VONMARCKEN

Model MKFT 240 | Dynamic climate chambers for rapid temperature changes with humidity control and extended low temperature range

The BINDER MKFT series environmental simulation chamber for low temperature alternating climate profiles is the specialist for dynamic alternating climate change between -70 °C and 180 °C. Large performance reserves and rapid cooling make the MKFT environmental simulation chamber the high-end product for complex standards-based climate tests.

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 240



Model 240

IMPORTANT FEATURES

- Temperature range: -70 °C to +180 °C
- Humidity range: 10 % to 98 % RH
- · Integrated water-storage tank, 20 liters
- 4 zero-voltage relay contacts
- APT.line[™] preheating chamber technology
- · Programmable condensation protection for test material
- Intuitive touchscreen controller with time-segment and real-time programming •
- Internal data logger, measured values can be read out in open format via USB •
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitative humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM[™] Basic Edition
- Troubleshooting system with visual and audible alarms
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm

- Access port with silicone plug: 50 mm, left
- 4 castors, two with brakes
- Computer interface: Ethernet
- 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 in height
- Inner chamber made of stainless steel
- CFC-free refrigerants R-452A and R-23
- Cooling with cascade compressor cooling unit

ORDERING INFORMATION

Interior volume [L]	Power supply - unit fuse	Plug*	Version	Model version	ArtNo.
Model MKFT 240					
228	400 V 3~/N/PE 50 Hz -16,0 A	CEE 16 / 6 H plug 5- pin	Standard	MKFT240-400V	9020-0383

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Interior volume [L]	Power supply - unit fuse	Plug*	Version	Model version	ArtNo.
	480 V 3~ 60 Hz -16,0 A	CEE 16 / 6 H plug 5- pin	with voltage and frequency converter	MKFT240-480V-C	9020-0361

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TECHNICAL DATA

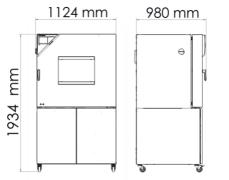
DesignationMRT204-00VMRT204-00VArtoc harborS020-0361Quico nodalSandardwit voltage and frequenty connetsPerformance Data Temperature70100 °CTemperature uniformly dependent on set volat6.1.0.5.4 KTemperature uniformly dependent on set volat6.1.0.5.4 KCoding down line from 180°C to -20°C10.0 minCoding down line from 180°C to -20°C10.0 minArcoge heating to not excerding to EC 60069-3.55.0 KrininArcoge heating to not excerding to EC 60069-3.56.0 KrininArcoge heating to not excerding to EC 60069-3.56.0 KrininArcoge coding down line according to EC 60069-3.56.0 Krinin	Data		
Option modelStandardwith voltage and frequency converterPerformance bata TergesatureTemperature range -20.130 °C -20.130 °CTemperature range $0.2.13 \times$ °C $0.2.13 \times$ °CTemperature runformity dependent on set value $0.2.13 \times$ °C $0.2.13 \times$ °CTemperature fluctuation dependent on set value $0.1.0.23 \times$ °C $0.1.0.23 \times$ °CCoding down time from 180°C to 70°C $100 min$ $100 min$ Coding down time form 180°C to 70°C $100 min$ $100 min$ Average coding to EC 60068-3.5 $4.2 $ K/min $4.2 $ K/minPerformance Data Climate 10	Designation	MKFT240-400V	MKFT240-480V-C
Performance Data Temperature Temperature range 78180 °C 78180 °C Temperature uniformity dependent on set value 8.218.± K 8.218.± K Temperature uniformity dependent on set value 8.00.5 ± K 8.10.5 ± K Average heating-up rate according to IEC 60068-55 5.0 K/min 5.0 K/min Cooling down time from 180° Cro -70°C 10 min 10 min Average cooling down time according to IEC 60068-55 4.2 K/min 4.2 K/min Performance Data Clmate 1055 °C 1050 °C Humdity range 1059 °C 1059 °C Humdity range 1059 °C 1059 °C Humdity furgetendent on set value 4.2.5 ± % cf. 4.115 ± K Humdity furgation with humdity dependent on set value 4.2.5 ± % cf. 4.115 ± K Humdity furgation with humdity dependent on set value 4.2.5 ± % cf. 4.015 ± K Humdity furgation with humdity dependent on set value 4.0.2 ± 5 ± % cf. 4.015 ± K Networdspice 0.0.9 W 400 W 400 W Detectival defa 400 W 400 W 400 W <t< td=""><td>Article Number</td><td>9020-0383</td><td>9020-0361</td></t<>	Article Number	9020-0383	9020-0361
Temperature range -70180 °C -70180 °C Temperature uniformity dependent on set value 0.2.1.8 ± K 0.2.1.8 ± K Temperature fluctuation dependent on set value 0.1.0.5 ± K 0.1.0.5 ± K Average houlding up rate according to EEC 60068-35 5.0 K/min 5.0 K/min Cooling down time from 180°C to -70°C 110 min 10 min Average cooling down time according to EEC 60068-35 4.2 K/min 4.2 K/min Performance Data Climate 1055 °C 1955 °C Humidity range 1038 % 8H 1058 % 8H Temperature fluctuation with humidity dependent on set value 2.5 ± % r.f. 2.5 ± % r.f. Maxe Part fluctuation with humidity dependent on set value 2.5 ± % r.f. 2.5 ± % r.f. Maxe Part fluctuation with humidity dependent on set value 2.0 ± % r.f. 2.5 ± % r.f. Maxe Part fluctuation with humidity dependent on set value 2.0 ± % r.f. 2.1 ± ± K Maxe Part fluctuation with humidity dependent on set value 2.0 ± ± % r.f. 2.1 ± ± K Maxe Part fluctuation with humidity dependent on set value 2.0 ± ± ± % r.f. 2.1 ± ± K Maxe Part fluctuation with humidity dependent on set value	Option model	Standard	with voltage and frequency converter
Temporature uniformity dependent on set value 0.2. 1.8 ± K 8.2. 1.8 ± K Temporature fluctuation dependent on set value 0.1. 1.5 ± K 11. 0.5 ± K Average heating-up rate according to IEC 60068-3-5 5.0 K/min 5.0 K/min Coding down time from 180°C to -70°C 10 min 110 min Average coding down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Average coding down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Average coding down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Average coding down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Performance Data Climate Temporature tange with humidity 10	Performance Data Temperature		
Temporature fluctuation dependent on set value 0.1. 0.5 ± K 0.1. 0.5 ± K Average heating-up rate according to IEC 60068-3-5 5.0 K/min 5.0 K/min Cooling down time from 180°C to -70°C 110 min 110 min Average cooling down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Performance Data Climate 1055 °C 1055 °C Temperature range with humidity 1055 °C 1055 °C Humidity range 1058 % M1 1058 % M1 Temperature fluctuation with humidity dependent on set value 2.2.5 °% r.E. 3.2.5 °C Humidity fluctuation with humidity dependent on set value 2.2.5 °% r.E. 3.2.5 °% r.E. Humidity fluctuation with humidity dependent on set value 2.2.5 °% r.E. 3.2.5 °% r.E. Humidity fluctuation with humidity dependent on set value 2.2.5 °% r.E. 3.2.5 °% r.E. Humidity fluctuation with humidity dependent on set value 2.2.5 °% r.E. 3.2.5 °% r.E. Max. heat compensation at 2.5°C and 50% RH 400 W 400 W Power frequency 50 Hz 60 Hz Nominal voltage) 3.0 Hz 60 Hz Interior volume <td>Temperature range</td> <td>-70180 ℃</td> <td>-70180 ℃</td>	Temperature range	-70180 ℃	-70180 ℃
Average heating-up rate according to IEC 60068-3-5 5.0 K/min 5.0 K/min Cooling down time from 180°C to -70°C 110 min 110 min Average cooling down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Performance Data Climate 1095 % C 1095 % C Temperature range with humdity 1095 % C 1095 % C Humdity range 1095 % RH 1095 % C Humdity range 0.1. 15 + K 0.1. 15 + K Humdity fucuation with humdity dependent on set value <2.5 ± % r.F.	Temperature uniformity dependent on set value	0.2. 1.8 ± K	0.2. 1.8 ± K
Cooling down time from 180°C to -70°C110 min110 minAverage cooling down time according to EC 60068-3-54.2 K/min4.2 K/minPerformance Data Climate1055 °C1055 °CTemperature range with humidity1056 °K PH1050 % PHHumidity range1056 % PH1050 % PHTemperature fluctuation with humidity dependent on set11.15 ± KMundity fluctuation with humidity dependent on set was42.5 ± % r.F.Average cooling down time according to ES °C400 WBetriktal data400 WElectrikal data50 H2Rated Voltage600 VPower frequency50 H2So H260 H2Noninal power50 AJohnsen ad weights3-//NPEIntersions and weights228 LAverage to difference228 LLondor of the unit (empty)415 kgOth game30 kgPermitted load30 kgLondor of the unit (empty)30 kgLondor of the unit (empty)30 kgPermitted load30 kgPermitted load30 kg	Temperature fluctuation dependent on set value	0.1. 0.5 ± K	0.1. 0.5 ± K
Average cooling down time according to IEC 60068-3-5 4.2 K/min 4.2 K/min Performance Data Climate In95 °C 1095 °C Humidhy range 1096 % RH 1099 % RH Temperature fluctuation with humidity dependent on set value 0.1. 1.5 ± K 0.1. 1.5 ± K Humidhy fluctuation with humidity dependent on set value 2.5 ± % n.F. 5.2 5 ± % n.F. Humidhy fluctuation with humidity dependent on set value 2.5 ± % n.F. 5.2 5 ± % n.F. Max. heat compensation at 25°C and 90% RH 400 W 400 W Electrical data Electrical data Electrical data Rated Voltage 400 V 480 V Prover frequency 50 Hz 60 Hz Nominal power 6kW 6kW Unit fuse 16,0 A 16,0 A Piase (Nominal voltage) 3~/NVPE 3~ Dimensions and weights 228 L 228 L Lead per rack 30 kg 30 kg	Average heating-up rate according to IEC 60068-3-5	5.0 K/min	5.0 K/min
Performance Data Climate Temperature range with humidity 1095 °C Humidity range 1095 % RH Temperature fluctuation with humidity dependent on set value 01. 1.5 ± K Humidity fluctuation with humidity dependent on set value s2,5 ± % r.F. Max. heat compensation at 25°C and 90% RH 400 W Bectrical data 400 V Power frequency 50 Hz Nominal power 61,0 A Phase (Nominal voltage) 3~/N/PE Dimensions and weights 228 L Interior volume 228 L Net weight of the unit (empty) 405 kg Jo Jag 50 kg	Cooling down time from 180°C to -70°C	110 min	110 min
Temperature range with humidity 1095 °C 1095 °C Humidity range 1095 % RH 1095 % RH Temperature fluctuation with humidity dependent on set value 01. $1.5 \pm K$ 01. $1.5 \pm K$ Humidity fluctuation with humidity dependent on set value $$2.5 \pm \%$ r.F. $$2.5 \pm \%$ r.F. Max. heat compensation at 25°C and 90% RH 400 W 400 W Electrical data Rated Voltage 400 V 480 V Power frequency 50 Hz 60 Hz Nominal power 6 kW 6 kW Urit fuse 16,0 A 16,0 A Phase (Nominal voltage) 3~/NI/PE 3~ Dimensions and weights 228 L 228 L Interior volume 228 L 228 L Act weight of the unit (empty) 415 kg 579 kg Laad per rack 30 kg 30 kg	Average cooling down time according to IEC 60068-3-5	4.2 K/min	4.2 K/min
Humidity range1098 % RH1098 % RHTemperature fluctuation with humidity dependent on set value0.1. 1.5 ± K0.1. 1.5 ± KHumidity fluctuation with humidity dependent on set values2,5 ± % r.F.s2,5 ± % r.F.Max. heat compensation at 25°C and 90% RH400 W400 WElectrical data400 V480 VPower frequency50 Hz60 HzNominal power6,6 V6,6 VUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LInterior volume228 L229 LNet weight of the unit (emply)415 kg579 kgLad per rack30 kg30 kg	Performance Data Climate		
Temperature fluctuation with humidity dependent on set value0.1. 1.5 ± K0.1. 1.5 ± KHumidity fluctuation with humidity dependent on set value≤2,5 ± % r.F.≤2,5 ± % r.F.Max. heat compensation at 25°C and 90% RH400 W400 WBectrical data400 VRated Voltage400 V480 VPower frequency50 Hz60 HzNominal power6kW6kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LInterior volume228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kg	Temperature range with humidity	1095 °C	1095 ℃
valueUI. 1.3 ± NUI. 1.3 ± NHumidity fluctuation with humidity dependent on set value\$2,5 ± % r.F.\$2,5 ± % r.F.Max. heat compensation at 25°C and 90% RH400 W400 WElectrical data400 V480 VRated Voltage400 V480 VPower frequency50 Hz60 HzNominal power6kW6kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LInterior volume228 L228 LLoad per rack30 kg30 kg	Humidity range	1098 % RH	1098 % RH
Max. heat compensation at 25°C and 90% RH400 W400 WElectrical data400 V480 VRated Voltage400 V480 VPower frequency50 Hz60 HzNominal power6kW6kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack70 kg70 kg		0.1. 1.5 ± K	0.1. 1.5 ± K
Electrical data Rated Voltage 400 V 480 V Power frequency 50 Hz 60 Hz Nominal power 6 kW 6 kW Unit fuse 16,0 A 16,0 A Phase (Nominal voltage) 3~/N/PE 3~ Dimensions and weights 228 L 228 L Net weight of the unit (empty) 415 kg 579 kg Load per rack 30 kg 30 kg	Humidity fluctuation with humidity dependent on set value	≤2,5 ± % r.F.	≤2,5 ± % r.F.
Rated Voltage400 V480 VPower frequency50 Hz60 HzNominal power6 kW6 kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LInterior volume228 L579 kgLoad per rack30 kg30 kg	Max. heat compensation at 25°C and 90% RH	400 W	400 W
Power frequency50 Hz60 HzNominal power6 kW6 kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights11Interior volume228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kgPermitted load70 kg70 kg	Electrical data		
Nominal power6 kW6 kWUnit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weights228 L228 LInterior volume228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kgPermitted load70 kg70 kg	Rated Voltage	400 V	480 V
Unit fuse16,0 A16,0 APhase (Nominal voltage)3~/N/PE3~Dimensions and weightsInterior volume228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kgPermitted load70 kg70 kg	Power frequency	50 Hz	60 Hz
Phase (Nominal voltage)3~/N/PE3~Dimensions and weightsInterior volume228 LNet weight of the unit (empty)415 kg10 d per rack30 kg20 kg30 kgPermitted load70 kg	Nominal power	6 kW	6 kW
Dimensions and weightsInterior volume228 LNet weight of the unit (empty)415 kg10ad per rack30 kg20 kg30 kg	Unit fuse	16,0 A	16,0 A
Interior volume228 L228 LNet weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kgPermitted load70 kg70 kg	Phase (Nominal voltage)	3~/N/PE	3~
Net weight of the unit (empty)415 kg579 kgLoad per rack30 kg30 kgPermitted load70 kg70 kg	Dimensions and weights		
Load per rack 30 kg Permitted load 70 kg	Interior volume	228 L	228 L
Permitted load 70 kg 70 kg	Net weight of the unit (empty)	415 kg	579 kg
	Load per rack	30 kg	30 kg
Wall clearance back 300 mm	Permitted load	70 kg	70 kg
	Wall clearance back	300 mm	300 mm



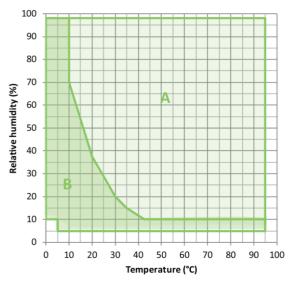
Wall clearance sidewise	200 mm	200 mm
Housing dimensions not incl. fittings and connections		
Width net	1,115 mm	1,115 mm
Height net	1,940 mm	1,940 mm
Depth net	925 mm	925 mm
Internal Dimensions		
Interior width	735 mm	735 mm
Interior height	700 mm	700 mm
Interior depth	443 mm	443 mm
Unit doors	1	1
Environment-specific data		
Sound-pressure level	67 dB(A)	70 dB(A)
Energy consumption at 25°C and 60% RH	1,000 Wh/h	1,000 Wh/h
Fixtures		
Number of shelves (std./max.)	1/6	1/6

All technical data is specified for unloaded units with standard equipment at an ambient temperature of $\pm 22 \text{ °C} \pm 3 \text{ °C}$ 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]

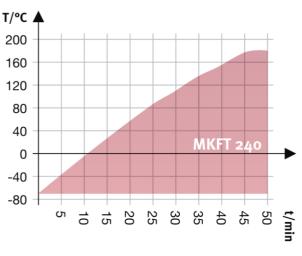


DIAGRAMS



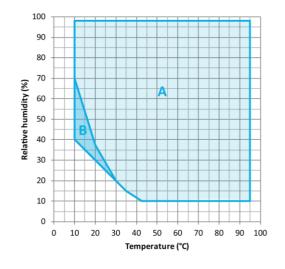
A: Standard Climate range

B: Expanded range with controlled dry-air purge

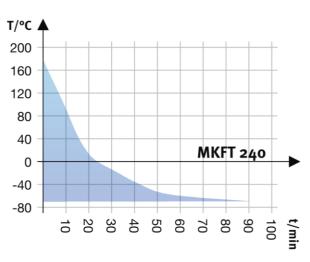


Climate chart

Heating up rate

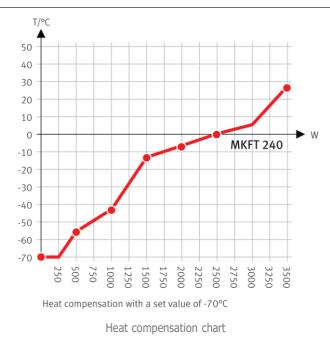


A: Standard Climate range B: Time-limited operation (max. 24 hours)



Climate chart

Cooling down rate



OPTIONS

Designation	Description	MKFT 240	*	ArtNo.
	left			
	30 mm	•	01	8012-0509
	50 mm	•	01	8012-0511
	80 mm	•	01	8012-0513
	100 mm	•	01	8012-0836
	125 mm	•	01	8012-0533
	right			
Access port with silicone plug	30 mm	•	01	8012-0508
Access port with shicone plug	50 mm	•	01	8012-0510
	80 mm	•	01	8012-0512
	100 mm	•	01	8012-0835
	125 mm	•	01	8012-0532
	top			
	80 mm	•	01	8012-0834
	100 mm	•	01	8012-0832
	125 mm	•	01	8012-0833

Data sheet Model MKFT 240

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Designation	Description	MKFT 240	ĸ	ArtNo.
Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	•	-	8012-1786
Calibration certificate. expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	•	-	8012-1193
	temperature measurement incl. certificate, 9 measuring points at specified temperature	•		8012-1567
Calibration certificate, temperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1588
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1608
	Measurement in center of chamber at 25°C / 60% RH or at specified test values	•	-	8012-1187
Calibration certificate, temperature and humidity	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 $^\circ$ C / 60 $^\circ$ RH or at specified values	•	-	8012-1614
Compressed air connection	for the connection to an existing pressurized air network	•	-	8012-1090
Door lock	lockable door handle	•	-	8012-1783
Dry-air purge	controlled, incl. connection; suitable for the simulation of current automobile industry standards	٠	-	8012-1871
Notch-type access port	notch-type access port in door, 100 x 35 mm	•	-	8012-1857
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	•	-	8012-1791
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM ^{TM}	•	-	8012-1767
Femperature safety device class 2	with visual alarm (DIN 12880)	•	-	8012-1793
Vater circuit	allows condensed water to be reused	•	-	8012-0785

ACCESSORIES

Designation	Description	MKFT 240	*	ArtNo.
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-	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
Edition	version 4, PROFESSIONAL edition	•	-	9053-0040
BINDER PURE AQUA SERVICE	System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts	•	-	8012-0759
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	•	-	6011-0165

Data sheet Model MKFT 240

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Designation	Description	MKFT 240	*	ArtNo.
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
	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 and humidity values			
	Digital in PDF format	•	-	7057-0006
	Hard copy inside folder	•	-	7007-0006
Qualification documents	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature and humidity values			
	Digital in PDF format	•	-	7057-0002
	Hard copy inside folder	•	-	7007-0002
Rack	stainless steel	•	-	8012-2053
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	•	-	8012-0605
Rack accessories	fasteners (1 set of 4) for additional security of racks	•	-	8012-2280
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
Shelf, perforated	Stainless steel	•	-	8012-2251

SERVICES

Designation	Description	*	ArtNo.
Calibration services			
T	Expansion –Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	-	DL30-0302
Temperature and humidity calibration	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	-	DL30-0330
Temperature and humidity measurement, 9-1 measuring points	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	_	DL30-0309
Temperature and humidity measurement, 18-1 measuring points	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	_	DL30-0318
Temperature and humidity measurement, 27-1 measuring points	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	-	DL30-0327

Data sheet Model MKFT 240

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Designation	Description	*	ArtNo.
Temperature and humidity measurement according to DIN12880	Temperature measurement in accordance with DIN 12880 with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	_	DL30-0427
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)	-	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	_	DL10-0700
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	_	DL20-0710
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	_	DL20-0935
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	_	DL20-0835
Maintenance services			
Leakage test	Testing and logging of the leak-tightness of systems containing hydrofluorocarbons in accordance with Regulation EC842/2006, incl. test book	-	DL00-0034
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	-	DL20-0610
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	-	DL42-0300
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	_	DL44-0500
Warranty service			
			DL50-0040

NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

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