



Product data sheet



## FP51-SL Ultra-Low Refrigerated / Heating Circulator

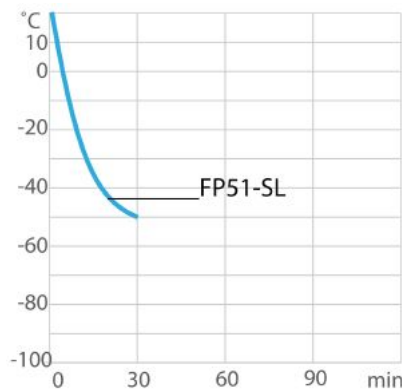
The Ultra-Low Refrigerated Circulators of the HighTech Series with HL or SL circulator feature powerful pressure and suction pumps. The instruments provide the entire variety of functions of the professional HighTech Series of circulators.

### Product features

- VFD COMFORT DISPLAY
- ICC (Intelligent Cascade Control), self-optimizing temperature control
- TCF Temperature Control Features to optimize the control behavior
- ATC3 3-Point-Calibration
- SMART PUMP, electronically adjustable pump stages
- Adjustable high temperature cut-out, visible via display
- RS232/RS485 interface for online communication
- Integrated programmer for 6 x 60 program steps
- Connections for solenoid valve and HSP booster pump
- Proportional cooling control

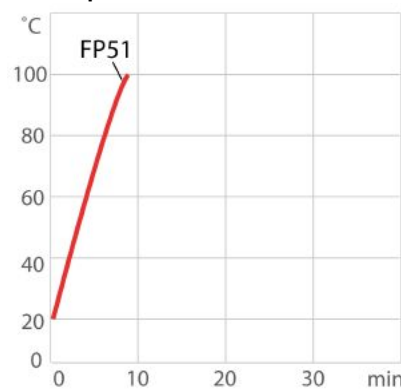


### Cool-down time



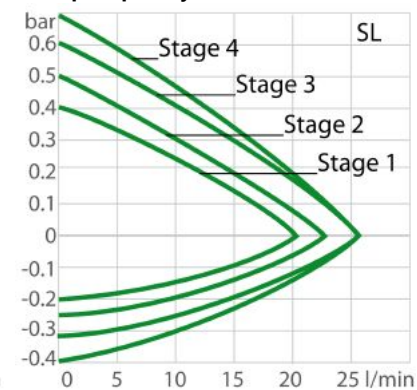
Medium: Ethanol

### Heat-up time



Medium: Ethanol

### Pump capacity



Medium: Water

### Performance values

208V/3PPE/60Hz (Without Plug)	
Heating capacity kW	3
Viscosity max. cST	70
Pump capacity flow rate l/min	22 ... 26
Pump capacity flow pressure psi	5.8 ... 10.2
Maximum suction psi	2.9 ... 5.8
Current Draw A	16

Order No.	9352751.16			
Cooling capacity (Ethanol)				
°C	20	0	-20	-40
kW	2	1.5	1	0.26
* Performance specifications measured in accordance with DIN12876. 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.				
Refrigerant stage 1				
Refrigerant	R507			
Filling volume g	830			
Global Warming Potential for R507	3985			
Carbon dioxide equivalent t	3.308			

## Technical data

<b>Available voltage versions</b>		<b>Bath</b>	
Order No.	9 352 751	Bath cover	integrated
Available voltage versions:		Usable bath opening in. (W x L / D)	7.1 x 4.7 / 7.9
9352751.06	230V/3PPE/50Hz (Without Plug) (R507)		
9352751.07	400V/3PNPE/50Hz (Plug 16A CEE)(R507)		
9352751.S1.07	400V/3PNPE/50Hz (Plug 16A CEE)(R449A)		
9352751.16	208V/3PPE/60Hz (Without Plug) (R507)		
<b>Cooling</b>		<b>Other</b>	
Cooling of compressor	1-stage Air	Sound pressure level dbA	63
		Classification	Classification III (FL)
		IP Code	IP 21
<b>Electronics</b>		<b>Dimensions and volumes</b>	
Digital interface	Optional Profibus	Weight lbs	198.4
External pt100 sensor connection	integrated		
Integrated programmer	6x60 steps	Dimensions in. (W x L x H)	18.1 x 21.7 x 35
Temperature control	ICC	Filling volume l	7.5 ... 12
Absolute temperature calibration	3 Point Calibration	Pump connections	M16x1 male
Temperature display	VFD + LCD		
Temperature setting	Keypad		
<b>Temperature values</b>		<b>Included in delivery</b>	
Setting the resolution of the temperature display °C	0.01	2 Barbed fittings for tubing 8 and 12 mm ID. (Pump connections M16x1 male)	
Working temperature range °C	-51 ... +200		
Temperature stability °C	±0.05		
Ambient temperature °C	+5 ... +40		
Temperature display resolution °C	0.01		

All Benefits



**100% Checked.**  
100% testing. 100% quality. Each JULABO Circulator undergoes thorough quality testing before leaving the factory.



**Green technology.**  
Development consistently applied environmentally friendly materials and technologies.



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



**JULABO. Quality.**  
Highest standards of quality for a long product life.



**Quick start.**  
Individual JULABO consultation and comprehensive manuals at your disposal.



**Satisfied customers.**  
11 subsidiaries and more than 100 partners worldwide guarantee fast and qualified JULABO support.



**Services 24/7.**  
Around the clock availability. You can find suitable accessories, data sheets, manuals, case studies, and more at [www.julabo.us](http://www.julabo.us).



**Connection of additional equipment**  
Stake connections for solenoid valve, HSP booster pump and HST booster heater



**Early warning system for high/low temperature limits**  
Maximum safety for applications, optical and audible alarm, convertible to automated cut-off function



**Clever pump system**  
Reliable and consistent pump capacity, electronically adjustable pump stages



**For flammable bath fluid**  
Classification III (FL) according to DIN 12876-1



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



**100 % Cooling capacity**  
'Active Cooling Control' for cooling available throughout the entire working temperature range, fast cool-down even at higher temperatures



**Energy saving cooling**  
Proportional cooling control for automatic adjustment of cooling power or temporary switch-off of compressor as needed to save up to 90 % energy in comparison to unregulated cooling machines



**Condensation and ice protection**  
A heated cover plate prevents condensation or ice build-up in the bath



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



**ATC3. Calibration.**  
'Absolute Temperature Calibration' for compensating a physically caused temperature difference, 3-point calibration.