

# Model MKF 115 | Dynamic climate chambers for rapid temperature changes with humidity control

A BINDER MKF series environmental simulation chamber is ideally suited for any cold and heat testing based on current temperature and climate testing methods according to DIN and IEC standards. The comprehensive standard equipment for this environmental simulation chamber ensures ease of operation.

## BENEFITS

- Homogeneous climate conditions thanks to APT.line™ technology
- Automatic water and wastewater management
- Pressure humidification with fast response times
- Comprehensive programming and data acquisition
- Large heated viewing window



Model 115



Model 115

## MAIN FEATURES

- Temperature range: -40 °C to 180 °C
- Humidity range: 10 % to 98 % RH
- Integrated water-storage tank, 20 liters (Models 115, 240, 720)
- 4 zero-voltage relay contacts
- 1 stainless steel rack
- APT.line™ preheating chamber technology
- Intuitive touchscreen controller with time-segment and real-time programming
- Internal data logger, measured values can be read out in open format via USB
- Programmable condensation protection for test material
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitive humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM™ Basic Edition
- Troubleshooting system with visual and audible alarms
- Access port with silicone plug (Models 56, 115, 240: 50 mm, left)
- 2 access ports with silicone plugs (Model 720: 80 mm, left and right)
- 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 (Models 115, 240, 720)
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- Door heating
- Alarm notification in the event of insufficient water in fresh water tank (Models 115, 240, 720)
- Complete safety connection kit for water supply and drainage, up to 1 m height
- Inner chamber made of stainless steel
- CFC-free refrigerant R-404A
- Cooling with compressor cooling unit

## ORDERING INFORMATION

Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
Model MKF 115				
4.1	400 V 3~ 50 Hz	Standard	MKF115-400V	9020-0207
	480 V 3~ 60 Hz	with voltage and frequency converter	MKF115-480V-C	9020-0357

## TECHNICAL DATA

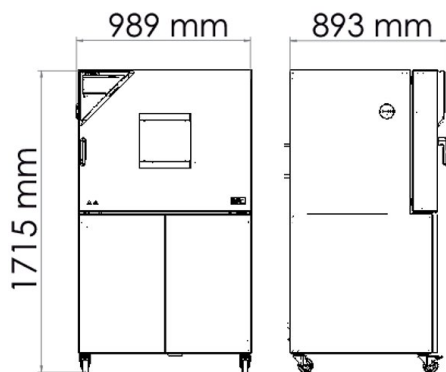
Description	MKF115-400V <sup>1</sup>	MKF115-480V-C <sup>1</sup>
Article Number	9020-0207	9020-0357
Performance Data Temperature		
Temperature range [°C]	-40...180	-40...180
Temperature variation depending on setpoint [± K]	0.1...1.3	0.1...1.3
Temperature fluctuation depending on setpoint [± K]	0.1...0.6	0.1...0.6
Average heating-up rate according to IEC 60068-3-5 [K/min]	5.5	5.5
Cooling down time from 180 °C to -40 °C [min]	95	95
Average cooling down time according to IEC 60068-3-5 [K/min]	4.5	4.5
Max. heat compensation at 25 °C [W]	2100	2100
Performance Data Climate		
Temperature range [°C]	10...95	10...95
Temperature fluctuation depending on setpoint [± K]	0.1...1.3	0.1...1.3
Humidity range [% RH]	10...98	10...98
Humidity fluctuation depending on setpoint	≤2,5 ± % RH	≤2,5 ± % RH
Dew point temperature range [°C]	5...94	5...94
Electrical data		
Rated Voltage [V]	400	480
Power frequency [Hz]	50	60
Nominal power [kW]	4.8	4.8
Unit fuse [A]	16	16
Phase (Nominal voltage)	3~	3~
Outer dimensions		
Width net [in]	38.61	38.61
Height net [in]	68	68
Depth net [in]	34.08	34.08
Wall clearance back [in]	11.82	11.82
Wall clearance sidewise [in]	7.88	7.88
Viewing window width [in]	11.35	11.35
Viewing window height [in]	8.75	8.75
Doors		
Unit doors	1	1
Internal Dimensions		
Width [in]	23.64	23.64
Height [in]	18.91	18.91
Depth [in]	15.76	15.76

<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.

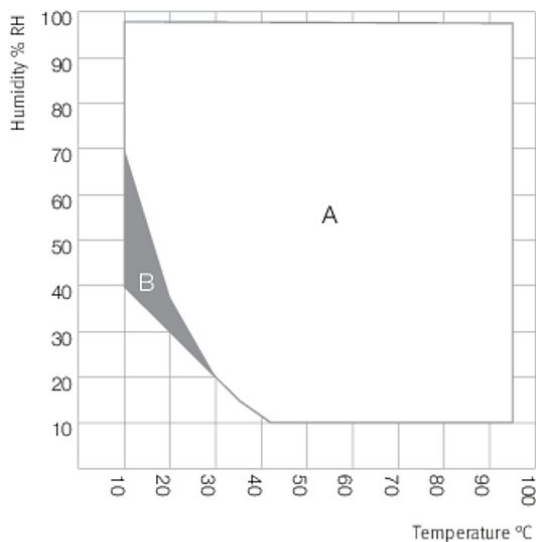
Description	MKF115-400V <sup>1</sup>	MKF115-480V-C <sup>1</sup>
Article Number	9020-0207	9020-0357
<b>Measures</b>		
Interior volume [cu.ft.]	4.1	4.1
Net weight of the unit (empty) [lbs]	617	617
permitted load [lbs]	132	132
Load per rack [lbs]	66	66
<b>Environment-specific data</b>		
Sound-pressure level [dB(A)]	62	67
<b>Fixtures</b>		
Number of shelves (std./max.)	1/4	1/4

1 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]**

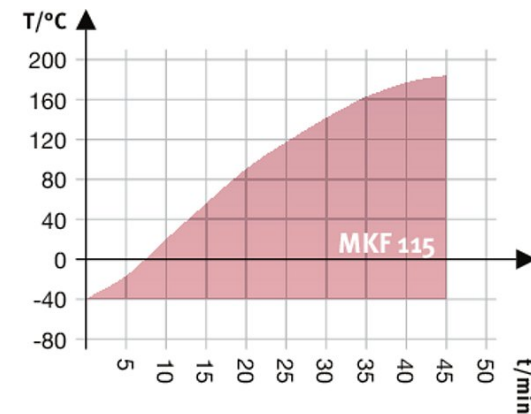


**CHARTS**

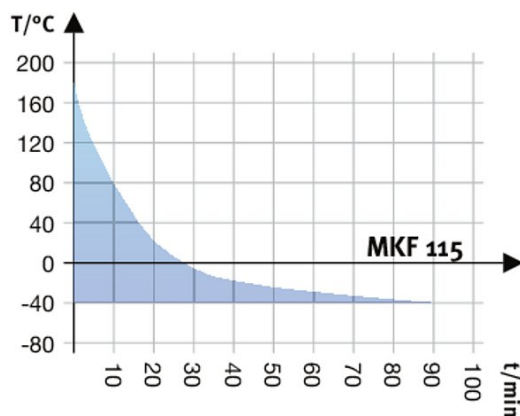


A: Standard Climate range  
 B: Time-limited operation (max. 24 hours)

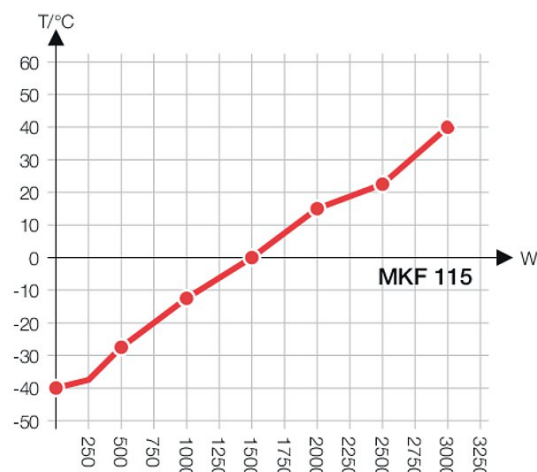
Climate chart



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	-	8012-1853
	left		
	30 mm	01	8012-1323
	50 mm	01	8012-1329
	80 mm	01	8012-1335
	100 mm	01, 11	8012-1543
	125 mm	01, 11	8012-1352
	right		
Access port with silicone plug	30 mm	01	8012-1320
	50 mm	01	8012-1326
	80 mm	01	8012-1332
	100 mm	01, 11	8012-1540
	125 mm	01, 11	8012-1349
	top		
	80 mm	01	8012-1537
	100 mm	01, 11	8012-1531
	125 mm	01, 11	8012-1534
Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	-	8012-1085
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	19	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	19	9053-0040
BINDER PURE AQUA SERVICE	system for preparation or complete desalination of tap water, containing single-use cartridge, hoses and measuring device	-	8012-0759
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	-	6011-0165
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	-	8012-1194
	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1609
Calibration certificate, temperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1589
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1568
Calibration certificate, temperature and humidity	Measurement in center of chamber at 25 °C / 60% RH or at specified test values	-	8012-1188
	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values	-	8012-1615

\* Notes &gt; See last page

Designation	Description	*	Art.-No.
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
	TH 100/70: For continuous temperature and humidity logging from -40 °C to 100 °C / 0% to 100% RH and additional logging of ambient conditions. Kit includes 1 data logger, 2 attachable combined humidity/temperature sensors, 2 m extension cable and 1 fixture for mounting to the BINDER unit	19	8012-1838
	TH 100: For continuous temperature and humidity logging from -50 °C to 100 °C; 0% to 100% RH. Kit includes 1 data logger, Pt 100 sensor with 2 m extension cable, and 1 magnetic fixture for mounting to the BINDER unit	19	8012-1837
Door lock	lockable door handle	-	8012-1862
Dry-air purge	controlled, incl. connection; suitable for the simulation of current automobile industry standards	-	8012-1863
Dry-air purge, connection	for the connection to an existing pressurized air network	-	8012-1802
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
Interface converter	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
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	-	8012-1094
Rack	stainless steel	-	6004-0008
Rack accessories	fasteners (1 set of 4) for additional security of racks	-	8012-0620
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	-	8012-0709
RS 422 interface	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
RS 485 / RS 422 interface converter	RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor		
	115 V option model	-	8012-0599
	230 V option model	-	8012-0589
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	-	8012-1769
Shelf, perforated	Stainless steel	-	6004-0030
Temperature safety device class 2	with visual alarm (DIN 12880)	-	8012-1864
Water circuit	allows condensed water to be reused	-	8012-1512
Water cooling	for reduced heat loss to ambient air	-	8012-0843

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL10-0300
Instruction	unit function instructions for operation and programming of the controller	18	DL10-0700
<b>Preventive maintenance</b>			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL20-0500
<b>Calibration services</b>			
Calibration temperature and humidity	including certificate, one measuring point in center of chamber at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL30-0301
Temperature and humidity measurement according to DIN12880	including certificate (27 temperature measuring points and one humidity measuring point, at 25 °C / 60 % RH or at specified values)	14, 16, 17, 18	DL30-0427

\* Notes › See last page

Designation	Description	*	Art.-No.
Temperature measurement 18 temperature measuring points and 1 humidity measuring point	including certificate, 18 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL30-0318
Temperature measurement 27 temperature measuring points and 1 humidity measuring point	including certificate, 27 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL30-0327
Temperature measurement 9 temperature measuring points and 1 humidity measuring point	including certificate, 9 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL30-0309
<b>Validation services</b>			
Execution of IQ/OQ	in accordance with qualification folder	15, 18, 20	DL42-0300
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL44-0500
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, 20	8012-0865
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	8012-0953
<b>Warranty service</b>			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	–	DL01-3041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	–	DL01-3042

\* 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 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 the item of the IQ/OQ folder.  
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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