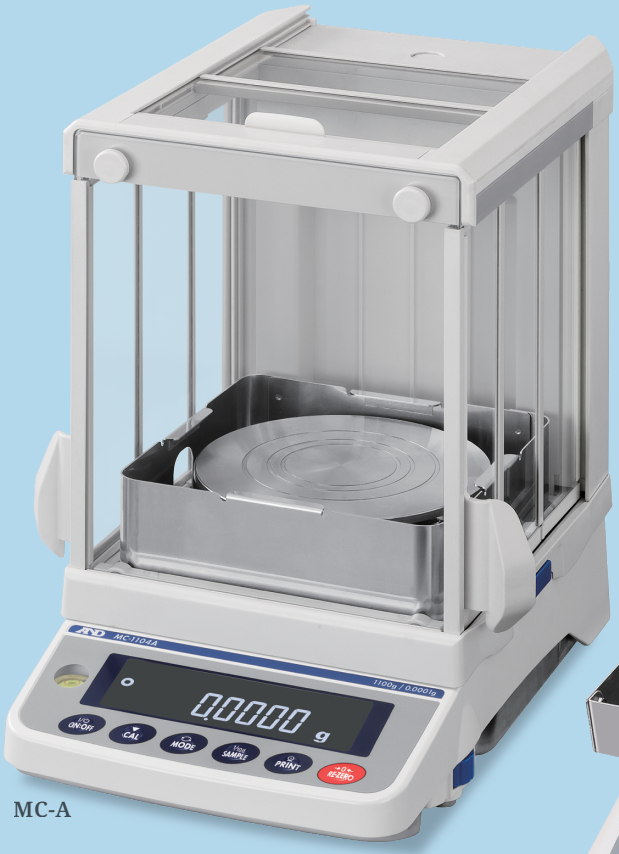
Mass Comparators

# MC-A/MC-M

## Series




MC-A


MC-M

ISO 9000 CERTIFIED

*Enhanced Performance. Unchanged Value.*

A&D Company, Ltd.

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# Upgraded Mass Comparators — Now More Precise, More Stable

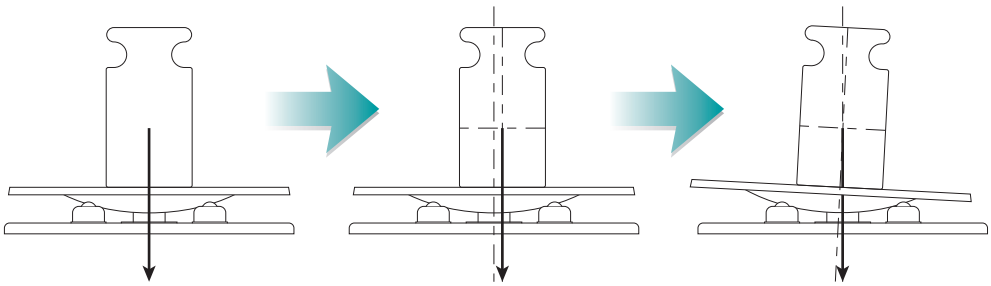
The MC-A and MC-M series mass comparators deliver significantly improved precision and stability over the previous generation, enabling reliable comparison of reference weights in calibration labs—whether in-house or service-based. Despite the performance upgrades, the series remain cost-effective, making high-end mass comparison accessible to a broader range of users.

## Smart tools for confident mass comparison

### Auto-centering pan to ensure consistent accuracy

One of the challenges in high-precision mass comparison is eccentricity error caused by off-center loading, which can compromise repeatability and overall measurement accuracy. The optional auto-centering pan addresses this by automatically bringing the mass to the center of the balance. Its dome-shaped bottom rests on three ball-tipped supports, allowing smooth movement to correct eccentricity errors. If an automatic loading system is not used, **A&D strongly recommends this option** for manual loading.

**How the auto-centering pan works**



Auto-centering pan

### Stable weighing through control of external disturbances

Mass comparators, due to their extremely high sensitivity, are more susceptible to various external disturbances. To help the MC-A and MC-M series fully demonstrate their true capabilities, A&D also recommends the following optional accessories:

**Remote controller (AD-8922A)**

Operate the balance without direct contact, reducing vibration caused by manual handling.

AD-8922A

**Tabletop breeze breaks (AD-1676 or AD-1672(A)*1)**

Shield the balance from drafts and minor temperature changes caused by air conditioning or operator movement. Made of antistatic panels to minimize static effects.

AD-1672A

*1 The AD-1676 is suitable for the MC-A series, and the AD-1672 or AD-1672A for the MC-M series.

## Recommended measurement ranges

| Nominal value | BM-20 | | | | | BM-252 | | | | BM-500 | | | | MC-1104A | | | | MC-6203A | | | | MC-10203M | | | | MC-32002M | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 | F1 | F2 | M1 | M2 |
| 1 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 mg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 g | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: For the BM-20, BM-252, and BM-500, please refer to the BM series of micro/analytical balances.

## Beyond their primary role as mass comparators

### Extra decimal place for system integration and fine control

The MC-A and MC-M series offer extended resolution not typically available in balances of similar capacity. This extra decimal place enables accurate tracking of small weight changes—even with heavy tare weights common in automated systems for precise dosing, blending, and other demanding processes.

### Impact shock detection (ISD) for reliable automation

The ISD function detects impact loads on the weight sensor and displays their intensity in five levels (0–4). High-impact events (Levels 3 and 4) also trigger an audible alert and are logged for review, supporting system adjustments to prevent future errors and sensor damage.

Internal Weight
Super Hybrid Sensor
Reverse Backlit LCD
Bi-directional/ Quick USB
RS-232C Interface
User Access Control
GLP Compliant
Date & Time
Data Memory Function
Impact Shock Detection
Electronically Controlled Load
Counting with ACAI
Percentage Function
Animal Weighing
Statistical Calculation
Comparator Function
Auto Power ON
Auto Power OFF
Underhook
Universal Flexi Coms
IP65
MC-M only

**Optional**

USB Host Interface
MC-A only
Ethernet (TCP/IP) Interface
Bluetooth® Interface
Rechargeable Battery
MC-A only

## Specifications

| | MC-1104A | MC-6203A | MC-10203M | MC-32002M |
|---|---|---|---|---|
| **Capacity** | 1100 g | 6200 g | 10.2 kg | 32.2 kg |
| **Readability** | 0.0001 g | 0.001 g | | 0.01 g |
| **Repeatability (standard deviation)*i** | 0.00035 g | 0.0035 g (over 2000 g)<br>0.0015 g (up to 2000 g) | | 0.05 g (over 20 kg)<br>0.015 g (up to 20 kg) |
| **Linearity*i** | ±0.003 g | ±0.03 g | | ±0.2 g |
| **Sensitivity drift (10 to 30 °C/50 to 86 °F, when automatic self-sensitivity adjustment is OFF)** | ±2 ppm/°C | | | ±3 ppm/°C |
| **Accuracy immediately after internal sensitivity adjustment*ii** | ±0.0100 g | ±0.150 g | | ±1.50 g |
| **Operating environment** | 5 to 40 °C (41 to 104 °F), 85 %RH or less (no condensation) | | | |
| **Display refresh rate** | 5 times/sec, 10 times/sec or 20 times/sec | | | |
| **Units of measure*iii** | g (gram), kg (kilogram), 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), and a user-programmable unit | | | |
| **Standard communication interface** | RS-232C (D-Sub 9-pin), USB (mini B) | | | |
| **Weighing pan size** | 128 × 128 mm | 165 × 165 mm | 270 × 210 mm | |
| **External dimensions** | 259 (W) × 358 (D) × 332 (H) mm<br>(with the large glass breeze break) | | 300 (W) × 355 (D) × 111 (H) mm | |
| **Net weight** | Approx. 7 kg | | Approx. 9.3 kg | |
| **Dust and waterproof rating** | N/A | | IP65 | |
| **Power supply / consumption** | AC adapter / approx. 30 VA | | | |
| **Standard accessories** | Breeze break × 1*iv, Display cover × 1, AC adapter × 1, USB cable (1.8 m) × 1 | | | |

**∗i** Under good environmental conditions using the auto-centering pan, or with consistent positioning in automated systems.
**∗ii** Under good environmental conditions using the internal weight. The mass of the internal weight may change over time or due to environmental factors.
**∗iii** The kg unit is for the MC-M series only. One additional unit from tael (Singapore/HK jewelry/Taiwan), tola, or Newton can be added upon request.
**∗iv** Large glass breeze break for the MC-A series, and simple, soft plastic breeze break for the MC-M series.

## Options

### For the MC-A series

| | |
|---|---|
| GXA-03*2 | 2nd RS-232C interface |
| GXA-04*2 | Comparator relay output/buzzer/ external key input interface |
| GXA-06*2 | Analog (0-1/0.2-1 V) output interface |
| FXi-08*2 | Ethernet (TCP/IP) interface |
| GXA-09*2*3 | Built-in rechargeable battery |
| GXA-10*4 | Large glass breeze break |
| GXA-12 | Animal weighing pan |
| GXA-17*2 | Large glass breeze break with built-in fanless ionizer and external IR switch |
| GXA-23-PRINT*2 | External key input interface + AX-SW137-PRINT foot switch |
| GXA-23-REZERO*2 | External key input interface + AX-SW137-REZERO foot switch |
| GXA-23-PLUG*2 | External key input interface + AX-T-314A-S plug |
| GXA-24A*2 | USB host interface |
| GXA-25*2 | Fanless ionizer with Quick Ion® technology |
| GXA-26*2 | External IR switch |
| GXA-27*2 | Bluetooth® interface |

**∗2** Only one of GXA-03, GXA-04, GXA-06, FXi-08, GXA-09, GXA-17, GXA-23-PRINT /REZERO/PLUG, GXA-24A, GXA-25, GXA-26, or GXA-27 can be installed.
**∗3** Factory-installed/dealer option.
**∗4** Also provided as standard.

### For the MC-M series

| | |
|---|---|
| GXM-04*5*6 | Comparator relay output/buzzer/ RS-232C/external key input interface |
| GXM-06*5*6 | Analog (0-1/0.2-1 V) output/RS-232C interface |
| GXM-08*5*6 | Ethernet (TCP/IP) interface |
| GXK-012 | Animal weighing pan |
| GXM-27*5 | Bluetooth® interface |

**∗5** Only one of GXM-04, GXM-06, GXM-08, GXM-27, or the standard (RS-232C and USB) interfaces can be installed.
**∗6** The MC-M series is not IP65 with GXM-04, GXM-06, or GXM-08.

## Accessories

| | |
|---|---|
| AD-1603*7 | Calibration masses |
| AD-1682 | Rechargeable battery unit |
| AD-1683A*8 | Static eliminator |
| AD-1684A | Electrostatic fieldmeter |
| AD-1687 | Weighing environment logger |
| AD-1688 | Weighing data logger |
| AD-1689 | Tweezers for calibration weight |
| AD-8129TH | Compact printer |
| AD-8526 | RS-232C/Ethernet (TCP/IP) converter |
| AD-8541-PC | Bluetooth® dongle for PC |
| AD-8541-SCALE | RS-232C/Bluetooth® converter |
| AD-8920A | Remote display |
| AD-8922A | Remote controller |
| AX-073007197-S | Display cover for the MC-M series (5 pcs) |
| AX-GXA-31 | Display cover for the MC-A series (5 pcs) |
| AX-MC10K/30KPAN | Auto-centering pan for the MC-M series |
| AX-MC1104APAN | Auto-centering pan for the MC-1104A |
| AX-MC6203APAN | Auto-centering pan for the MC-6203A |
| AX-USB-9P | RS-232C/USB converter with cable |

**∗7** Available in weights from 1 mg to 20 kg, in OIML classes E2, F1, and F2.
**∗8** For in-line use in automated systems, the AD-1683 (without A) is recommended.

A&D Company, Ltd.

## Discover Precision

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∗MC-AM-ADCC-00-PR1-25b