

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

## 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
- 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
- Humidity regulation with capacitive humidity sensor and vapor humidification
- 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
- Alarm notification in the event of insufficient water in fresh water tank
- 1 stainless steel rack
- Complete safety connection kit for water supply and drainage, up to 1 m height
- BINDER test confirmation
- Inner chamber made of stainless steel
- Pt 100 temperature sensor
- Thermal insulation using PUR foam
- CFC-free refrigerant R-404A
- Cooling with compressor cooling unit
- Fin evaporator

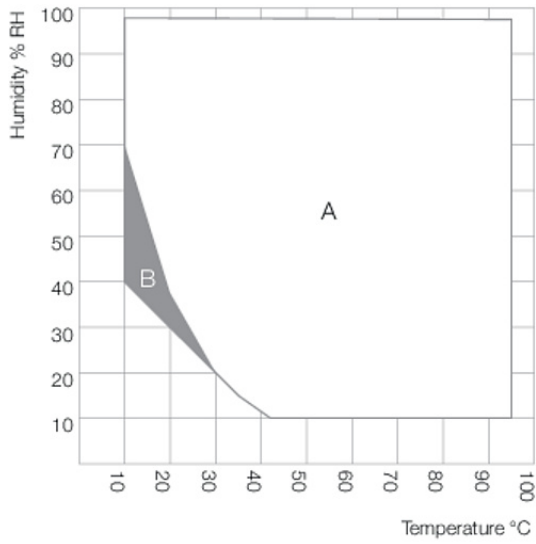
## ORDERING INFORMATION

Interior volume [L]	Voltage	Option model	Version	Art.-No.
Model MKF 115				
115	400 V 3~ 50 Hz	Standard	MKF115-400V	9020-0283
	480 V 3~ 60 Hz	with voltage and frequency converter	MKF115-400V-C	9020-0291

## TECHNICAL DATA

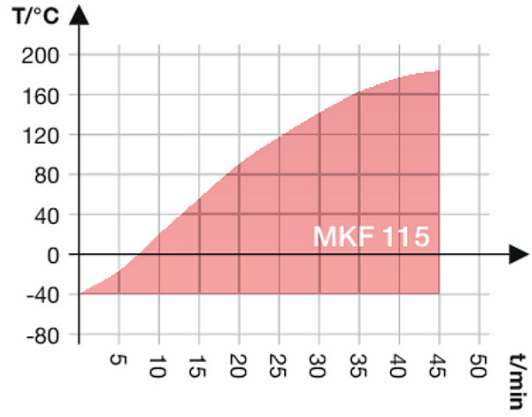
Description	MKF115-400V	MKF115-400V-C
<b>Article Number</b>	<b>9020-0283</b>	<b>9020-0291</b>
<b>Performance Data Temperature</b>		
Temperature range [°C]	-40...180	-40...180
Temperature uniformity depending on setpoint [± K]	0.1...1.3	0.1...1.3
Temperature fluctuation depending on setpoint [± K]	0.1...0.6	0.1...0.6
Average heating-up rate according to IEC 60068-3-5 [K/min]	5.5	5.5
Average cooling down time according to IEC 60068-3-5 [K/min]	4.5	4.5
Max. heat compensation at 25 °C [W]	2500	2500
Max. heat compensation at 25 °C at 90 % RH [W]	400	400
<b>Performance Data Climate</b>		
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	5...94 °C	5...94 °C
<b>Electrical data</b>		
Rated Voltage [V]	400	480
Power frequency [Hz]	50	60
Nominal power [kW]	4.5	4.5
Unit fuse [A]	16	16
Phase (Nominal voltage)	3~	3~
<b>Measures - 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
<b>Measures - Doors</b>		
Unit doors	1	1
<b>Measures - 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]	280	280
Load per rack [kg]	30	30
<b>Environment-specific data</b>		
Sound-pressure level [dB(A)]	62	67

CHARTS

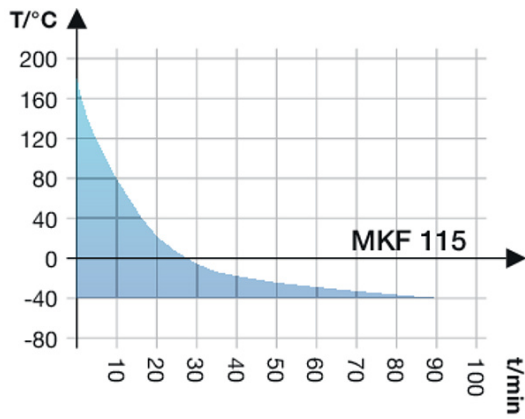


A: Standard Climate range  
 B: Time-limited operation (max. 24 hours)

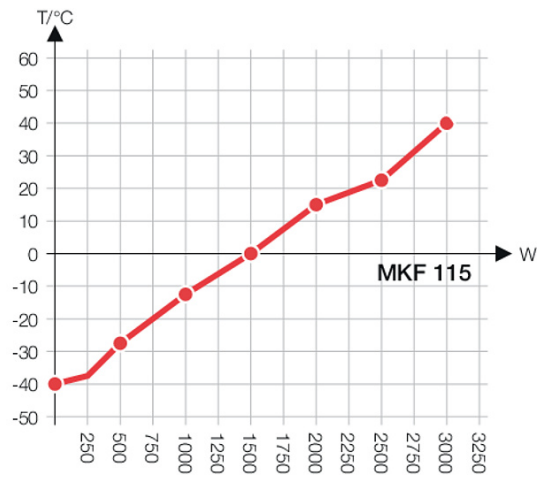
Climate chart



Heating up rate



Cooling down rate



Heat compensation chart

## OPTIONS AND ACCESSORIES

Designation	Description	*	Art.-No.	
<b>Access port</b>	notch-type access port in door, 100 x 35 mm	-	8012-0708	
	30 mm, left	01	8012-0509	
	30 mm, right	01	8012-0508	
	50 mm, left	01	8012-0511	
	50 mm, right	01	8012-0510	
	80 mm, left	01	8012-0513	
	80 mm, right	01	8012-0512	
	<b>Access port with silicone plug</b>	80 mm, top	01	8012-0834
		100 mm, left	01, 11	8012-0836
		100 mm, right	01, 11	8012-0835
		100 mm, top	01, 11	8012-0832
		125 mm, left	01, 11	8012-0533
		125 mm, right	01, 11	8012-0532
		125 mm, top	01, 11	8012-0833
<b>Analog output, 4 – 20 mA</b>	for temperature and humidity values (output not adjustable)	-	8012-0516	
<b>BINDER Pure Aqua Service</b>	system for preparation or complete desalination of tap water, containing single-use cartridge, hoses and measuring device	-	8012-0759	
<b>BINDER Pure Aqua Service, accessories</b>	Single-use, replacement cartridge for BINDER Pure Aqua System	-	6011-0165	
<b>Calibration certificate, expanded</b>	for temperature and humidity, each additional measurement at additional points or sets of values	-	8012-0155	
<b>Calibration certificate, temperature</b>	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-0923	
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-0920	
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-0917	
<b>Calibration certificate, temperature and humidity</b>	for temperature and humidity, measurement in center of chamber at 25 °C / 60 % RH or at specified values	-	8012-0154	
	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	-	8012-0924	
<b>Converter, voltage and frequency</b>	to operate the device at a nominal voltage of 480 V 3 ph 60 Hz, 32 A	-	8009-0806	
<b>Data Logger Kit</b>	T 220: temperature logging from -90 °C to 220 °C	19	8012-0715	
	TH 100/70: temperature and humidity logging from -40 °C to 100 °C and 0 % to 100 % RH and additional combination sensor for recording environmental conditions	19	8012-0719	
	TH 100: temperature and humidity logging from -40 °C to 100 °C and 0 % to 100 % RH	19	8012-0718	
<b>Data Logger Kit, software</b>	LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)	19	8012-0821	
<b>Door lock</b>	lockable door handle	-	8012-0606	
<b>Dry-air purge</b>	regulated, incl. connection, not suitable for simulation of typical automotive standards	-	8012-0852	
<b>Dry-air purge, connection</b>	for the connection to an existing pressurized air network	-	8012-0936	
<b>Interface converter</b>	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	
<b>Interface converter, USB / RS422</b>	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	
<b>Lockable controller keyboard</b>	Lockable controller keyboard with key-operated switch	-	8012-0530	
<b>Magnetic Pouch (A4)</b>	insert pouch with magnetic strip	-	1007-0065	

\* Notes › See last page

Designation	Description	*	Art.-No.
<b>Measuring channel for digital display of specimen temperature</b>	with flexible Pt 100 temperature sensor, measured data recorded via unit interface	-	8012-0447
<b>pH-neutral detergent</b>	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
<b>Rack</b>	stainless steel	-	6004-0008
<b>Rack, accessories</b>	set of 4 fasteners for additional security	-	8012-0620
<b>Rack, reinforced</b>	stainless steel, with 1 set of 4 fasteners, max. load 70 kg	-	8012-0709
<b>RS 422 interface</b>	in place of Ethernet, for communication software	-	8012-0788
	modular plug distributor for 10 RS 422 interfaces	-	8012-0295
<b>RS 422 interface, cable (15 m)</b>	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	-	5023-0036
<b>RS 422 interface, cable (50 m)</b>	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	-	5023-0117
<b>Shelf, perforated</b>	stainless steel	-	6004-0030
<b>Software</b>	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
<b>Temperature safety device</b>	for over- and under-temperature, Class 2 - with visual alarm (DIN 12880)	-	8012-0310
<b>Water circuit</b>	allows water to be reused	-	8012-0785
<b>Water cooling</b>	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	DL100300
Instruction	unit function instructions for operation and programming of the controller	18	DL100700
<b>Preventive maintenance</b>			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL200500
<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	DL300301
Temperature and humidity measurement according to DIN12880	including certificate (27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values)	14, 16, 17, 18	DL300427
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	DL300318
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	DL300327
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	DL300309
<b>Validation services</b>			
Execution of IQ/OQ	in accordance with qualification folder	15, 18, 20	DL420300
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, 20	8012-0865

\* Notes › See last page

<b>Designation</b>	<b>Description</b>	<b>*</b>	<b>Art.-No.</b>
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	-	DL013041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL013042

\* 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.
- 05 Attention: The pump is delivered separately. The electric connection for the pump (230 V/1~/50 Hz) must be carried out by an authorized electrician.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 08 The pump (packaged separately) is ready for connection.
- 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.
- 21 ATEX conformity:  
Pumping chamber (pumped gases): II 2G IIC T3 X  
Environment with inert purge gas: II 2G IIB T4 X  
Environment without inert purge gas: II 3G IIB T4 X  
Motor: II 2G Ex d IIB T4 Gb

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