

CF31 Cryo-Compact Circulator

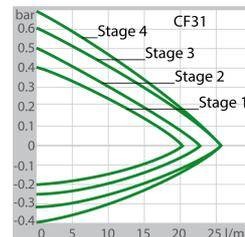
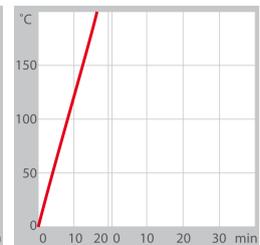
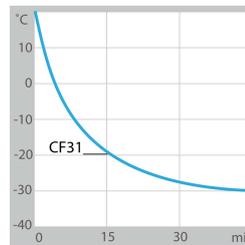
The top class for demanding applications of all types.

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.

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



- Cool-down time (Ethanol)
- Heat-up time (thermal)
- Pump capacity (Water)

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)	2

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 (bar)	0.4-0.7
Pump capacity flow suction (bar)	0.2-0.4
Bath opening / bath depth (W x L / D cm)	16 x 3 / 14
Pump connections	M16x1
Barbed fittings diameter (inner dia. / mm)	8 / 12
Filling volume liters	3.5
Refrigerant stage 1	R134a
Filling volume refrigerant stage 1 (g)	150
Global Warming Potential for R134a	1430
Carbon dioxide equivalent stage 1 (t)	0.215
External Pt100 sensor connection	integrated
Digital interface	RS232, RS485 Optional: Profibus
Ambient temperature	5...40 °C
Dimensions W x L x H (cm)	24 x 46 x 40
Weight (kg)	35
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
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 ±0.005 °C internal, <±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