.001 g	220 g x 0.001 g	320 g x 0.001 g	520 g x 0.001 g	1220 g x 0.01 g	2200 g x 0.01 g	3200 g x 0.01 g	5200 g x 0.01 g
Repeatability (std. deviation) ⁱⁱ		0.001 g				0.01 g			
Minimum weight ⁱⁱⁱ (typical)		FZ/FX: 1.4 g FZ-WP/FX-WP: 1.8 g				FZ/FX: 14 g FZ-WP/FX-WP: 18 g			
Linearity		±0.002 g				±0.02 g			
Stabilization time (typical when set to FAST)		Approx. 1 sec							
Sensitivity drift		±2 ppm / °C (10 to 30 °C / 50 to 86 °F)							
Operating environment		5 to 40 °C (41 to 104 °F), 85 % RH or less (no condensation)							
Display refresh rate		5 times / second, 10 times / second or 20 times / second							
Units of measure ^{iv}		g (gram), oz (ounce), lb (pound), lb-oz (pound-ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), gr (grain), pcs (counting mode), % (percent mode), DS (density mode), and a user-programmable unit							
Counting mode	Minimum unit mass	0.001 g				0.01 g			
	Number of samples	5, 10, 25, 50 or 100 pieces							
Percent mode	Minimum 100% reference mass	0.100 g				1.00 g			
	% readability	0.01%, 0.1% or 1% (depends on the reference mass stored)							
Standard communication interface		RS-232C (D-Sub 9-pin), USB							
Applicable weight value for sensitivity adjustment		50 g 100 g	50 g 100 g 200 g	50 g 100 g 200 g 300 g	50 g 100 g (100 g interval) 500 g	500 g 1000 g	500 g 1000 g 2000 g	500 g 1000 g 2000 g 3000 g	500 g 1000 g (1000 g interval) 5000 g
Weighing pan size		Ø130 mm / 5.12 in				Ø150 mm / 5.91 in			
External dimensions (WxDxH)		193 x 262.5 x 85.5 mm / 7.60 x 10.33 x 3.37 in 193 x 262.5 x 176 mm / 7.60 x 10.33 x 6.93 in (with the small breeze break)							
Net weight		FZ: approx. 3.0 kg / 6.6 lb, FX: approx. 2.5 kg / 5.5 lb, FZ-WP: approx. 3.2 kg / 7.1 lb, FX-WP: approx. 2.7 kg / 6.0 lb							
Dust and waterproof rating		IP65 (for FZ-WP/FX-WP only)							
Power supply / consumption		AC adapter / approx. 30 VA							
Standard accessories		Small breeze break x 1 ^v , Main unit cover x 1, AC adapter x 1							

Dimensions (mm/inches)

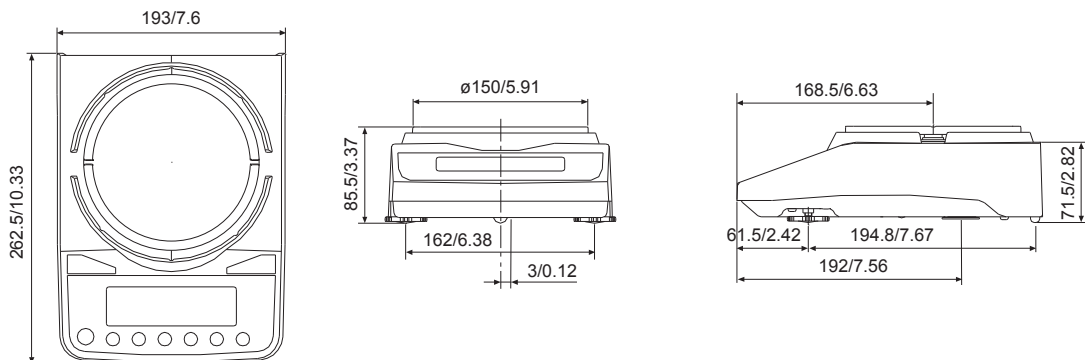
0.0001 g models



0.001 g models



0.01 g models^{vi}



vi. A small breeze break is provided as standard for the 0.01 g models of the FZ/FZ-WP series as well.