High-Capacity Precision Balances

A&D Apollo

High Capacity

GX-M/GF-M Series

GF-32001M

GX-32001M

ISO 9000 CERTIFIED

Taking Weighing Precision and Protection to New Heights

A&D Company, Ltd.

Discover Precision

www.aandd.jp

High Capacity and Precision With Safeguards Against Various “Accidents”

The occurrence of accidents, such as those that follow, whether expected or unexpected, can cause serious damage to your balance or problems with your measurements. The new A&D Apollo High Capacity, GX-M/GF-M series, is designed to provide excellent protection from these accidents, preventing loss due to downtime while also guaranteeing maximum productivity.

Common accident in weighing 1: Spillage

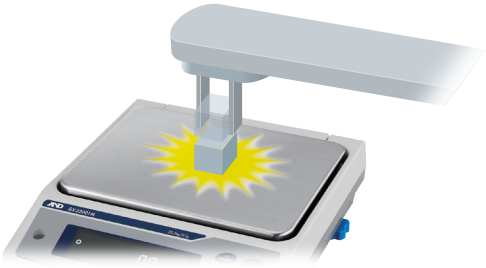
Weighing of powder or liquid materials for filling, formulating, etc., always carries a risk of spillage, which could damage the balance.

IP65 dust and waterproof

A&D Apollo High Capacity balances, 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.

Common accident in weighing 2: Impact shocks

The weight sensor of a high-precision balance will be damaged if continually affected by loads with acceleration (impact shocks). This typically occurs in factories where objects are placed roughly by machines or thrown by operators onto balances. In addition, impact shocks can easily shift values and cause errors.



Impact shock detection (ISD)

Impact-Alert

A&D Apollo High Capacity balances visualize the magnitude of impact shocks received by the weight sensor at four levels. Also, one beep is emitted if a Level 3 shock is received, and two beeps are emitted if a Level 4 shock is received (both of which should be avoided).

No impact shock | Level 1 | Level 2 | Level 3 | Level 4

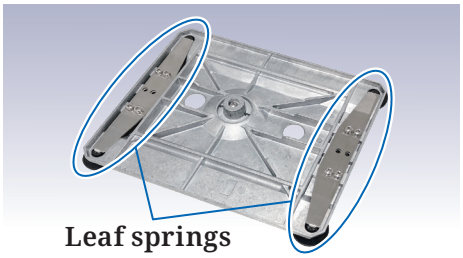
Shock-Log

While the power is on, up to 50 impacts of Level 3 and Level 4 will be stored in the balance with a timestamp (and log-in user information when the password lock function is used).*1 This function is especially beneficial for quality managers, as it enables them to check and show how their balances were treated during use.

*1 Data will then be overwritten in order from the weakest impact.

Cushioning mechanism

The two leaf springs that support the weighing pan mitigate impact shocks significantly.



Common accident in weighing 3: Power failure

Power supply may be interrupted suddenly in the middle of measurement, spoiling your work.

Tare memory

When this function is activated, the tare value is saved in non-volatile memory, and the net value displayed before the power failure occurred is restored once the balance is turned on again. This also allows for the balance to be turned off during weigh-in or loss-in-weight measurement when necessary.

Auto power ON/OFF

The weighing mode display is automatically activated when AC power is supplied, so there is no need to press the ON/OFF key as the power comes back on, which is useful when the balance is part of an automated weighing system. Meanwhile, the balance can be set to switch off the display automatically after 10 minutes of inactivity to save power.

Common accident in weighing 4: Misuse

People may touch the balance and change its configuration or sensitivity without permission.

User access control (UAC) and key lock

A&D Apollo High Capacity balances can be password-protected in two ways: The first way is to limit use to authorized individuals (up to 11 including one administrator—the administrator can perform all operations while other users are limited to measurements and calibration*2 only) by setting a password for each user. The second way is to set a password for just the administrator, allowing anyone else to use the balance without entering a password, but for measurements and calibration*2 only.

Moreover, upon receiving a command to disable its keys, the balance becomes operable only by sending commands from an external device, such as a PC.

*2 The administrator can inhibit calibration also so that others can perform measurements only.

Accuracy and precision management

Automatic self calibration (ASC)*3

To ensure accuracy at all times, models with an internal weight (i.e. GX-M series) can be set to calibrate themselves automatically either (1) in response to change in ambient temperature to prevent error due to sensitivity drift, (2) at a set interval time, or (3) at predetermined (up to three) times of the day. Internal calibration can also be performed any time with one key press.

∗3 Available for the GX-M series

Automatic precision assessment (APA)

In APA, the balance first makes quick diagnoses on whether there is a critical failure (Dia-Check), and then shows a repeatability test result (Standard Deviation) as well as the minimum weight (QuickMin-S) calculated using an electronically controlled load (ECL).*4 It only takes 1.5 minutes and can be readily included in a daily check SOP.

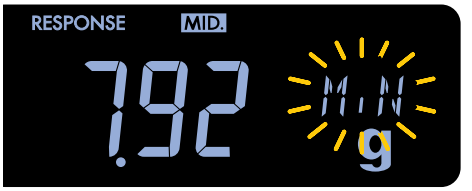
∗4 ECL is A&D's patented technology of generating a minute load (0.3 to 3% of the balance capacity) by purposely altering the equilibrium state of the electromagnetic force restoration sensor.

Automatic minimum weight calculation and implementation

You can enter the minimum weight into the balance by either direct key input, using the result of QuickMin-S, or having the balance calculate it from 10 repeated measurements of an actual, external weight (the tolerance can be set to either 0.1% pursuant to USP Chapter 41, or 1%).

Further, to ensure that the measured sample amount meets the minimum weight requirement, the balance can display an alert until the sample amount reaches the value entered as the minimum weight (Min-S Alert).*5

∗5 Only when g is selected as the unit of measure



Blinking minimum weight alert

Data output/communication

RS-232C and USB interfaces as 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 communication*6) using the internal settings. A USB cable (1.8 m) is provided as standard.

∗6 For PCs with a Windows version other than Windows 10, a special driver downloaded from the A&D website needs to be installed.

Universal Flexi Coms (UFC)

This function enables customization of printout content and layout by editing and sending commands to the balance (a dedicated software, WinCT-UFC, is available as a free download). Following the commands, the balance creates data to be output to either a printer capable of dump printing, such as the AD-8127 compact printer, or a commercially-available label printer*7 for barcode printing.

*7 A label printer that supports ZPL or ZPL II (ZPL and ZPL II are registered trademarks of ZIH Corp.)

Gross/Net/Tare output

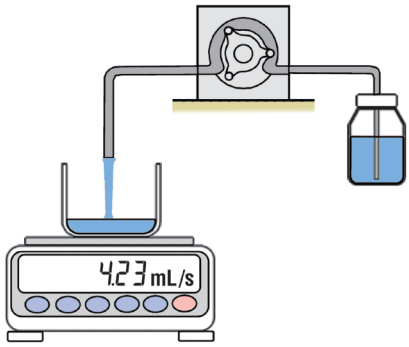
Upon receiving a command, or with key operation, the balance can also output the gross, net, and tare values.

Special application function

Flow rate display (FRD)

FR-Cal

The balance can calculate and display/output the mass flow rate (the unit of measure can be selected from g/s, g/m or g/h), or the volume flow rate (mL/s, mL/m or mL/h) by entering the density of the material,*8 by itself. This function makes flow rate measurement much easier and more precise than manual calculation using a stopwatch. A dedicated graphing software, WinCT-FRD, is available as a free download.



*8 Up to 10 densities can be saved to the balance.

FR-Compare

The balance indicates whether the flow rate is maintained within the designated limits (either 3 levels or 5 levels). The results can be output using the optional GXM-04 interface.

Options

GXM-04*9*10	**Comparator relay output/buzzer/RS-232C/external key input interface**
GXM-06*9*10	**Analog (0-1/0.2-1 V) output/RS-232C interface**
GXK-012	**Animal weighing pan**
GXK-015	**Carrying case**
GXM-27*9*11	**Bluetooth® interface**

*9 Only one of GXM-04, GXM-06, GXM-27, or the standard (RS-232C and USB) interfaces can be used.

*10 The GX-M/GF-M series are not IP65 with GXM-04 or GXM-06.

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

Accessories

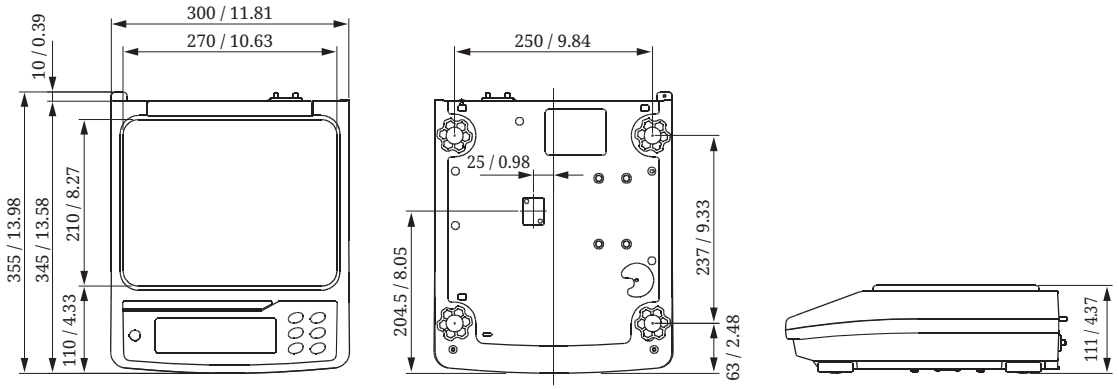
AD-1682	**Rechargeable battery unit**	**AD-8526**	**Serial/Ethernet (TCP/IP) converter**
AD-1683	**Static eliminator**	**AD-8920**	**Remote display**
AD-1684A	**Electrostatic field meter**	**AD-8922A**	**Remote controller**
AD-1687	**Weighing environment logger**	**AX-USB-9P**	**Serial/USB converter with cable**
AD-1688	**Weighing data logger**	**AX-KO2737-500**	**Waterproof RS-232C cable (5 m)**
AD-8127	**Compact printer**		

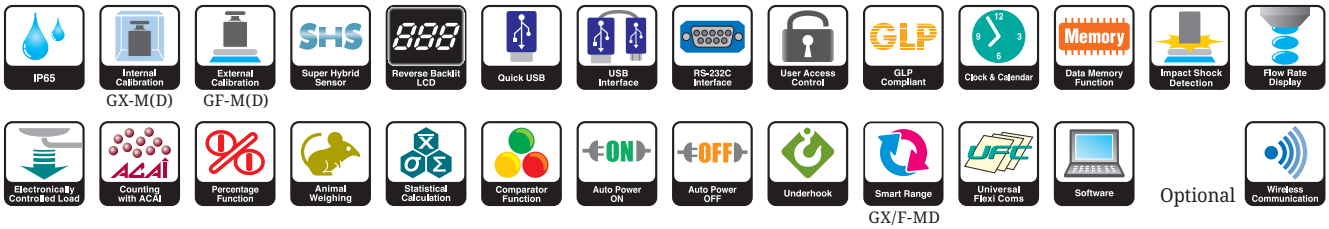
Specifications

Models	GX-[illegible]02M / GF-[illegible]02M	GX-[illegible]02MD / GF-[illegible]02MD	GX-10202M / GF-[illegible]02M	GX-12001M / GF-[illegible]01M	GX-22001M / GF-[illegible]001M	GX-32001M / GF-[illegible]01M	GX-[illegible]01MD / GF-[illegible]01MD
Capacity	8.2 kg	2.2 kg / 8.2 kg*i	10.2 kg	12.2 kg	22.2 kg	32.2 kg	6.2 kg / 32.2 kg*i
Readability	0.01 g	0.01 g / 0.1 g*i	0.01 g	0.1 g			0.1 g / 1 g*i
Repeatability (standard deviation)	0.01 g	0.01 g / 0.05 g	0.01 g	0.1 g			0.1 g / 0.5 g
Linearity	±0.03 g	±0.02 g / ±0.1 g	±0.03 g	±0.2 g			±0.2 g / ±1 g
Stabilization time (typical when set to FAST)	Approx. 1.5 seconds						
Sensitivity drift (10 to 30 °C/50 to 86 °F, when automatic self calibration is OFF)	±2 ppm/°C	±3 ppm/°C	±2 ppm/°C	±3 ppm/°C			±5 ppm/°C
Accuracy immediately after internal ca libration (for the GX-M series)*ii	±0.15 g	±0.3 g	±0.15 g	±1.0 g		±1.5 g	±3 g
Operating environment	5 to 40 °C (41 to 104 °F), 85%RH or less (no condensation)						
Data memory	200 weighing results + 50 calibration results (with timestamp), 50 unit masses for counting mode, 20 sets of upper/lower limit values for comparator mode, and 20 tare values						
Display refresh rate	5 times/second, 10 times/second, or 20 times/second						
Units of measure*iii	g (gram), kg (kilo 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), SG (density mode), and a user-programmable unit						
Counting mode — Minimum unit mass	0.01 g	0.1 g	0.01 g	0.1 g			1 g
Counting mode — Number of samples	10, 25, 50 or 100 pieces						
Percent mode — Minimum 100% reference mass	1 g	10 g	1 g	10 g			100 g
Percent mode — % readability	0.01%, 0.1% or 1% (depends on the reference mass stored)						
Communication interface	RS-232C and USB						
Applicable calibration weight value	2 kg, 3 kg, 4 kg, 5 kg, 6 kg, 7 kg, 8 kg		2 kg, 3 kg, 4 kg, 5 kg, 6 kg, 7 kg, 8 kg, 9 kg, 10 kg	5 kg, 10 kg	5 kg, 10 kg, 20 kg	10 kg, 20 kg, 30 kg	
Weighing pan size	270 × 210 mm						
External dimensions	300 (W) × 355 (D) × 111 (H) mm						
Net weight	GX-M: Approx. 9.3 kg / GF-M: Approx. 8.3 kg						
Dust and waterproof rating	IP65						
Power supply / consumption	AC adapter / approx. 30 VA						
Standard accessories	Display cover, AC adapter, USB cable (1.8 m), Simple breeze break (for the GX/F-8202M, GX/F-8202MD, and GX/F-10202M only)						

*i Smart range function: Automatically switches between the precision and standard ranges, and recovers the full precision range with a press of the RE-ZERO (tare) key.
*ii Under a stable environment: No rapid temperature/humidity change, vibration, draft, magnetism, static, etc., between 10 °C and 30 °C (50 °F and 86 °F). The mass of the internal weight may vary with age.
*iii One additional unit from tael (Singapore/HK jewelry/Taiwan), tola, or Newton can be added upon request. Grain is not available with the GX/F-32001MD.

Dimensions (mm/inches)





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