



Cubis® MCM40K3

Manual Mass Comparator

User Benefits

- Complete mass standard laboratory in a single unit
- Integrated climate sensors for recording all data relevant for determining measurement uncertainty
- Integrated workflow control for efficient and error-free mass comparison
- Fast measurement cycles according to the ABA, ABBA or AB₁...B_nA method

Highlighted Performance Features

- Cubis® MSA color touch screen for fast and simple configuration of parameters and workflows
- External sensor-equipped climate module for recording the temperature, humidity and air pressure
- Integrated calibration workflows for ABA, ABBA, AB₁...B_nA cycles to ensure efficient, error-free mass comparison
- Fully integrated function for determining the measurement uncertainty in accordance with OIML and ASTM recommendations
- Filters for optimal adaptation of the mass comparator to ambient conditions
- Monolithic weighing technology
- For display and evaluation, complete electronics and power supply separated from the weighing system to prevent heat from affecting the results
- All MCM mass comparators featuring eccentric (off-center) load compensation for easy loading of weights without automatic centering
- Additional applications for density determination, statistics and individual identifiers are integrated as standard programs
- Built-in SD card slot for storage and transfer of all data and settings
- Graphical level indicator for interactive user guidance during levelling
- Easy logging of reference weight data
- Continuous weighing range display: any weight between 0 g and the maximum capacity can be displayed
- USB, RS-232C and Ethernet interface ports to integrate the mass comparator into networks or to enable it to communicate with external software via third-party protocols, standardized communication protocols or Web services



Technical Specifications

Metrological Specifications

Maximum capacity	41 kg
Application range	0–41 kg
Readability	1 mg
Repeatability, optimal ¹⁾	2 mg
Repeatability, standard E ²⁾	3 mg
Repeatability, E ^{1/10} load ²⁾	2 mg
Repeatability standard, F ³⁾	6 mg
Electronic weighing range and tare range	41 kg
Linearity	20 mg
Eccentric load deviation	3.5 mg mm
Stabilization time	5 s
Cycle time, ABBA in s	120 s

Basic Equipment

Interfaces	RS232C USB LAN
Application programs	Basic weighing, mass unit conversion, individual identifiers, density determination, statistics
Below-comparator weighing port	With optional accessory
PC connecting cable	USB

Ambient Conditions

Permissible operating temperature range	10–30 °C
Recommended operating temperature	22 °C
Temperature fluctuations	0.3°C/h 0.5°C/12h
Max. air current	< 0.2 m/s
Humidity range	40–70 %
Humidity fluctuations	5% 4 h
Power supply	100–240 V AC/50–60 Hz
Power consumption	< 35 VA

Dimensions

Weighing pan dimensions (W × D)	400 × 300 mm
Sample size (D × H)	400 × 326 × 126 mm
Weigh cell (W × D × H)	239 × 320 × 56 mm
Electronic unit (W × D × H)	15 kg
Net weight	18.6 kg
Gross weight	1
Number of packages	73 × 60 × 36 cm
Optimal height for setup	800 mm

Applications

OIML R111, class E1	20 kg
OIML R111, class E2	10–20 kg
OIML R111, class F1	2–20 kg
OIML R111, class F2	500 g–20 kg
OIML R111, class M1	
OIML R111, class M2	
OIML R111, class M3	
ASTM E617, class 0	5–30 kg
ASTM E617, class 1	5–30 kg
ASTM E617, class 2	2–30 kg
ASTM E617, class 3	1–30 kg
ASTM E617, class 4	
ASTM E617, class 5	
ASTM E617, class 6	

Optional Accessories	
External calibration weight	20 kg E2 YCW722-00
Climate module, uncalibrated, for all MCM models	YCM20MC
Calibration of a YCM20MC climate module with DAkkS calibration certificate	YCM20DAkkS
Climate module with DAkkS calibration certificate for all MCM models	YCM20MC-DAkkS
Tower for climate module, for connection to MCM high-capacity models, including cable	YCM20MC-Tower
Optional draft shield	YDS05C YDS03C
Hook for below-comparator weighing	69EA0040
Lifting device for 10 kg	YAW51
Lifting device for 20 kg	YAW52

The standard deviation "s" is the repeatability calculated from 5 ABA cycles under the following conditions:

- 1) Optimal conditions: automatic measurement without operator influence measured in a laboratory under E1 conditions, on a decoupled weighing stone no drafts from above
- 2) Standard conditions E: measured by hand in a laboratory under E1 conditions, on a decoupled weighing stone; no drafts from above
- 3) Standard conditions F: measurement performed manually in a laboratory under at least F1 conditions, on a non-decoupled weighing stone, air conditioning and minimal drafts from above