

## 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.



### 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				
Heating capacity (kW)	1.2				
Cooling capacity (Medium Ethanol)	°C	20	10	5	-10
	kW	1.45	1.05	0.8	0.25
Pump capacity flow rate (l/min)	28				
Pump capacity flow pressure (bar)	3.5				
Pressure indicator (bar)	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 R134a	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 (cm)	46 x 61 x 49				
Weight (kg)	67				
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				
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,  $\leq \pm 0.1$  °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