

## MA-4 Heating Circulator

### Middle class for a broad range of applications +20°C...200°C

Heating Circulator for internal and external temperature applications. JULABO circulators with stainless steel bath tanks are suitable for both internal and external temperature control. They are designed primarily for external temperature control. They have elevated performance for controlling the temperature of large or open systems. Smaller objects may be inserted directly into the circulator's bath at the same time. Models of the TopTech and HighTech series are available with a variety of bath sizes and functional characteristics. Bath covers and a variety of bath inserts for laboratory glassware are available as accessories.



### Your advantages

- MULTI-DISPLAY (LED) for actual and setpoint values, warning/safety functions and pump stage
- Keypad for setpoints, warning/safety values and menu functions
- PID2 temperature control with drift compensation
- ATC3 3-Point-Calibration
- Early warning system for low liquid level (DBGM 203 06 059.8)
- Adjustable high temperature cut-out, visible via display
- RS232 interface for online communication
- SMART PUMP, electronically adjustable pump stages

Made in Germany

### Technical Data

Order No.	9153504
Model series	TopTech
Category	Heating Circulators
Working temperature range (°C)	+20 ... +200
Temperature stability (°C)	0.01
Setting / display resolution	0.01 (-9.99...99.99) / 0.1 °C
Temperature Display	LED
Heating capacity (kW)	1
Pump capacity flow rate (l/min)	11-16
Pump capacity flow pressure (psi)	3.3-6.5
Bath opening / bath depth (W x L / D inch)	5.1 x 5.9 / 5.9
Pump connections	M10x1
Barbed fittings diameter (inner dia. / mm)	8 / 10
Filling volume liters	4.5
Digital interface	RS232, Optional Profibus
Ambient temperature	5...40 °C
Dimensions W x L x H (inch)	8.3 x 16.5 x 15
Weight (LBS)	21.2
Classification according to DIN12876-1	Classification III (FL) according to DIN 12876-1
Included with each unit	2 barbed fittings suitable for tubing 8 and 10 mm inner dia. (pump connections M10x1 female)

Cooling coil	integrated
Bath tank	3
Power requirement V / Hz / A	115/60/9
Available voltage versions	230 V / 50-60 Hz 100-115 V / 50-60 Hz

Built-in cooling coil for tap water connection for temperature applications below or near ambient temperatures are integrated.

## Characteristics

### Display



#### Several values at a glance

Large Multi-Display (LED), easy to read across the room, for actual value and up to 3 setpoints, warning functions, high temperature cut-off, selected pump stages (resolution 0.01/0.1 °C)

### Operation



#### Comfortable and detailed

Comfortable keypad with additional menu functions for pump stages, calibration, control parameters, programmer, warnings, etc.

### Temperature Control



#### Highly precise

PID Temperature control with drift compensation and adjustable control parameters, temperature stability  $\pm 0.01 \dots \pm 0.02$  °C



#### Highest measuring accuracy

'Absolute Temperature C alibration' for manual compensation of a temperature difference, 3-point calibration



#### Serial connection

RS232 interface for PC connection, e.g. for data communication and recording of measured values

### Warning & Safety Functions



#### Early warning system for low liquid level

Maximum safety for applications, optical and audible alarm, allows user to refill bath fluid before the unit shuts down



#### Early warning system for high/low temperature limits

Maximum safety for applications, optical and audible alarm, convertible to automated cut-off function



#### Enhanced protective functions

Maximum safety, adjustable high temperature cut-off or dry-running protection, additional display of setpoints permits easy and precise adjustments



#### For flammable bath fluids

Classification III (FL) according to DIN 12876-1

### Technical Features



#### Clever pump system

Reliable and consistent pump capacity, electronically adjustable pump stages

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