

# Model M 56 | Drying and heating chambers with forced convection and advanced program functions

With a maximum of +300 °C and various programming options the M series material test chambers are ideal for material and aging tests. With a high air flow, the powerful fans ensure rapid heating.

## BENEFITS

- Uniform drying conditions thanks to APT.line™ technology
- Identical test conditions throughout the chamber interior independent of sample size and quantity
- Outstanding thermal insulation saves operation costs
- Advanced programming options



Model 56



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## IMPORTANT FEATURES

- Temperature range: +23°C above ambient temperature to +300°C
- High temperature accuracy thanks to APT.line™ technology with increased heating output
- Reinforced fan with adjustable speed
- Electromechanical control of the exhaust air flap
- Intuitive touchscreen controller with time-segment and real-time programming
- 2 chrome-plated racks
- Class 2 independent adjustable temperature safety device (DIN 12880) and class 3.1 independent temperature safety device (DIN 12880) with visual/ acoustic alarm available for selection on the controller
- Failsafe function – backup sensor Pt 100
- Computer interface: Ethernet
- Internal data logger, measured values can be read out in open format via USB

## ORDERING INFORMATION

| Interior volume [L] | Power supply - unit fuse  | Plug*   | Version  | Model version | Art.-No.  |
|---------------------|---------------------------|---------|----------|---------------|-----------|
| Model M 56          |                           |         |          |               |           |
| 59                  | 230 V 1~ 50/60 Hz -10,0 A | CEE 7/7 | Standard | Mo56-230V     | 9010-0371 |

## TECHNICAL DATA

| Data  |  |
|---|--|
| Designation   | M056-230V                                  |
| Article Number  | 9010-0371                                  |
| Option model  | Standard                                   |
| Performance Data Temperature                          |  |
| Temperature range                                     | +23 °C above ambient temperature to 300 °C |
| Temperature uniformity at 150°C                       | 1.4 ± K                                    |
| Temperature fluctuation at 150°C                      | 0.2 ± K                                    |
| Heating up time to 150°C                              | 9 min                                      |
| Recovery time after door was opened for 30 s at 150°C | 4 min                                      |
| Air change data                                       |  |
| Air change rate at 100°C                              | 175 x/h                                    |
| Electrical data                                       |  |
| Rated Voltage   | 230 V                                      |
| Power frequency                                       | 50/60 Hz                                   |
| Nominal power   | 2 kW                                       |
| Unit fuse   | 10,0 A                                     |
| Phase (Nominal voltage)                               | 1~   |
| Dimensions and weights                                |  |
| Interior volume                                       | 59 L                                       |
| Net weight of the unit (empty)                        | 43 kg                                      |
| Load per rack   | 30 kg                                      |
| Permitted load  | 70 kg                                      |
| Wall clearance back                                   | 160 mm                                     |
| Wall clearance sidewise                               | 100 mm                                     |
| Housing dimensions not incl. fittings and connections |  |
| Width net   | 560 mm                                     |
| Height net  | 622 mm                                     |
| Depth net   | 596 mm                                     |
| Internal Dimensions                                   |  |

|                 |        |
|-----------------|--------|
| Interior width  | 400 mm |
| Interior height | 440 mm |
| Interior depth  | 335 mm |
| Unit doors      | 1      |

Environment-specific data

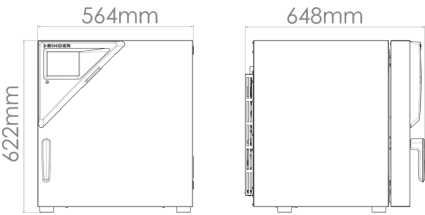
|                             |          |
|-----------------------------|----------|
| Sound-pressure level        | 46 dB(A) |
| Energy consumption at 100°C | 210 Wh/h |
| Energy consumption at 150°C | 330 Wh/h |

Fixtures

|                               |     |
|-------------------------------|-----|
| Number of shelves (std./max.) | 2/4 |
|-------------------------------|-----|

All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

DIMENSIONS Incl. fittings and connections [mm]



OPTIONS

| Designation                    | Description | *  | Art.-No.  |
|--------------------------------|-------------|----|-----------|
| Access port with silicone plug | left        |    |           |
|                                | 10 mm       | 01 | 8012-2296 |
|                                | 30 mm       | 01 | 8012-2302 |
|                                | 50 mm       | 01 | 8012-2305 |
|                                | right       |    |           |
|                                | 10 mm       | 01 | 8012-2298 |
|                                | 30 mm       | 01 | 8012-2304 |
|                                | 50 mm       | 01 | 8012-2307 |
|                                | top         |    |           |
|                                | 10 mm       | 01 | 8012-2297 |

| Designation                          | Description  | *  | Art.-No.  |
|--------------------------------------|--|----|-----------|
|                                      | 30 mm  | 01 | 8012-2303 |
|                                      | 50 mm  | 01 | 8012-2306 |
|                                      | 100 mm   | 01 | 8012-2300 |
| Analog output 4-20 mA                | for temperature values (output not adjustable)   | 02 | 8012-2295 |
| Calibration certificate, expanded    | for temperature; for extending the measurement in center of chamber to include another test temperature  | -  | 8012-2328 |
|                                      | for temperature, measurement in center of chamber at specified temperature   | -  | 8012-2324 |
| Calibration certificate, temperature | temperature measurement incl. certificate, 9 measuring points at specified temperature   | -  | 8012-2327 |
|                                      | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature  | -  | 8012-2325 |
|                                      | temperature measurement incl. certificate and 27 measuring points at specified temperature   | -  | 8012-2326 |
| Door gasket                          | made of FKM, silicone-free   | -  | 8012-2331 |
| Door lock                            | lockable door handle   | -  | 8012-2335 |
| Gas-tight option model               | Incl. additional measures for the greatest possible impermeability to gas; not in conjunction with access port or interior lighting option                                     | -  | 8012-2308 |
| HEPA air filter                      | On fresh air supply for unit; filter classification H14 (acc. to. EN 1822-1:2009, > 99.995% at 0.3 µm); not in conjunction with reinforced heating output, reinforced fan      | -  | 8012-2311 |
| Inert gas connection                 | With gas inlet and outlet, Ø 10 mm, incl. additional measures for the greatest possible impermeability to gas; not in conjunction with access port or interior lighting option | -  | 8012-2315 |
| Inner chamber, reinforced            | max. total load 85 kg  | -  | 8012-2320 |
| Interior lighting                    | with 27 W light bulb   |    |           |
|                                      | 230/240 V option model   | -  | 8012-2318 |
| Measurement of air exchange rate     | in accordance with ASTM D5374, definition and protocol according to ambient temperature  | -  | 8012-2329 |
| Pt 100 temperature sensor            | Additional flexible Pt 100, interior, for displaying the temperature on the unit display. (Not combined with specimen temperature control option)                              | -  | 8012-2330 |
| Specimen temperature control         | With additional specimen temperature sensor. Standard function 2 zero-voltage relay contacts not applicable.   | -  | 8012-2343 |

## ACCESSORIES

| Designation              | Description   | * | Art.-No.  |
|--------------------------|---|---|-----------|
| APT-COM™ 4 BASIC-Edition | for simple logging and documentation requirements with up to 5 networked units.   |   |           |
|                          | version 4, BASIC edition  | - | 9053-0039 |
| APT-COM™ 4 GLP-Edition   | for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11. |   |           |

| Designation                     | Description   | * | Art-No.   |
|---------------------------------|---|---|-----------|
|                                 | version 4, GLP edition  | - | 9053-0042 |
| APT-COM™ 4 PROFESSIONAL-Edition | convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.  |   |           |
|                                 | version 4, PROFESSIONAL edition   | - | 9053-0040 |
| pH-neutral detergent            | concentrated, for gentle remove of residual contaminants; 1 kg  | - | 8012-2250 |
| Qualification documents         | IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> – or pressure, depending on unit     |   |           |
|                                 | Digital in PDF format   | - | 7057-0005 |
|                                 | Hard copy inside folder   | - | 7007-0005 |
|                                 | IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> , pressure, depending on unit |   |           |
|                                 | Digital in PDF format   | - | 7057-0001 |
|                                 | Hard copy inside folder   | - | 7007-0001 |
| Rack                            | max. load per rack 30 kg  |   |           |
|                                 | chrome plated   | - | 8012-2038 |
|                                 | stainless steel   | - | 8012-2085 |
| Rubber pads                     | set anti-slip feet  | - | 8012-2030 |
| Shelf, perforated               | max. load per rack 30 kg  |   |           |
|                                 | Stainless steel   | - | 8012-2175 |
| Table on castors                | stable cart, casters with locking brakes, dimensions: W 1,000 x D 800 x H 780 mm  | - | 9051-0018 |

## SERVICES

| Designation                                  | Description  | *  | Art-No.   |
|--|--|----|-----------|
| <b>Calibration services</b>                  |  |    |           |
| Calibration certificate, temperature         | Calibration of one (1) test temperature specified by the user in center of chamber, including certificate                                      | 05 | DL30-0120 |
|  | Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate | 05 | DL30-0102 |
| Measurement of air exchange rate             | including certificate (in accordance with ASTM D5374)  | 05 | DL33-0000 |
| Temperature measurement, 9 measuring points  | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate                                  | 05 | DL30-0109 |
| Temperature measurement, 18 measuring points | Temperature measurement with 18 measuring points with a set value specified by the user, including certificate                                 | 05 | DL30-0118 |

| Designation                                  | Description   | *  | Art.-No.  |
|--|---|----|-----------|
| Temperature measurement, 27 measuring points | Temperature measurement with 27 measuring points with a set value specified by the user, including certificate  | 05 | DL30-0127 |
| <b>Installation services</b>                 |   |    |           |
| Unit commissioning                           | Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work)  | 05 | DL10-0100 |
| Unit instructions                            | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming   | 05 | DL10-0500 |
| <b>Maintenance contracts</b>                 |   |    |           |
| BRONZE 3-year maintenance contract           | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts  | 05 | DL20-0720 |
| GOLD 3-year maintenance contract             | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate | 05 | DL20-0910 |
| SILVER 3-year maintenance contract           | Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate                              | 05 | DL20-0810 |
| <b>Maintenance services</b>                  |   |    |           |
| Maintenance                                  | One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate   | 05 | DL20-0602 |
| <b>Validation services</b>                   |   |    |           |
| Execution of IQ/OQ                           | Execution of IQ/OQ in accordance with qualification folder  | 05 | DL41-0200 |
| Execution of IQ/OQ/PQ                        | Execution of IQ/OQ/PQ in accordance with qualification folder   | 05 | DL44-0500 |
| <b>Warranty service</b>                      |   |    |           |
| 1-year warranty extension                    | The warranty is extended by 1 year from the delivery date, wear parts are excluded  | 05 | DL50-0010 |

## NOTES

- 01      Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02      UL mark is not granted when this option is used.
- 05      Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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