

## CF31 Cryo-Compact Circulator

The top class for demanding applications of all types.

Cryo-Compact Circulator for internal and external temperature applications

The new CF series offers compact refrigerated/heating circulators. With small overall dimensions the units can even be placed on a very small surface or within a complex installation. All models offer a heating capacity of 2 kW and classification 3 according to DIN12876-1. The maximum ambient temperature of +40°C as well as a ventilation air cooling allow installing the units very closely side by side with other units or directly under a fume hood. Furthermore all the models feature pump connections for external temperature applications and a bath opening for temperature control of small objects directly in the circulator bath. Wetted parts are made of high quality stainless steel or plastic. The instruments provide a reliable Microprocessor electronics with high temperature stability as well as warning and safety functions.



Made in Germany

### Your advantages

- Ergonomic design and easy operation
- Small overall dimensions for lowest space requirement
- Splash-proof keypad
- Bright VFD display and interactive LCD dialog display
- Highly precise ICC cascade temperature control
- RS232/RS485 interface for PC connection
- Electronically adjustable pump stages
- External Pt100 sensor connection
- Integrated programmer with 6x60 program steps
- Early warning system for low liquid level
- 3-point calibration
- TCF Temperature Control Features
- Adjustable high temperature cut-off
- Classification 3 according to DIN12876-1
- Pump connections for external temperature applications
- Bath opening for temperature control of small objects in the bath
- Front drain

### Technical Data

Order No.	9400331
Model series	HighTech
Category	Cryo-Compact Circulators
Working temperature range (°C)	-30 ... +200
Temperature stability (°C)	±0.02
Setting / display resolution	0.01 °C
Integrated programmer	6x60 steps
Temperature Display	VFD, LCD
Heating capacity (kW)	1

Cooling capacity (Medium Ethanol)	°C 20 0 -20 kW 0.32 0.25 0.15
Pump capacity flow rate (l/min)	22-26
Pump capacity flow pressure (psi)	5.8-10.2
Pump capacity flow suction (psi)	2.9-5.8
Bath opening / bath depth (W x L / D inch)	6.3 x 1.2 / 5.5
Pump connections	M16x1
Barbed fittings diameter (inner dia. / mm)	8 / 12
Filling volume liters	3.5
Refrigerant	R134a
External Pt100 sensor connection	integrated
Digital interface	RS232, RS485 Optional: Profibus
Ambient temperature	5...40 °C
Dimensions W x L x H (inch)	9.4 x 18.1 x 15.7
Weight (LBS)	79
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 of compressor	Air
Power requirement V / Hz / A	115/60/14
Available voltage versions	230 V / 50 Hz 230 V / 60 Hz 115 V / 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



#### Clearly structured

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

### Temperature Control



#### For perfect results

'Intelligent Cascade Control', automatic & self optimizing adjustment of PID control parameters, temperature stability  $\pm 0.005$  °C internal,  $< \pm 0.05$  °C external



#### Full control

'Temperature Control Features' for individual optimization, access to all important control parameters, additional settings for band limit, limits, Co-Speedfactor etc.



#### Highest measuring accuracy

'Absolute Temperature Calibration' for manual compensation of a temperature difference, 3-point calibration

### 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

## 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