

# Datasheet

This product datasheet has been provided by  
John Godrich & SJ Electronics in Partnership  
with BINDER



Best conditions for your success

# Model MKT 115 | Dynamic climate chambers for rapid temperature changes with extended low temperature range

Temperature ranges between  $-70\text{ }^{\circ}\text{C}$  and  $180\text{ }^{\circ}\text{C}$ , with the added benefit of natural simulation, are what make the BINDER MKT series so unique. At the same time, this environmental simulation chamber fulfills the very highest precision and performance requirements for cyclical temperature tests.

## BENEFITS

- Homogeneous climate conditions thanks to APT.line™ technology
- Comprehensive programming and data acquisition
- Large heated viewing window



Model 115



Model 115

## MAIN FEATURES

- Temperature range:  $-70\text{ }^{\circ}\text{C}$  to  $180\text{ }^{\circ}\text{C}$
- 4 zero-voltage relay contacts that can be activated via MCS controller
- APT.line™ preheating chamber technology
- Programmable condensation protection for test material
- Heated viewing window with LED interior lighting
- BINDER APT-COM™ 3 Basic Edition communication software
- Troubleshooting system with visual and audible alarms
- Controller with time-segment programming
- Access port with silicone plug: 50 mm, left
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- 4 castors, two with brakes
- Computer interface: Ethernet
- 230 V power socket on the right-side control panel
- Display via color LCD monitor
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- Door heating
- 1 stainless steel rack
- BINDER test confirmation
- Inner chamber made of stainless steel
- Pt 100 temperature sensor
- Thermal insulation using PUR foam
- CFC-free refrigerants R-404A and R-23
- Cooling with cascade compressor cooling unit
- Fin evaporator

## ORDERING INFORMATION

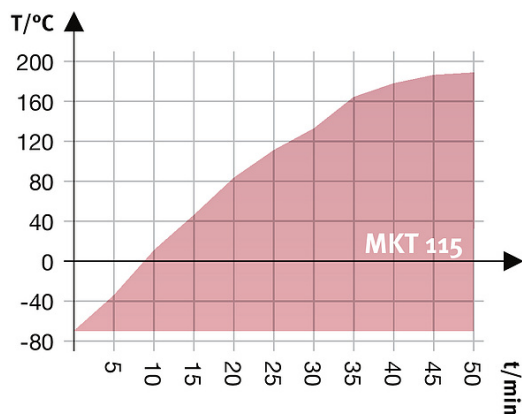
| Interior volume [cu.ft.] | Voltage          | Option model                         | Version       | Art.-No.  |
|--------------------------|------------------|--------------------------------------|---------------|-----------|
| Model MKT 115            |                  |                                      |               |           |
| 4.1                      | 400 V 3 ph 50 Hz | Standard                             | MKT115-400V   | 9020-0151 |
|                          | 480 V 3 ph 60 Hz | with voltage and frequency converter | MKT115-400V-C | 9020-0292 |

## TECHNICAL DATA

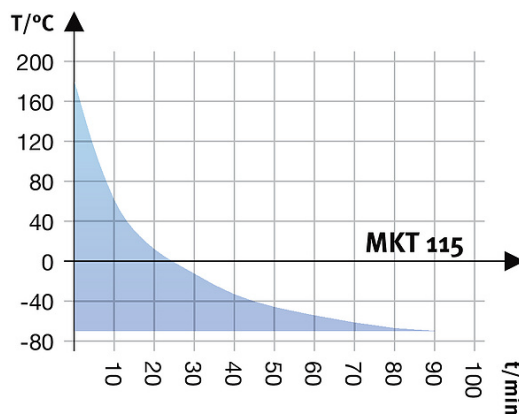
| Description  | MKT115-400V <sup>1</sup> | MKT115-400V-C <sup>1</sup> |
|--|--------------------------|----------------------------|
| Article Number   | 9020-0151                | 9020-0292                  |
| <b>Performance Data Temperature</b>                          |                          |                            |
| Temperature range [°C]                                       | -70...180                | -70...180                  |
| Temperature variation depending on setpoint [± K]            | 0.2...1.8                | 0.2...1.8                  |
| Temperature fluctuation depending on setpoint [± K]          | 0.1...0.6                | 0.1...0.6                  |
| Average heating-up rate according to IEC 60068-3-5 [K/min]   | 5.3                      | 5.3                        |
| Cooling down time from 180 °C to -70 °C [min]                | 90                       | 90                         |
| Average cooling down time according to IEC 60068-3-5 [K/min] | 4.2                      | 4.2                        |
| Max. heat compensation at 25 °C [W]                          | 1800                     | 1800                       |
| <b>Electrical data</b>                                       |                          |                            |
| Rated Voltage [V]  | 400                      | 480                        |
| Power frequency [Hz]   | 50                       | 60                         |
| Nominal power [kW]   | 5.5                      | 5.5                        |
| Unit fuse [A]  | 16                       | 16                         |
| Phase (Nominal voltage) [ph]                                 | 3                        | 3                          |
| <b>Outer dimensions</b>                                      |                          |                            |
| Width net [mm]   | 980                      | 980                        |
| Height net [mm]  | 1725                     | 1725                       |
| Depth net [mm]   | 865                      | 865                        |
| Wall clearance back [mm]                                     | 210                      | 210                        |
| Wall clearance sidewise [mm]                                 | 300                      | 300                        |
| Viewing window width [mm]                                    | 228                      | 228                        |
| Viewing window height [mm]                                   | 222                      | 222                        |
| <b>Doors</b>   |                          |                            |
| Unit doors   | 1                        | 1                          |
| <b>Internal Dimensions</b>                                   |                          |                            |
| Width [mm]   | 600                      | 600                        |
| Height [mm]  | 480                      | 480                        |
| Depth [mm]   | 400                      | 400                        |
| <b>Measures</b>  |                          |                            |
| Interior volume [L]  | 115                      | 115                        |
| Net weight of the unit (empty) [kg]                          | 305                      | 305                        |
| permitted load [kg]  | 60                       | 60                         |
| Load per rack [kg]   | 30                       | 30                         |
| <b>Environment-specific data</b>                             |                          |                            |
| Sound-pressure level [dB(A)]                                 | 64                       | 67                         |
| <b>Fixtures</b>  |                          |                            |
| Number of shelves (std./max.)                                | 1/4                      | 1/4                        |

<sup>1</sup> 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.

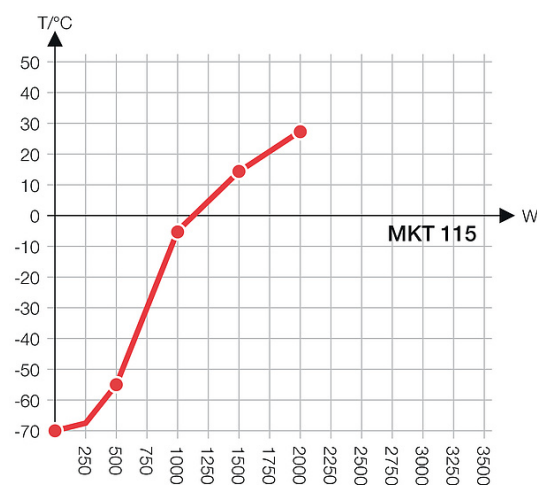
### CHARTS



Heating up rate



Cooling down rate



Heat compensation chart

### OPTIONS AND ACCESSORIES

| Designation                    | Description                                 | *      | Art.-No.  |
|--------------------------------|---|--------|-----------|
| Access port                    | notch-type access port in door, 100 x 35 mm | -      | 8012-1505 |
|                                | left  |        |           |
|                                | 30 mm                                       | 01     | 8012-1324 |
|                                | 50 mm                                       | 01     | 8012-1330 |
|                                | 80 mm                                       | 01     | 8012-1336 |
|                                | 100 mm                                      | 01, 11 | 8012-1544 |
|                                | 125 mm                                      | 01, 11 | 8012-1353 |
|                                | right                                       |        |           |
| Access port with silicone plug | 30 mm                                       | 01     | 8012-1321 |
|                                | 50 mm                                       | 01     | 8012-1327 |
|                                | 80 mm                                       | 01     | 8012-1333 |
|                                | 100 mm                                      | 01, 11 | 8012-1541 |
|                                | 125 mm                                      | 01, 11 | 8012-1350 |
|                                | top   |        |           |
|                                | 80 mm                                       | 01     | 8012-1538 |
|                                | 100 mm                                      | 01, 11 | 8012-1532 |
|                                | 125 mm                                      | 01, 11 | 8012-1535 |

\* Notes > See last page

| Designation                          | Description  | *  | Art.-No.  |
|--------------------------------------|--|----|-----------|
| Analog output, 4 – 20 mA             | for temperature values (output not adjustable)   | –  | 8012-1344 |
| Calibration certificate, expanded    | for temperature; for extending the measurement in center of chamber to include another test temperature  | –  | 8012-1125 |
|                                      | for temperature, measurement in center of chamber at specified temperature   | –  | 8012-1144 |
| Calibration certificate, temperature | temperature measurement incl. certificate and 27 measuring points at specified temperature   | –  | 8012-1603 |
|                                      | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature  | –  | 8012-1582 |
|                                      | temperature measurement incl. certificate, 9 measuring points at specified temperature   | –  | 8012-1561 |
| Converter, voltage and frequency     | to operate the device at a nominal voltage of 480 V 3 ph 60 Hz, 16 A   | –  | 8009-0889 |
| Data Logger Kit                      | T 220: For continuous temperature logging from -90 °C to 220 °C. The kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit | 19 | 8012-0715 |
| Data Logger Software                 | LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)   | 19 | 8012-0821 |
| Door lock                            | lockable door handle   | –  | 8012-1407 |
| Dry-air purge                        | uncontrolled, incl. connection; for preventing condensation  | –  | 8012-0912 |
| Dry-air purge, connection            | for the connection to an existing pressurized air network  | –  | 8012-1617 |
| Interface converter                  | RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit   |    |           |
|                                      | 120 V, 60 Hz option model  | –  | 8012-0557 |
|                                      | 230 V, 50/60 Hz option model   | –  | 8012-0556 |
|                                      | RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit   |    |           |
|                                      | 120 V, 60 Hz option model  | –  | 8012-0405 |
|                                      | 230 V, 50/60 Hz option model   | –  | 8012-0380 |
| Interface converter, USB / RS422     | RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)  | –  | 8012-0665 |
| Lockable controller keyboard         | Lockable controller keyboard with key-operated switch  | –  | 8012-1347 |
| pH-neutral detergent                 | concentrated, for gentle remove of residual contaminants; 1 kg   | –  | 1002-0016 |
| Pt 100 temperature sensor            | additional flexible Pt 100, interior, for displaying the temperature on the unit display   | –  | 8012-1297 |
| Rack                                 | stainless steel  | –  | 6004-0008 |
| Rack accessories                     | Rack accessories – fasteners (1 set of 4) for additional security of racks   | –  | 8012-0620 |
| Rack, reinforced                     | stainless steel, with 1 set of 4 fasteners, max. load 70 kg  | –  | 8012-0709 |
| RS 422 interface                     | in place of Ethernet, for communication software   | –  | 8012-1515 |
|                                      | modular plug distributor for 10 RS 422 interfaces  | –  | 8012-0295 |
| RS 422 interface, cable (15 m)       | RS 422 connection cable (15 m) between plug distributor and RS 422 interface   | –  | 5023-0036 |
| RS 422 interface, cable (50 m)       | RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor   | –  | 5023-0117 |
| Shelf, perforated                    | stainless steel  | –  | 6004-0030 |
| Software                             | APT-COM™ communications software   |    |           |
|                                      | version 2 to 3, GLP edition  | 19 | 9053-0016 |
|                                      | version 3, BASIC edition   | 19 | 9053-0014 |
|                                      | version 3, GLP edition   | 19 | 9053-0015 |
|                                      | version 3, STANDARD edition  | 19 | 9053-0013 |
|                                      | APT-COM™ communications software, price: for free  |    |           |
|                                      | version 3, GLP DEMO Edition  | 19 | 9053-0008 |
| Temperature safety device class 2    | with visual alarm (DIN 12880)  | –  | 8012-1245 |

\* Notes › See last page

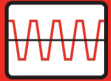
## SERVICES

| Designation                                 | Description   | *                 | Art.-No.  |
|---|---|-------------------|-----------|
| <b>Installation services</b>                |   |                   |           |
| Data Logger Kit installation service        | unit function instructions for operation and programming of the controller  | 18                | DL100600  |
| Installation                                | and set up of unit at operating location, connect to existing connections   | 13, 18            | DL100100  |
| <b>Preventive maintenance</b>               |   |                   |           |
| Preventive maintenance                      | Executive of equipment inspection according to maintenance plan   | 14, 18            | DL200500  |
| <b>Calibration services</b>                 |   |                   |           |
| Data Logger Kit calibration service         | including certificate, one measuring point in center of chamber at specified temperature  | 14, 16,<br>17, 18 | DL300101  |
| Temperature measurement 18 measuring points | including certificate, 18 measuring points at specified temperature   | 14, 16,<br>17, 18 | DL300118  |
| Temperature measurement 27 measuring points | including certificate, 27 measuring points at specified temperature   | 14, 16,<br>17, 18 | DL300127  |
| Temperature measurement 9 measuring points  | including certificate, 9 measuring points at specified temperature  | 14, 16,<br>17, 18 | DL300109  |
| <b>Validation services</b>                  |   |                   |           |
| Execution of IQ/OQ                          | in accordance with qualification folder   | 15, 18,<br>20     | DL410200  |
| Execution of IQ/OQ/PQ                       | in accordance with customer's requirement, price: on request  | 15, 18            | DL440500  |
| Qualification folder IQ/OQ                  | supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001     | 15, 18,<br>20     | 8012-0864 |
| Qualification folder IQ/OQ/PQ               | supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ | 15, 18            | 8012-0952 |
| <b>Warranty service</b>                     |   |                   |           |
| Extension of the warranty from 2 to 3 years | beginning with the date of delivery, wearing parts are not included   | -                 | DL012041  |
| Extension of the warranty from 2 to 5 years | beginning with the date of delivery, wearing parts are not included   | -                 | DL012042  |

\* Notes › See last page

## 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.
- 03 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 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).
- 19 For additional accessories, refer to the Process documentation chapter.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.



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