

# Automated Comparators



## AX Series

Minimized Uncertainties

Highest Resolution

Automated Handling



## When Quality Counts

Choose Solutions of Undoubted Accuracy

**METTLER TOLEDO**

# Attention to Detail Gives Exceptional Results

**Highest accuracy is achieved in weight dissemination or one-to-one mass comparisons with the AX range of Automated Mass Comparators.**

In mass comparison it is necessary to accurately determine the smallest difference between the reference standard and test masses. METTLER TOLEDO Automatic Mass Comparators enable this by minimizing errors using 4-place automatic weight handlers, centering aids and innovative Windows®-based software. Swiss attention to detail from design through to precision manufacture results in minimized uncertainties, giving the most accurate and repeatable measurement data for National Measurement Institutes and Mass Calibration Laboratories alike.

Eccentric error is virtually eliminated with the innovative hanging weighing pans, or the X-Y LevelMatic weighing platforms, while the Thermal Bridge\* maintains thermostasis in the weighing chamber. Every design detail contributes to giving your laboratory exceptional results.

\*(AX107H, AX106H, AX1007CP, AX1006 and AX10005)



**AX107H / AX106H**  
111 g  
0.1 µg / 1 µg



**AX1007CP**  
1001.5 g  
0.1 µg



**AX1006**  
1011 g  
1 µg



**AX10005**  
10011 g  
10 µg



**AX16004 / AX32004 / AX64004**  
16260 g / 32260 g / 64260 g  
0.1 mg



Standardize mass comparisons by measuring at Constant Pressure, using the AX1007CP automated mass comparator. National Metrology Institutes can now compare artefacts up to 1kg at the same pressure, with reduced uncertainties.

## AX1007CP

Ultimate Performance... at Constant Pressure

### Constant Pressure



Designed as a turn-key solution for mass determination under constant pressure (down to 500 mbar), the AX1007CP delivers ultimate performance up to 1 kg at 0.1  $\mu$ g resolution.

### Automated Centering



The Automated Gravimetric Centering (AGC) automatically centers weights at all four positions before determining the mass to reduce eccentricity influence to a minimum.

### Weight Dissemination



The 4-position, 3-star weight handler automates one-to-one comparisons or weight dissemination of various artefacts, including large cylindrical objects.\*

\* optional disc weight needed.

# Precise Handling Produces Precise Results

**Outstanding High Performance up to 64 kg capacity and resolution down to 0.1 µg make these automated mass comparators the choice for professionals. Automated, precise handling and hanging weighing pans combine to produce results with the lowest uncertainties.**

Compare weights or groups of weights automatically up to 64 kg with outstanding results. Individual draft shields provide quicker settling times, and outstanding repeatability.

## AX107H, AX106H, AX1006, AX10005

Unrivalled Accuracy...

### Minimized Uncertainties



The unique Hanging Weighing Pan technology ensures the weights are always centered and therefore do not contribute any eccentric error. Active Thermal Bridges protect the weighing chamber from external temperature influence, giving a more stable weighing environment, and ultimately better performance.

### Highest Resolution



From 0.1 µg resolution and up to 10 kg capacity, the AX automated line delivers up to 110 million data measuring points, providing you with nano-accuracy capability. A complete system including AX Control software and controller laptop allows a fully automatic process, and secure data management.

### Weight Dissemination



Dissemination is facilitated by the 4-place weight handler and Windows®-based software- up to 3 weights can be placed on each weighing position.\* The continuous weighing range means any weight or combination of weights in the comparator's range can be measured.\*\*

\* optional disc weight needed for AX10005

\*\* AX107H, AX106H, AX1006



**AX16004, AX32004, AX64004**  
 Total Flexibility... at 0.1 mg Resolution

**Continuous Weighing Range**



The clever use of internal dial weights makes the continuous weighing range of up to 64 kg completely flexible. Unlimited dissemination possibilities using the large weighing pans and the 4 place turntable provides unmatched capabilities.

**Peak Performance**




The clever integrated LevelMatic reduces eccentricity to a minimum – especially important when comparing multiple weights. Individual draft shields enable quicker settling times, and a more stable weighing result, resulting in shorter cycle times for ABA or ABBA comparisons.

**Streamlined Processes**



The controller station with Windows®-based software streamlines and automates processes and ensures the integrity of your data, which can be exported to a database giving full traceability.

				
<b>Automatic Comparator</b>	<b>AX1007CP</b>	<b>AX107H</b>	<b>AX106H</b>	<b>AX1006</b>
Article Number	30217170	11115765	11115755	11115725
Maximum load	1001.5 g	111 g	111 g	1011 g
Readability	0.1 µg	0.1 µg	1 µg	1 µg
Repeatability at nominal load 5 ABA	0.5 µg	0.8 µg	1.5 µg	2 µg
Repeatability typical ABA	0.4 µg	0.6 µg	1.2 µg	1.5 µg
Electrical weighing range	1.5 g	0...11 g	0...11 g	0...11 g
Substitution weights	500, 200, 200, 100 g	50, 30, 10, 10 g	50, 30, 10, 10 g	500, 300, 100, 100, 50, 30, 10, 10 g
Linearity (electrical weighing range)	± 2 µg	± 8 µg	± 8 µg	± 8 µg
Eccentric load deviation (at test load)	0.0 ng (1 g)	0.0 ng (10 g)	0.0 µg (10 g)	0.0 µg (10 g)
Settling time	30 s - 40 s	10 s	10 s	10 s
Adjustment – internal	Yes – Motorized	Yes – Motorized	Yes – Motorized	Yes – Motorized

#### System Configuration

Weight handler	Turntable, 4 positions	Turntable, 4 positions	Turntable, 4 positions	Turntable, 4 positions
Software and controller	Windows®, standard	Windows®, standard	Windows®, standard	Windows®, standard
Draft shield	Standard	Motorized	Motorized	Motorized
Self centering pan	Hanging pan	Hanging pan	Hanging pan	Hanging pan
SmartScreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
SmartSens	Standard	Standard	Standard	Standard
Separate display	Standard	Standard	Standard	Standard

#### Dimensions

Comparator (W x D x H, mm)	252 x 340 x 573	346 x 514 x 432	346 x 514 x 432	346 x 514 x 432
Display unit (W x D x H, mm)	226 x 370 x 155	226 x 370 x 155	226 x 370 x 155	226 x 370 x 155
Balance weight (kg)	140	23	23	25
Object diameter (D, mm)	18 - 80	8 - 30	8 - 30	12 - 60
Object height (H, mm)	90	70	70	95

#### Disc Weights for Dissemination

Article Number	<b>AX1006 - Weight Set</b> 222404	<b>AX10005 - Weight Set</b> 222420
	100 g	1 kg
	200 g	2 kg
	200 g*	2 kg*
		5 kg



<b>Automatic Comparator</b>	<b>AX10005</b>	<b>AX16004</b>	<b>AX32004</b>	<b>AX64004</b>
Article Number	11115785	11115815	11115845	11115875
Maximum load	10011 g	16260 g	32260 g	64260 g
Readability	10 µg	0.1 mg	0.1 mg	0.1 mg
Repeatability at nominal load 5 ABA	20 µg	0.2 mg	0.2 mg	0.4 mg
Repeatability typical ABA	15 µg	0.1 mg	0.1 mg	0.2 mg
Electrical weighing range	0..11 g	0..260 g	0..260 g	0..260 g
Substitution weights	5, 3, 1 kg	0.25, 0.25, 0.25, 0.25, 0.5, 0.5, 2, 2, 2, 4, 4 kg	0.25, 0.25, 0.25, 0.25, 0.5, 0.5, 2, 2, 2, 4, 4, 8, 8 kg	0.25, 0.25, 0.25, 0.25, 0.5, 0.5, 2, 2, 2, 8, 8, 8, 8, 8, 8 kg
Linearity (electrical weighing range)	± 0.05 mg	± 0.5 mg	± 0.5 mg	± 0.5 mg
Eccentric load deviation (at test load)	0.0 µg (10 g)	0.0 mg (260 g)	0.0 mg (260 g)	0.0 mg (260 g)
Settling time	15 s	25 s	25 s	25 s
Adjustment – internal	Yes – Motorized	Yes – Motorized	Yes – Motorized	Yes – Motorized

#### System Configuration

Weight handler	Turntable, 4 positions	Turntable, 4 positions	Turntable, 4 positions	Turntable, 4 positions
Software and controller	Windows®, standard	Windows®, standard	Windows®, standard	Windows®, standard
Draft shield	Standard	Standard	Standard	Standard
Self centering pan	Hanging pan	LevelMatic	LevelMatic	LevelMatic
SmartScreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
SmartSens	Standard	Standard	Standard	Standard
Separate display	Standard	Standard	Standard	Standard

#### Dimensions

Comparator (W x D x H, mm)	315 x 720 x 850	1200 x 1200 x 15	1200 x 1200 x 15	1200 x 1200 x 15
Display unit (W x D x H, mm)	226 x 370 x 155	224 x 366 x 94	224 x 366 x 94	224 x 366 x 94
Balance weight (kg)	85	290	290	290
Object diameter (D, mm)	16 - 110	40 - 340	40 - 340	40 - 340
Object height (H, mm)	200	350	350	350

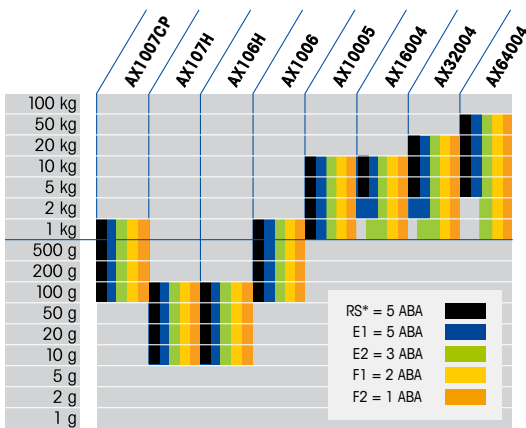
#### Software - Efficiency Pack

Article Number 11116875

- Task Manager for multiple jobs
- Air density calculation according CIPM 2007
- Air buoyancy correction calculation
- Enhance productivity by running all loaded weights at once
- Individual measurements report
- Conventional and true mass calculation



# OIML Application Ranges



The illustration left shows the OIML application ranges according to the OIML R111 recommendation at zero meter altitude. In certain instances, the weight range is limited by the physical size of the weighing pan / weight handler. It is however possible to weigh smaller weights with the addition of support plates (please contact us for more information).

\* Reference Standard with 1/5 uncertainty contribution of the E1 tolerance limit.

## Climate Stations



Model	ClimaLog30	DataLog30	Klimet A30
Application range	E1 0 .. 330 m E2* 0 .. 800 m F1 .. M3* 0 .. 2000 m	E1 0 .. 330 m E2* 0 .. 800 m F1 .. M3* 0 .. 2000 m	E1 0 .. 2000 m E2* 0 .. 2000 m F1 .. M3* 0 .. 2000 m
Air temperature / Res / Unc (°C)	-20 .. 50 / 0.1 / 0.3	-20 .. 50 / 0.1 / 0.3	15 .. 25 / 0.001 / 0.05
Air pressure / Res / Unc (hPa)	300 .. 1300 / 0.1 / 0.5	–	600 .. 1060 / 0.001 / 0.04
Dew point temperature / Res / Unc (°C)	–	–	0 .. 17 / 0.001 / 0.05
Relative air humidity / Res / Unc (%)	10 .. 95 / 0.5 / 2	–	20 .. 80 / 0.01 / 0.15
CO <sub>2</sub> content / Res / Unc (ppm)	–	–	200 .. 1500 / 0.1 / 50.00

\* without weight density determination

[www.mt.com/comparators](http://www.mt.com/comparators)

For more information



### METTLER TOLEDO Group

Laboratory Weighing  
Local contact: [www.mt.com/contacts](http://www.mt.com/contacts)

Subject to technical changes  
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