

## MAGIO MS-1000FF Ultra-low refrigerated / heating circulator

As with all circulators from the MAGIO range, the ultra-low refrigerated circulators stand out thanks to their premium quality, high performance and intuitive operation. The devices offer extra strong pressure and suction pumps, thus fulfilling the highest demands for temperature control of external applications. They cover an enormous temperature range and are also suitable for simulating extreme conditions down to -90 °C.

The cooling machine is equipped with sustainable, natural refrigerant in both cooling stages, making it a particularly future-proof solution. Thanks to the tool-free removable venting grid, the condenser can be cleaned easily, ensuring that the full cooling capacity is available throughout the entire life cycle. A heated bath cover plate to prevent condensation and ice build-up is implemented as standard. In addition, the absence of side vents means that several units can be placed next to each other to save space. Using an additional condensation trap (accessories) significantly reduces the dilution of bath fluids at low operating temperatures.



### High resolution TFT touch display

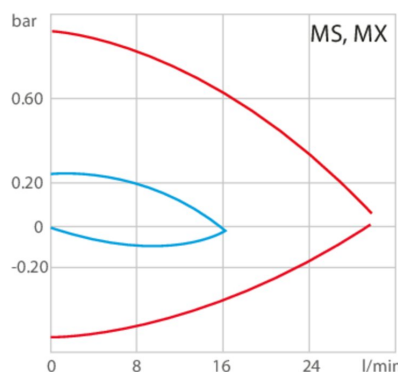
The modern TFT touch display gives you all the important information at a glance. Three large, predefined main screens clearly display data and graphics with various application priorities. Menu navigation is self-explanatory, arranged by relevance to daily operations and easy to operate with the touch of a finger. The in-built help function provides detailed support in case of additional questions.



### Product features

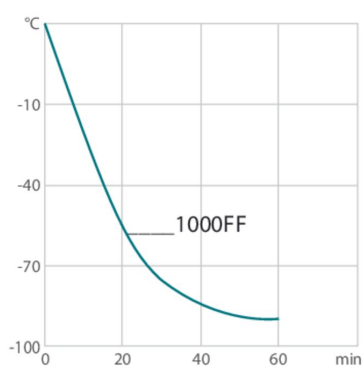
- Modbus TCP/IP
- Class III (FL) according to DIN 12876-1
- RS232 interface for online communication
- Integrated programmer
- Integrated external Pt100 connection
- Ethernet
- analog interfaces (accessory)
- Ideal for demanding external applications
- USB connection
- Simple control of complex applications
- Flow rate 16 ... 31 l / min, pressure 0.24 ... 0.92 bar, suction 0.03 ... 0.4 bar
- Continuously adjustable, extremely powerful pressure / suction pump
- Large, high-resolution TFT touch display with multilingual user interface
- Parts being in contact with the medium made of stainless steel
- Connections for solenoid valve
- Integrated pump connection M16×1

### Pump capacity

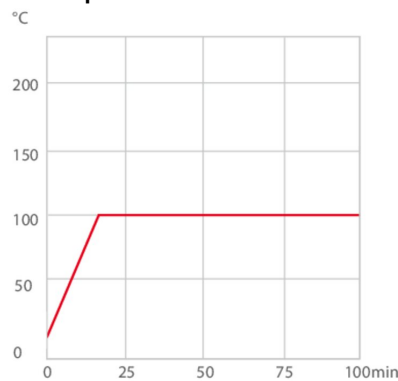


Medium: Water

### Cool-down time



### Heat-up time



Medium: Thermal

## Performance values

230V/50Hz (Schuko Plug - CEE 7/4 Plug Type F)

Heating capacity kW	1.8
Viscosity max. cSt	70
Pump capacity flow pressure l/min	16 ... 31
Pump capacity pressure bar	0.24 ... 0.92
Maximum suction bar	-0.03 ... -0.4
Power consumption A	14

Order number including voltage version 9032757.N1.03

#### Cooling capacity (Ethanol)

°C	20	0	-20	-40	-60	-80
kW <sup>1</sup>	1.1	1	0.9	0.85	0.65	0.22

#### Note about natural refrigerants:

Temperature control units using natural refrigerants are often subject to regulatory requirements regarding the installation site, operation, transport or disposal of the units. If you have any questions, we will be happy to advise you.

Refrigerant stage 1		Refrigerant stage 2	
Refrigerant	R290	Refrigerant	R170
Filling weight g <sup>2</sup>	80	Filling weight g	95
Global Warming Potential for R290	3	Global Warming Potential for R170	6
Carbon dioxide equivalent t	0.00024	Carbon dioxide equivalent t	0.00057

<sup>1</sup> Performance specifications measured in accordance with DIN 12876. Cooling capacities up to 20 °C measured with ethanol; over 20 °C with thermal oil unless otherwise specified. Performance specifications apply at an ambient temperature of 20 °C. Performance values may differ with other bath fluids.

Cooling capacity 1 = capacity at minimum pump level, cooling capacity 2 = capacity at maximum pump level

<sup>2</sup> Please observe the applicable transportation regulations.

## Technical data

### Available voltage versions

Order No. 9032757

#### Available voltage versions:

9032757.N1.03 230V/50Hz (Schuko Plug - CEE 7/4 Plug Type F) (R290)

### Cooling

Cooling of compressor 2-stage Air

9032757.N1.13	230V/60Hz (Nema N6-20 Plug) (R290)
9032757.N1.04	230V/50Hz (UK Plug Type BS1363A) (R290)
9032757.N1.03.chn	230V/50Hz (CN Plug) (R290)

Bath	
Bath tank	Stainless steel
Bath cover	integrated
Usable bath opening cm (W x L / D)	13 x 15 / 15

Other	
Classification	Classification III (FL)
IP Code	IP 20
Pump function	Pressure Suction Pump
Pump type	Immersion Pump
User Interface Language	Chinese, Czech, Dutch, English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Spanish, Turkish

Electronics	
Interfaces	Ethernet, Modbus TCP/IP, RS232, RS485, Stakei, USB
External pt100 sensor connection	integrated
Integrated programmer	8x60 steps
Temperature control	ICC
Absolute temperature calibration	10 Point Calibration
Temperature display	7" TFT Touchscreen
Temperature setting	Touchscreen
Electronic Timer h:min	00:00 ... 99:59

Dimensions and volumes	
Weight kg	108
Total dimensions cm (W x L x H)	55 x 60 x 94
Filling volume l	7.5 ... 10
Pump connections	M16x1 male

Temperature values	
Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-90 ... +100
Temperature stability °C	0.02
Ambient temperature °C	+5 ... +40
Temperature display resolution °C	0.01

Included in delivery	
2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)	

### All Benefits



**Intelligent temperature control.**  
Intelligent cascade control - automatic and self-optimizing adaptation of the PID control parameters with external stability of +/- 0.05 °C.



**Many interfaces.**  
Straight-forward remote control, data management, and integration into process structures. USB, Ethernet, RS232, SD card, and alarm off are permanently integrated. Further interfaces available as accessories.



**Touch display. Perfect operation.**  
With the touch display, the user always has an overview of all values and functions. The intuitive and multilingual menu structure enables perfect control.



**Maximum safety.**  
Classification III according to DIN12876-1 enables safe operation, even with flammable fluids. Automatic switch-off in the event of high temperature or low liquid level.



**Space saving. Free up space.**  
Place your JULABO Circulator right next to an application, another unit, or wall. That saves space. This is made possible by eliminating vents and connections on the sides.



**Multi-lingual.**  
Operation in multiple languages.



**Programmer. Integrated.**  
The integrated internal programmer makes it possible to automatically run temperature time profiles.



**Analog I/O.**  
Analog interfaces for integration into process control systems (optional).



**Temperature. Under control.**  
External Pt100 sensor connection for precise measurement and control directly in the external application.



**Fill level. Monitored.**  
Fill level indicator on the display for heat-transfer liquid.



**Process stability.**  
Early warning - visual and acoustic - of critical states increases process stability.



**Process. Under control.**  
Full regulation of the dynamics control, access to all important control parameters for individual process optimization.



**Stable. Mobile.**  
Rubber feet keep JULABO Circulators standing firm. Larger and more powerful units also have integrated rollers for easy handling.



**Energy-saving.**  
The high-quality insulation of all relevant components saves energy.



**Everything made of stainless steel.**  
Quality and material compatibility at the highest level. All parts in contact with the medium are entirely made of stainless steel.



**Most powerful pump.**  
The integrated pressure/suction pump with performance values of 0.9 bar and -0.4 bar is the most powerful in its class and continuously adjustable.



**Wide range.**  
Refrigerated and heating circulator in various combinations, circulator in various sizes. Maximum flexibility through a large selection of accessories.



**Condensation protection.**  
Superb design solution. Integrated ventilation directs air over the bath lid and minimizes condensation.



**Connection. Easy.**  
Inclined pump connections (M16x1) facilitate the connection of applications. Each unit includes 2 barbed fittings of 8/12 mm diameter each.



**Highest measuring accuracy**  
'Absolute Temperature Calibration' for manual compensation of a temperature difference, 10-point calibration