

## FC1600T Compact Recirculating Cooler

### Models for heating and cooling applications, up to 2.5 kW cooling capacity

Recirculating Cooler for environmentally friendly cooling.

Today, tap water is still often used for continuous cooling tasks. Is this acceptable with respect to environmental responsibility? Recirculating coolers of the JULABO TopLine stand for environmental consciousness that became a subject of growing importance in the recent years. The instruments offer an economical solution for cooling applications avoiding expenses for tap water and waste water disposal. The JULABO recirculating coolers of the Economy Line and TopLine have a compact design and fit under a lab counter. The bright MULTI-DISPLAY (LED) is visible from across a lab and gives instant information on actual and setpoint temperatures. Self-test after switch-on, reciprocal sensor monitoring, pump motor and compressor overload protection as well as complete shut-down in case of an alarm offer unequalled safety. Additional protection is ensured by high and low temperature warning functions as well as freezing protection and dry-running protection. These features ensure stable working temperatures, constant pressure of the circulating pump and avoid contamination in the cooling loop. Featuring various electrical connections, the TopLine models fulfill the requirements of modern laboratories.



Made in Germany

### Your advantages

- Adjustable ratio for feed/return temperatures
- Easy filling system located at the front
- Activation of pump for filling
- Bright MULTI-DISPLAY (LED)
- Upper and lower temperature warning functions with interval tone
- Integrated freezing protection and dry-running protection
- Rapid and easy operation via seamless, splash-proof keypad
- Liquid level indication on the front
- Self-test, reciprocal sensor monitoring, pump motor and compressor overload protection
- Complete shut-down with audible signal in case of an alarm
- Removable venting grid for simplified removal of dust
- ATC function for simple correction of temperature variations
- RS232 interface for on-line communication (LIMS capability)
- High temperature stability
- Integrated heater with 1.2 kW capacity
- Pressure Indicator 0...4 bar
- Connection for Pt100 sensor
- Analog Connections for programming (0..10V / 0...24mA) and temperature recorder (0V = 0°C)

### Technical Data

Order No.	9600166
Model series	FC Series

Category	Recirculating Coolers								
Working temperature range (°C)	-15 ... +80								
Temperature stability (°C)	±0.2								
Setting / display resolution	0.1 °C								
Temperature Display	2x LED								
Cooling capacity (Medium Ethanol)	<table border="0"> <tr> <td>°C</td> <td>20</td> <td>0</td> <td>-10</td> </tr> <tr> <td>kW</td> <td>1.42</td> <td>0.5</td> <td>0.25</td> </tr> </table>	°C	20	0	-10	kW	1.42	0.5	0.25
°C	20	0	-10						
kW	1.42	0.5	0.25						
Pump capacity flow rate (l/min)	28								
Pump capacity flow pressure (psi)	50.76								
Pressure indicator (psi)	0...4.0								
Pump connections	M16x1								
Barbed fittings diameter (inner dia. / mm)	8 / 12								
Filling volume liters	8 ... 11								
Refrigerant stage 1	R134a								
Filling volume refrigerant stage 1 (g)	380								
Global Warming Potential for	1430								
Carbon dioxide equivalent stage 1 (t)	0.543								
External Pt100 sensor connection	integrated								
Digital interface	RS232 Optional: Profibus								
Ambient temperature	5...40 °C								
Dimensions W x L x H (inch)	18.1 x 24 x 19.3								
Weight (LBS)	148								
Sound pressure level (distance 1 m) max. (dBA)	58								
Included with each unit	2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)								
Cooling of compressor	Air								
Power requirement V / Hz / A	230/60/15								
Available voltage versions	230 V / 50 Hz 230 V / 60 Hz								

Analog Connections for programming (0..10V / 0...24mA) and temperature recorder (0V = 0°C).

## Characteristics

### Display



#### Easy to read

Large LED temperature display for actual value and setpoint (resolution 0.1 °C)

### Operation



#### Clearly structured

Comfortable, splash-proof keypad for setpoint adjustment, high/low temperatures, timer and shaking frequency (SW models)

### Temperature Control



#### For higher demands

PID Temperature control with drift compensation and adjustable parameters, improved temperature stability for external applications, temperature stability  $\pm 0.01$  °C internal,  $< \pm 0.1$  °C external



#### High measuring accuracy

'Absolute Temperature Calibration' for manual compensation of a temperature difference, 1-point calibration

### Refrigeration Technology



#### Consistent cooling capacity

Easily removable venting grid for quick and easy cleaning



#### 100 % Cooling capacity

'Active Cooling Control' for cooling available throughout the entire working temperature range, fast cool-down even at higher temperatures

### Technical Features



#### Control from the external application

External Pt100 sensor connection for precise measurement and control directly in the external application



#### Serial connection

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



#### Automatic control of operating time

Electronic countdown-timer function for timer-programmed unit shut-down, standby mode after programmed time expires

### Warning & Safety Functions



#### 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