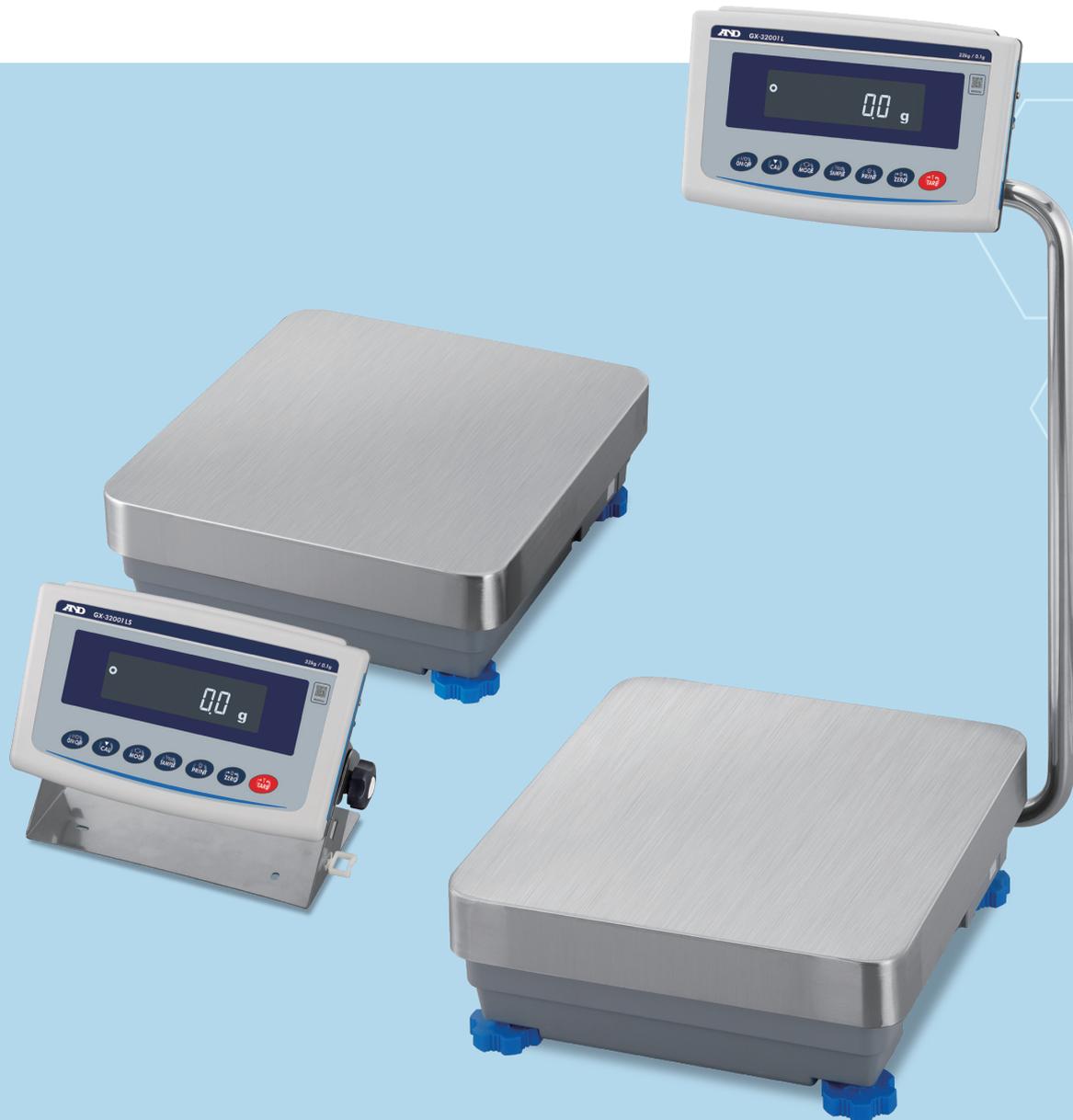


High-Capacity Precision Balances



# A&D Apollo

## GX-L/GF-L Series



*Taking Weighing Precision  
and Protection to New Heights*

# New and Improved—Precision Balances Ideal for Heavy-Duty Weighing In Tough Industrial Conditions

Who else is interested in a laboratory balance that provides the feel of a washdown bench scale? The GX-L/GF-L series, the successor to A&D's long-selling GP series, continues to allow precise weighing of heavy or large amounts of materials in demanding conditions. In addition, now as part of the A&D Apollo family, these models also offer various advanced features that make your weighing easier and more efficient, not to mention more accurate.

## Flexible display position

### Swing-arm display stand

Unlike the commonly utilized stationary pole display stand, the swing-arm display stand allows its angle to be adjusted by approx. 100 degrees. It can therefore be pulled down to create a bench configuration with a front display, or angled back for weighing items of unusual size.



#### Applicable models

GX-12001L/GF-12001L, GX-22001L/GF-22001L  
GX-32001L/GF-32001L, GX-32001LD, GX-42001L  
GX-62001L, GX-62000L/GF-62000L, GX-102000L



### Separate display stand

There are also models available in the GX-L series that have a separate display stand instead of the swing-arm display stand. With the separate display stand, the display unit can be installed away from the weighing platform (the cable length is approx. 3 m), either on the floor, on a desk/bench, or on a wall.



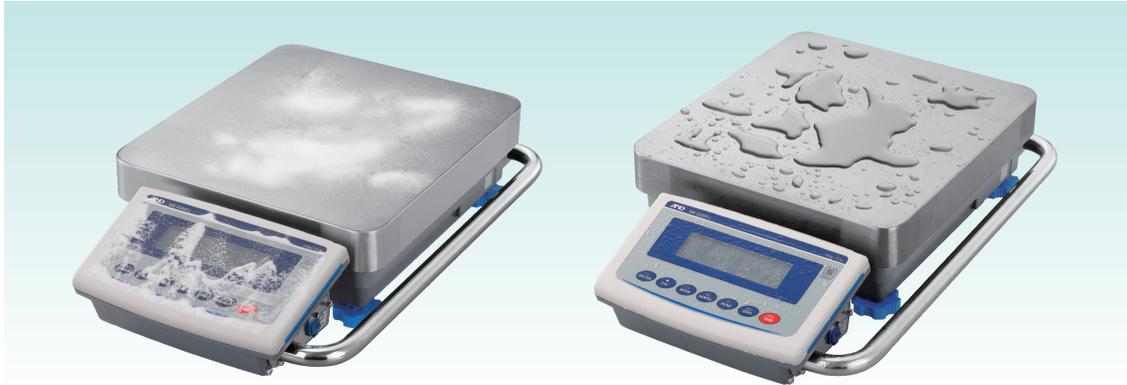
#### Applicable models

GX-32001LS, GX-32001LDS  
GX-62001LS, GX-62000LS  
GX-102000LS

## Safeguard against spillage

### IP65 dust and waterproof

The GX-L/GF-L 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 working with liquid or powder materials, or use in dusty/wet environments, with no need to worry about damaging it.



## Further balance protection

### Impact shock detection (ISD)

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



### Impact-Alert

The GX-L/GF-L series 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).



### 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 (combined with log-in user information when the password lock function is used).<sup>\*1</sup> This function is especially beneficial for quality managers, as it enables them to check and show how their balances were treated during use.

<sup>\*1</sup> Data will then be overwritten in order from the weakest impact.

## Data output/communication

### RS-232C (D-Sub 9-pin) and USB (Mini-B) 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\*2). A USB cable (1.8 m) is supplied as standard.

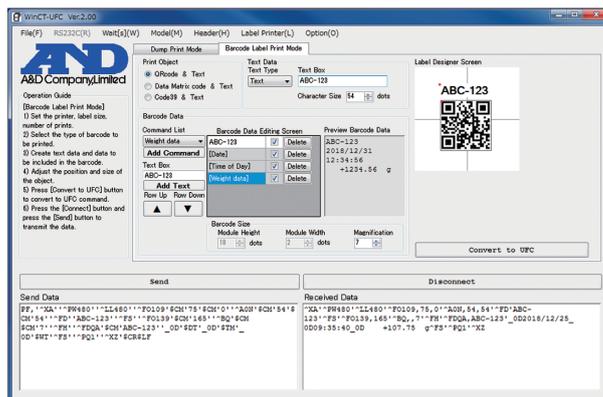
The GX-L/GF-L series remain IP65-rated when a USB cable is connected to the USB interface. For the RS-232C interface, a 5-meter waterproof RS-232C cable is available as a separately-sold accessory (AX-KO2737-500).

\*2 Installation of dedicated driver software is required for Windows 8.1 or earlier.

### Universal Flexi Coms (UFC)

This function enables customization of printout content and layout by editing and sending commands to the balance (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\*3 for barcode printing.

\*3 A label printer that supports ZPL or ZPL II (ZPL and ZPL II are registered trademarks of ZIH Corp.)



WinCT-UFC

### GLP/GMP/GCP/ISO-compliant output

The balance manufacturer, model, serial number, ID number (set by the user), date + time, space for signature for sensitivity adjustment report, calibration test report, and title & end blocks for a series of weighing results can be output.

### Gross/Net/Tare output

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

## Accuracy and precision management

### AD-Just – Automatic self-sensitivity adjustment (for the GX-L series)

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 blinks to give notice when the adjustment is about to start. Internal sensitivity adjustments can also be performed any time with just one key press.

### Internal weight value correction

In cases where the internal weight value varies over time, it can be corrected by loading an external reference weight.

### Automatic level detection & warning

The balance shows a blinking "TILT" on the display and blinks the spirit level LED when it detects a tilt to prevent inaccurate weighing due to the balance not being level.



Warning that the balance is not level

## Automatic precision assessment (APA)

In APA mode, the balance first makes a 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).<sup>\*4</sup> It takes less than 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%).

Moreover, 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).<sup>\*5</sup>

\*5 Only when g is selected as the unit of measure



Blinking minimum weight alert

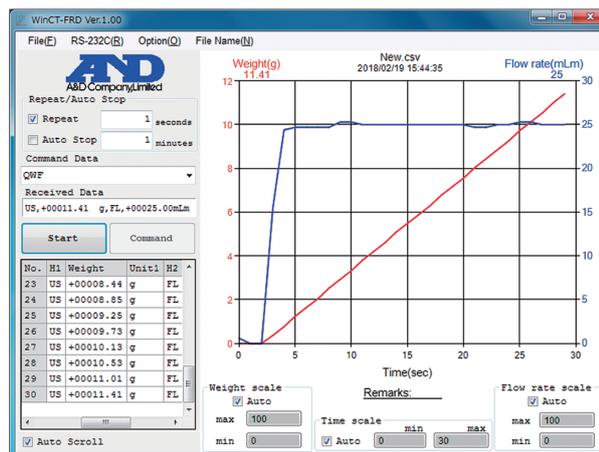
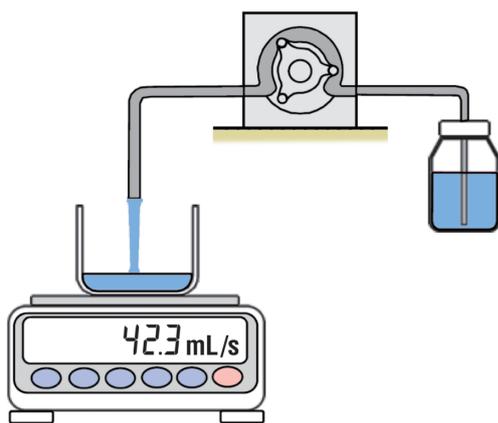
## Other useful features

### 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.<sup>\*6</sup> This function makes flow rate measurement much easier and more precise than manual calculation using a stopwatch. (Dedicated graphing software, WinCT-FRD, is available as a free download.)

\*6 Up to 10 densities can be saved to the balance.



WinCT-FRD

#### 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 GXL-04 interface.

## Tare memory

The tare value can be saved in non-volatile memory. When this function is activated, the power-on zero/tare is turned off. Therefore, even if the power supply is interrupted during weigh-in or loss-in-weight measurement (e.g. filling), the net value displayed before the loss of power is restored once the balance is turned on again.

## Data memory

Each balance has a capacity to store up to 200 weighing results + 50 sensitivity adjustment/calibration test results (all with timestamps), and 50 unit masses to be used in counting mode, 20 sets of upper/lower limit values to be used in comparator mode, and 20 tare values for cases when no external memory device, such as a PC, is available.

## User access control (UAC) and key lock

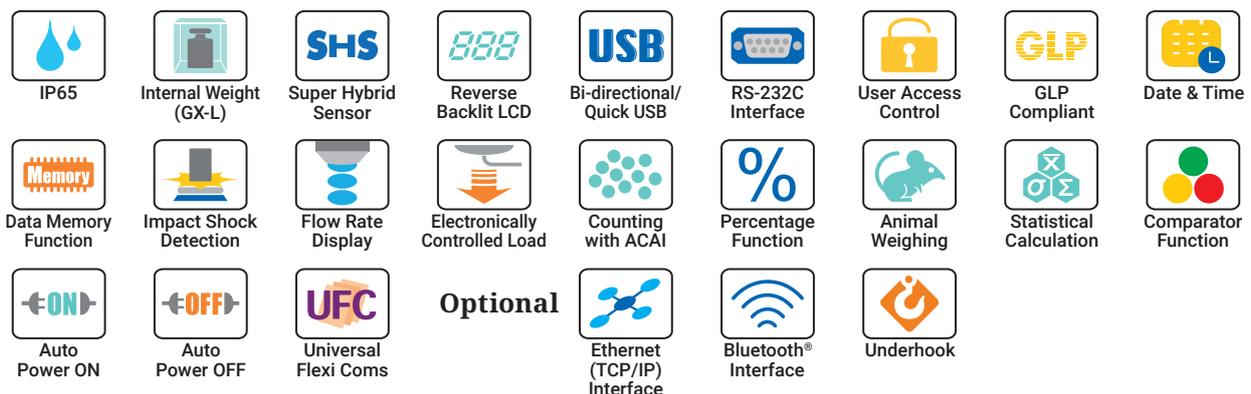
The GX-L/GF-L series can be password-protected in two ways: The first way is to limit use to authorized individuals (up to 11 including one administrator—the administrator can perform all operations while other users are limited to measurements and sensitivity adjustments\*<sup>7</sup> only) by setting 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 sensitivity adjustments\*<sup>7</sup> only.

Meanwhile, upon receiving a command to disable its keys, the balance becomes operable only by sending commands from an external device, such as a PC. Alternatively, it is also possible to disable designated keys only (so as to avoid unnecessary/incorrect operations, etc.).

\*<sup>7</sup> The administrator can also restrict sensitivity adjustment so that others can perform measurements only.

- ✓ Stabilization in approx. 1.5 seconds (typical) for fast, efficient weighing
- ✓ Adjustable response characteristics to optimize performance under the given environmental condition (e.g. draft, vibration, etc.)
- ✓ Clearly visible, reverse-backlit LCD (main character height: 17.8 mm)
- ✓ Counting mode with Automatic Counting Accuracy Improvement
- ✓ Density determination function for automatic density calculation
- ✓ Multiple units of measure: g, kg, oz, lb, lb-oz, ozt, ct, mom, dwt, pcs (counting mode), % (percent mode), DS (density mode), in addition to a user-programmable unit for conversion applications\*<sup>8</sup>
- ✓ Comparator display with buzzer for intuitive, error-free check weighing
- ✓ Capacity indicator that lets you know the remaining capacity of the balance

\*<sup>8</sup> One additional unit from either tael (Singapore/HK jewelry/Taiwan), tola, or Newton can be added upon request.



# Specifications

Models	GX-12001L GF-12001L	GX-22001L GF-22001L	GX-32001L GX-32001LS GF-32001L	GX-32001LD GX-32001LDS
Capacity	12 kg	22 kg	32 kg	6.2 kg / 32 kg <sup>*i</sup>
Readability		0.1 g		0.1 g / 1 g <sup>*ii</sup>
Repeatability (standard deviation)		0.1 g		0.1 g / 0.5 g
Minimum weight <sup>*ii</sup>		140 g		
Linearity		±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 sensitivity adjustment is OFF)		±3 ppm/°C		±5 ppm/°C
Accuracy immediately after internal sensitivity adjustment (for the GX-L(S) series) <sup>*iii</sup>	±1.0 g		±1.5 g	
Operating environment	5 to 40 °C (41 to 104 °F), 85%RH or less (no condensation)			
Data memory	200 weighing results + 50 sensitivity adjustment/calibration test results (with timestamps), 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 <sup>*iv</sup>	g (gram), kg (kilo gram), oz (ounce), lb (pound), lb-oz (pound-ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), pcs (counting mode), % (percent mode), DS (density mode), and a user-programmable unit			
Counting mode	Minimum unit mass	0.1 g		1 g
	Number of samples	10, 25, 50 or 100 pieces		
Percent mode	Minimum 100% reference mass	10 g		100 g
	% readability	0.01%, 0.1% or 1% (depends on the reference mass stored)		
Communication interface	RS-232C (D-Sub 9-pin) and USB (mini B)			
Applicable calibration weight value	5 kg, 10 kg	5 kg, 10 kg, 20 kg	5 kg, 10 kg, 20 kg, 30 kg	
Weighing pan size	384 × 344 mm			
External dimensions	Swing-arm type (GX-L/GF-L)	372 (W) × 615 (D) × 130 (H) mm <sup>*v</sup>		
	Separate type (GX-LS)	344 (W) × 442 (D) × 130 (H) mm <sup>*vi</sup>		
Net weight	Internal adjustment type (GX-L/GX-LS)	Approx. 17 kg		
	External adjustment type (GF-L)	Approx. 15 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), Cable clamp × 2 <sup>*vii</sup>			

Models	GX-42001L	GX-62001L GX-62001LS	GX-62000L GX-62000LS GF-62000L	GX-102000L GX-102000LS
Capacity	42 kg	62 kg	62 kg	102 kg
Readability	0.5 g	0.1 g	1 g	
Repeatability (standard deviation)	0.5 g	0.2 g	0.7 g	1 g
Minimum weight <sup>*ii</sup>	410 g	140 g	1.4 kg	
Linearity	±1 g	±0.5 g	±1 g	±2 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 sensitivity adjustment is OFF)	±5 ppm/°C		±6 ppm/°C	
Accuracy immediately after internal sensitivity adjustment (for the GX-L(S) series) <sup>*iii</sup>	±1.5 g	±3 g	±5 g	±10 g
Operating environment	5 to 40 °C (41 to 104 °F), 85%RH or less (no condensation)			
Data memory	200 weighing results + 50 sensitivity adjustment/calibration test results (with timestamps), 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 <sup>*iv</sup>	g (gram), kg (kilo gram), oz (ounce), lb (pound), lb-oz (pound-ounce), ozt (troy ounce), ct (metric carat), mom (momme), dwt (pennyweight), pcs (counting mode), % (percent mode), DS (density mode), and a user-programmable unit			
Counting mode	Minimum unit mass	0.5 g	0.1 g	1 g
	Number of samples	10, 25, 50 or 100 pieces		
Percent mode	Minimum 100% reference mass	50 g	10 g	100 g
	% readability	0.01%, 0.1% or 1% (depends on the reference mass stored)		
Communication interface	RS-232C (D-Sub 9-pin) and USB (mini B)			
Applicable calibration weight value	10 kg, 20 kg, 30 kg, 40 kg	10 kg, 20 kg, 30 kg, 40 kg, 50 kg, 60 kg	10 kg, 20 kg, 30 kg, 40 kg, 50 kg, 60 kg	10 kg, 20 kg, 40 kg, 50 kg, 60 kg, 80 kg, 100 kg
Weighing pan size	384 × 344 mm			386 × 346 mm
External dimensions	Swing-arm type (GX-L/GF-L)	372 (W) × 615 (D) × 130 (H) mm <sup>*v</sup>		373(W)×615(D)×130(H) mm <sup>*v</sup>
	Separate type (GX-LS)	344 (W) × 442 (D) × 130 (H) mm <sup>*vi</sup>		346(W)×443(D)×130(H) mm <sup>*vi</sup>
Net weight	Internal adjustment type (GX-L/GX-LS)	Approx. 17 kg		Approx. 18 kg
	External adjustment type (GF-L)	Approx. 15 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), Cable clamp × 2 <sup>*vii</sup>			

\*i Smart range function: Automatically switches between the precision and standard ranges, and recovers the full precision range with a press of the TARE key.

\*ii Pursuant to the United States Pharmacopeia (USP), Chapter 41

\*iii 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.

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

\*v Dimensions when the swing-arm stand is pulled fully down.

\*vi Dimensions of the base unit. The dimensions of the display unit is 260 (W) × 164 (D) × 202 (H) mm, and the cable length is 3 m.

\*vii Not provided for the separate type (GX-LS).

## Options

- GXL-04\*9\*10 Comparator relay output/buzzer/RS-232C/external key input interface
- GXL-06\*9\*10 Analog (0-1/0.2-1 V) output/RS-232C interface
- GXL-07 5-meter cable for the GX-LS
- GXL-08\*9\*10 Ethernet (TCP/IP) interface
- GXL-27\*9\*11 Bluetooth® interface
- GP-12 Animal-weighing pan
- GP-16 AD-8127 printer support
- GP-20 Underhook for models with 42 kg capacity or below
- GP-21 Underhook for models with 62 kg capacity or above

\*9 Only one of GXL-04, GXL-06, GXL-08, GXL-27, or the standard (RS-232C and USB) interfaces can be used.

\*10 The GX-L/GF-L series are not IP65 with GXL-04, GXL-06, or GXL-08.

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

## Accessories

- AD-1682 Rechargeable battery unit
- AD-1683A Static eliminator
- AD-1684A Electrostatic field meter
- AD-1687 Weighing environment logger
- AD-1688 Weighing data logger
- AD-8127 Compact printer
- AD-8526 RS-232C/Ethernet (TCP/IP) converter
- AD-8920A Remote display
- AD-8922A Remote controller
- AX-GXL-31 Display unit cover (5 pcs)
- AX-KO2737-500 Waterproof RS-232C cable (5 m)
- AX-USB-9P RS-232C/USB converter with cable

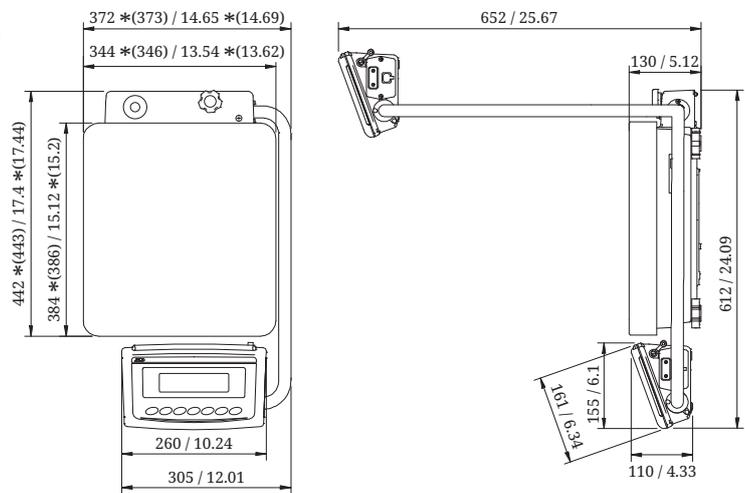
## Dimensions (mm/inches)

### Swing-arm type

- GX-12001L / 22001L / 32001L / 32001LD / 42001L / 62001L / 62000L / 102000L

- GF-12001L / 22001L / 32001L / 62000L

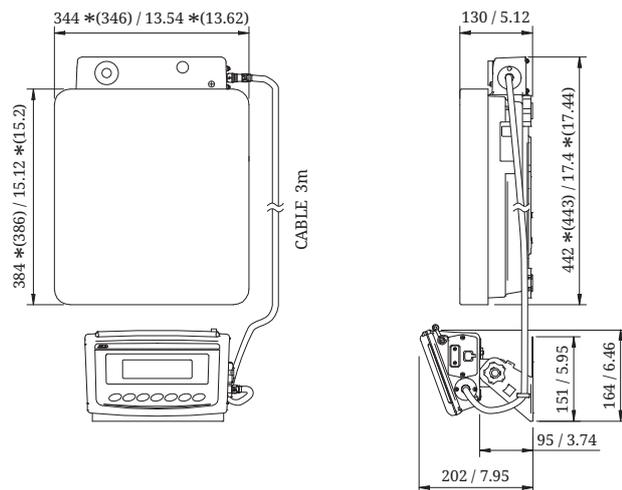
\*( ) for GX-102000L



### Separate type

- GX-32001LS / 32001LDS / 62001LS / 62000LS / 102000LS

\*( ) for GX-102000LS



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