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TECHNOLOGY GROUP

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FPW90-SL Ultra-Low Refrigerated-Heating Circulator



Superior models for most demanding applications

JULABO Ultra-Low Refrigerated Circulators for heating and cooling are suitable for external temperature tasks. Powerful circulating pump systems and high heating and cooling capacities guarantee short heat-up and cool-down times. ACC ‘Active Cooling Control‘ provides active cooling control across the whole temperature range. An energy saving feature with only minor loss of heat is provided by the proportional cooling capacity control in the ‘FP’ refrigeration units. The inevitable dust accumulation that occurs in refrigeration systems is solved by means of an easily removed venting grill, which allows for easy cleaning. The units are equipped with handles or castors for an easy transportation. All models have a drain tap on the front allowing the fluid to be drained easily. Additionally the instruments are equipped with an improved insulation to help avoid ice-formation, and have a visual liquid level display.

Your advantages

- VFD COMFORT DISPLAY
- LCD DIALOG DISPLAY backlit for convenient interactive operation
- Keypad for setpoints, warning/safety values and menu functions
- ICC (Intelligent Cascade Control), self-optimizing temperature control
- TCF Temperature Control Features to optimize the control behaviour
- ATC3 3-Point-Calibration
- Pt100 External sensor connection for measurement and control
- SMART PUMP, electronically adjustable pump stages
- Early warning system for low liquid level (DBGM 203 06 059.8)
- 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
- Active Cooling Control

Technical Data

Order No.	9352791N
Model series	HighTech
Category	Ultra-Low Refrigerated-Heating Circulators
Working temperature range (°C)	-90 ... +100
Temperature stability (°C)	±0.05
Setting / display resolution	0.01 °C
Integrated programmer	6x60 steps
Temperature Display	VFD, LCD
Heating capacity (kW)	3
Cooling capacity (Medium Ethanol)	°C 20 0 -20 -40 -60 -80 kW 1.8 1.7 1.6 1.35 0.75 0.15
Pump capacity flow rate (l/min)	22-26

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Pump capacity flow pressure (bar)	0.4-0.7
Pump capacity flow suction (bar)	0.2-0.4
Bath opening / bath depth (W x L / D cm)	Ø = 7 / 20 cm
Pump connections	M16x1
Barbed fittings diameter (inner dia. / mm)	8 / 12
Filling volume liters	22
Refrigerant	R23, R404A
External Pt100 sensor connection	integrated
Digital interface	RS232, RS485 Optional: Profibus
Ambient temperature	5...40 °C
Dimensions W x L x H (cm)	59 x 76 x 116
Weight (kg)	214
Classification according to DIN12876-1	Classification III (FL)
Included with each unit	2 each barbed fittings for tubing 8 and 12 mm inner dia. (pump connections M16x1 female). Cooling water connection G 3/4" male with barbed fittings for tubing 1/2" inner dia.
Cooling of compressor	Water
Available voltage versions	400 V / 3 Ph. / 50 Hz 230 V / 3 Ph. / 50 Hz 230 V / 3 Ph. / 60 Hz

Characteristics

Display

A perfect view
Ample, easy to read VFD Comfort display for simultaneous display of 3 values, warning functions, high temperature cut-off, pump stages (resolution 0.01 °C)

Additional plain text information
Comfortable LCD dialog display for interactive operation with plain text display

Pump stage and liquid level
Backlit indicator for selected pump stages and filling volume on Presto® PLUS, Magnum 91 & Forte HT

Operation

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

Temperature Control

For perfect results
'**I**ntelligent **C**ascade **C**ontrol', automatic & self optimizing adjustment of PID control parameters, temperature stability ±0.005 °C internal, <±0.05 °C external

Full control
'**T**emperature **C**ontrol **F**eatures' for individual optimization, access to all important control parameters, additional settings for band limit, limits, Co-Speedfactor etc.

Highest measuring accuracy
'**A**bsolute **T**emperature **C**alibration' for manual compensation of a temperature difference, 3-point calibration

Refrigeration Technology

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

Consistent cooling capacity
Easily removable venting grid for quick and easy cleaning

100 % Cooling capacity
'**A**ctive **C**ooling **C**ontrol' for cooling available throughout the entire working temperature range, fast cool-down even at higher temperatures

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

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Technical Features

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

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

Connection compliant to standard
RS232/RS485 dual-interface for serial data transmission according to EIA-485 industry standard (2-wire bus technology), upgradable with Profibus DP

Optimal program control
For the execution of time and temperature dependant profiles, 6 temperature profiles with 60 steps max., with real time clock

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 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

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