

## DYNEO DD-310F Refrigerated / heating circulator

Refrigerated circulators of the DYNEO series distinguish themselves with a great price-performance ratio. The instruments offer high heating/cooling capacities for short heat-up and cool-down times. The refrigerated circulators work precisely and reliably even at higher ambient temperatures up to +40 °C. Either in basic research, in material testing or in technical systems – the DYNEO refrigerated circulators offer functional solutions for every requirement and budget.

### Alternatively with natural refrigerant

The DYNEO DD-310F is alternatively available with natural refrigerant. Order No. 9 021 713.N1



### Product features

- Optimized cooling coil design saves space in the bath tank
- powerful and infinitely adjustable pressure pump
- Flow rate 27 l/min, pressure 0.7 bar
- easy switching between internal and external circulation
- large color TFT display, multilingual interface
- central rotary knob (controller) simplifies operation
- Integrated programmer
- Integrated external Pt100 connection
- USB connection
- RS232 interface or analog interfaces (optional)
- Integrated drain makes emptying liquid easy and safe.
- Bath cover included with delivery
- Removable ventilation grid
- Powerful cooling machines
- For internal and external applications
- Integrated pump connection M16×1
- For internal and external applications

### Performance values

230V/50Hz (Schuko Plug - CEE 7/4 Plug Type F)	
Heating capacity kW	2
Viscosity max. cSt	50
Pump capacity flow rate l/min	8 ... 27
Pump capacity flow pressure psi	1.5 ... 10.2
Power consumption A	13

## Refrigerant variants

Order No.	9021713.N1.33				
Cooling capacity (Ethanol)					
°C	20	0	-10	-20	-30
kW <sup>1</sup>	0.3	0.27	0.21	0.12	0.02

### 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	R290
Filling weight g	30
Global Warming Potential for R290	3
Carbon dioxide equivalent t	9.0E-5

Order No.	9021713.S1.33				
Cooling capacity (Ethanol)					
°C	20	0	-10	-20	-30
kW <sup>1</sup>	0.3	0.27	0.21	0.12	0.02

Refrigerant stage 1	
Refrigerant	R449A
Filling weight g	63
Global Warming Potential for R449A	1397
Carbon dioxide equivalent t	0.088011

<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.

## Technical data

Available voltage versions		Cooling	
Order No.	9 021 713	Cooling of compressor	1-stage Air
Available voltage versions:			
9021713.N1.01	100V/50-60Hz (Nema N5-15 Plug) (R290)		
9021713.S1.01	100V/50-60Hz (Nema N5-15 Plug) (R449A)		
9021713.N1.02	115V/60Hz (Nema N5-15 Plug) (R290)		
9021713.S1.02	115V/60Hz (Nema N5-15 Plug) (R449A)		
9021713.N1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R290)		
9021713.S1.33	200-230V/50-60Hz (Schuko Plug - CEE 7/4 Plug Type F) (R449A)		
9021713.N1.33.chn	200-230V/50-60Hz (CN Plug) (R290)		
9021713.S1.33.chn	200-230V/50-60Hz (CN Plug) (R449A)		
9021713.N1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R290)		

9021713.S1.04	200-230V/50-60Hz (UK Plug Type BS1363A) (R449A)
9021713.N1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R290)
9021713.S1.05	200-230V/50-60Hz (CH Plug Type SEV 1011) (R449A)

Bath	
Bath tank	Stainless steel
Bath cover	integrated
Usable bath opening in. (W x L / D)	5.1 x 5.9 / 5.9

Other	
Classification	Classification III (FL)
IP Code	IP 21
Pump function	Pressure Pump
Pump type	Immersion Pump
User Interface Language	Chinese, English, French, German, Italian, Japanese, Korean, Portuguese, Russian, Spanish

Electronics	
Interfaces	Alarm output optional, REG/EPROG optional, RS232 optional, Standby-Input optional, USB
External pt100 sensor connection	integrated
Integrated programmer	8x60 steps
Temperature control	PID3
Absolute temperature calibration	3 Point Calibration
Temperature display	3.5" TFT Display
Temperature setting	Shaft Encoder
Electronic Timer h:min	00:00 ... 99:59

Dimensions and volumes	
Weight lbs	56
Barbed fittings inner diameter mm	8/12 mm
Dimensions in. (W x L x H)	9.1 x 15.7 x 25.6
Filling volume l	3 ... 4
Pump connections	M16x1 male

Temperature values	
Setting the resolution of the temperature display °C	0.01
Working temperature range °C	-30 ... +200
Temperature stability °C	±0.01
Ambient temperature °C	+5 ... +40
Setting the resolution of the temperature display °C	0.01

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

## All Benefits



### Handle with ease.

Makes day-to-day work easy. Comfortably move your CORIO around by using the ergonomic handles (front and rear).



### Highly precise

PID Temperature control with drift compensation and adjustable control parameters, temperature stability  $\pm 0.01 \dots \pm 0.02$  °C



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



**Brilliance. In color.**  
Large color display with vivid luminance is easy to read, even from a large distance.



**Information. Everything clear.**  
Information in plain text on a large color screen.



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



**Turn. Push. Go.**  
Easy operation of all parameters using the central controller.



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



**Powerful. Adjustable.**  
Strong pressure pump, continuously adjustable.



**USB.**  
Remote control made easy using the integrated USB interface.



**RS232.**  
Standard connection using the serial RS232 interface.



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



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



**Stable. Mobile.**



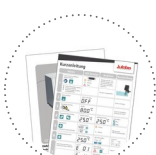
**Connection. Easy.**  
Inclined pump connections (M16x1) facilitate the connection of applications. Each unit includes 2 barbed fittings of 8/12 mm diameter each.



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



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



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



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



**Quick support**  
If an error occurs, the integrated Black-Box function permits fast diagnosis by the JULABO service team



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