# Model FED 56 | Drying and heating chambers with forced convection and enhanced timer functions

**BINDER heating chambers of the FED Avantgarde.Line series provide almost unlimited capacity and are particularly adaptable. With advanced timing functions and a controllable fan, temperature and convection conditions are easily controlled.**

## BENEFITS

- Best energy efficiency on the market
- Excellent temporal and spatial temperature accuracy
- USB connection for recording data
- Temperature range up to 300 °C



Model 56



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## IMPORTANT FEATURES

- Temperature range: +10°C above ambient temperature to +300 °C
- Up to 30% lower energy consumption compared to conventional units on the market
- High temperature accuracy thanks to APT.line™ technology
- Adjustable fan speed
- Controller with LCD display and enhanced time functions
- Electromechanical control of the exhaust air flap
- 2 chrome-plated racks
- Stackable
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm
- Ergonomic handle design
- Ethernet interface
- USB port for recording data

## ORDERING INFORMATION

| Interior volume [L] | Power supply - unit fuse | Plug* | Version | Model version | Art.-No. |
|---|---|---|---|---|---|
| **Model FED 56** | | | | | |
| 60 | 230 V 1~ 50/60 Hz -6,3 A | CEE 7/7 | Standard | FED056-230V | 9010-0295 |
| | 120 V 1~ 60 Hz -12,5 A | NEMA 5-15 | Standard | FED056UL-120V | 9010-0296 |

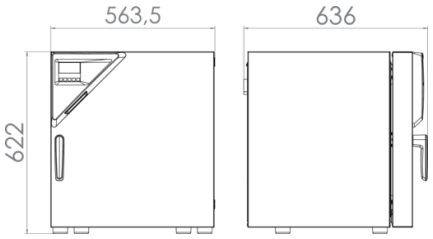
## TECHNICAL DATA

| | | |
|---|---|---|
| **Data** | | |
| Article Number | 9010-0295 | 9010-0296 |
| Designation | FED056-230V | FED056UL-120V |
| Option model | Standard | Standard |
| **Performance Data Temperature** | | |
| Temperature range | +10 °C above ambient temperature to 300 °C | +10 °C above ambient temperature to 300 °C |
| Temperature uniformity at 150°C | 1.4 ± K | 1.4 ± K |
| Temperature fluctuation at 150°C | 0.3 ± K | 0.3 ± K |
| Heating up time to 150°C | 15 min | 15 min |
| Recovery time after door was opened for 30 s at 150°C | 4 min | 4 min |
| **Air change data** | | |
| Air change rate at 100°C | 80 x/h | 80 x/h |
| **Electrical data** | | |
| Rated Voltage | 230 V | 120 V |
| Power frequency | 50/60 Hz | 60 Hz |
| Nominal power | 1,1 kW | 1,2 kW |
| Unit fuse | 6,3 A | 12,5 A |
| Phase (Nominal voltage) | 1~ | 1~ |
| **Dimensions and weights** | | |
| Interior volume | 60 L | 60 L |
| Net weight of the unit (empty) | 39 kg | 39 kg |
| Load per rack | 30 kg | 30 kg |
| Permitted load | 70 kg | 70 kg |
| Wall clearance back | 160 mm | 160 mm |
| Wall clearance sidewise | 100 mm | 100 mm |
| **Housing dimensions not incl. fittings and connections** | | |
| Width net | 560 mm | 560 mm |
| Height net | 625 mm | 625 mm |
| Depth net | 565 mm | 565 mm |
| **Internal Dimensions** | | |

| | | |
|---|---|---|
| Interior width | 400 mm | 400 mm |
| Interior height | 440 mm | 440 mm |
| Interior depth | 345 mm | 345 mm |
| Unit doors | 1 | 1 |
| **Environment-specific data** | | |
| Sound-pressure level | 43 dB(A) | 43 dB(A) |
| Energy consumption at 100°C | 180 Wh/h | 180 Wh/h |
| Energy consumption at 150°C | 290 Wh/h | 290 Wh/h |
| **Fixtures** | | |
| Number of shelves (std./max.) | 2/4 | 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 | FED 56 | * | Art.-No. |
|---|---|---|---|---|
| Access port with silicone plug | left | | | |
| | 10 mm | • | 01 | 8012-1278 |
| | 30 mm | • | 01 | 8012-1655 |
| | 50 mm | • | 01 | 8012-1657 |
| | right | | | |
| | 10 mm | • | 01 | 8012-1271 |
| | 30 mm | • | 01 | 8012-1654 |
| | 50 mm | • | 01 | 8012-1656 |
| | top | | | |
| | 10 mm | • | 01 | 8012-1264 |

| Designation | Description | FED 56 | * | Art.-No. |
|---|---|---|---|---|
| | 30 mm | • | 01 | 8012-1365 |
| | 50 mm | • | 01 | 8012-1381 |
| | 100 mm | • | 01 | 8012-1672 |
| Alarm function for overheating | switchable acoustic alarm, with adjustable limit value on the independent temperature safety device. Not in combination with the following option: Door with window | • | - | 8012-1637 |
| Analog output 4-20 mA | for temperature values (output not adjustable) | • | 02 | 8012-1625 |
| Calibration certificate, expanded | for temperature; for extending the measurement in center of chamber to include another test temperature | • | - | 8012-1118 |
| Calibration certificate, temperature | for temperature, measurement in center of chamber at specified temperature | • | - | 8012-1137 |
| | temperature measurement incl. certificate, 9 measuring points at specified temperature | • | - | 8012-1554 |
| | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature | • | - | 8012-1575 |
| | temperature measurement incl. certificate and 27 measuring points at specified temperature | • | - | 8012-1596 |
| Class 3.1 independent temperature safety device | with visual alarm (DIN 12880) | • | - | 8012-1644 |
| Clock | battery-backed | • | - | 8012-1642 |
| Door gasket | made of FKM, silicone-free | • | - | 8012-1649 |
| Door lock | lockable door handle | • | - | 8012-1666 |
| Gas-tight option model | Incl. additional measures for the greatest possible impermeability to gas; not in conjunction with access port or interior lighting option | • | - | 8012-1684 |
| Heating output, reinforced | for faster heating up time and improved recovery time; max. 300°C | | | |
| | 230 V option model | • | - | 8012-1698 |
| 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 | • | - | 8012-1695 |
| 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 | • | - | 8012-1690 |
| Inner chamber, reinforced | max. total load 85 kg | • | - | 8012-1713 |
| Interior lighting | with 25 W light bulb | | | |
| | 120 V option model | • | - | 8012-1633 |
| | with 27 W light bulb | | | |
| | 230/240 V option model | • | - | 8012-1629 |
| Measurement of air exchange rate | in accordance with ASTM D5374, definition and protocol according to ambient temperature | • | - | 8012-1197 |

| Designation | Description | FED 56 | * | Art.-No. |
|---|---|---|---|---|
| Pt 100 temperature sensor | additional flexible Pt 100, interior, for displaying the temperature on the unit display | • | - | 8012-1621 |
| Viewing window and interior lighting | Viewing window (triple-glazed insulating glass) 240 x 240 mm in the door and interior lighting 15 W. Not in combination with the following option: Alarm function for overheating | | | |
| | 120 V option model | • | - | 8012-1703 |
| | 230 V option model | • | - | 8012-1701 |

## ACCESSORIES

| Designation | Description | FED 56 | * | 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. | | | |
| | 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, $CO_2$, $O_2$ – 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, $CO_2$, $O_2$, 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 |

| Designation | Description | FED 56 | * | Art.-No. |
|---|---|---|---|---|
| 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. |
|---|---|---|---|
| **Calibration services** | | | |
| 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 |
| Temperature measurement, 27 measuring points | Temperature measurement with 27 measuring points with a set value specified by the user, including certificate | 05 | DL30-0127 |
| **Installation services** | | | |
| 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 | DL10-0160 |
| Unit instructions | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming | 05 | DL10-0540 |
| **Maintenance contracts** | | | |
| 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 |
| **Maintenance services** | | | |
| 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 |
| **Validation services** | | | |
| Execution of IQ/OQ | Execution of IQ/OQ in accordance with qualification folder | 05 | DL40-0100 |
| Execution of IQ/OQ/PQ | Execution of IQ/OQ/PQ in accordance with qualification folder | 05 | DL44-0500 |

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Warranty service** | | | |
| 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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