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# mRC-C-450-100/240 – mini Recirculating Chiller

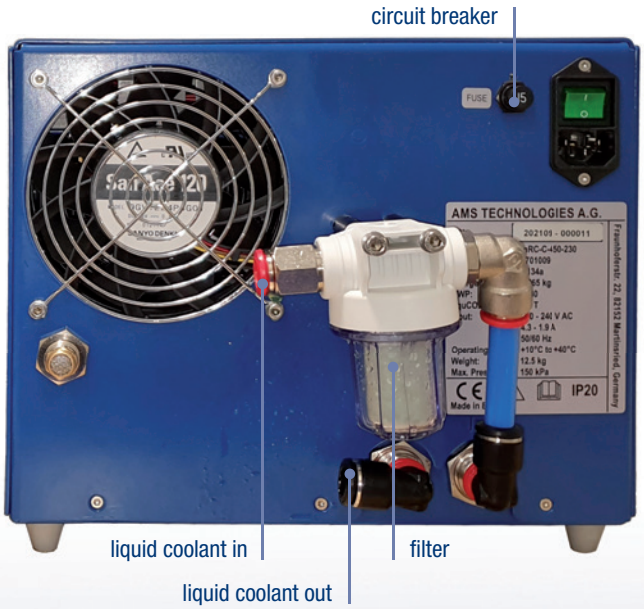
compact water cooling system

- 450 W cooling capacity ($T_{WATER}$ +25°C, $T_{AMBIENT}$ +25°C)
- high cooling capacity in compact format
- 90 to 264 VAC universal power supply
- temperature stability down to ±0.05 K
- flow rate 1 to 5.5 lpm @1.5 to 0.5 bar
- low vibration
- automatic fill & drain
- IoT enabled

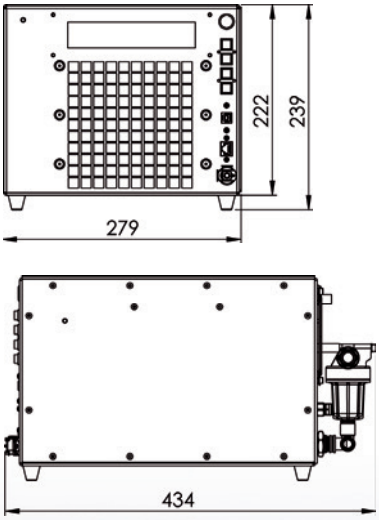


THERMAL MANAGEMENT

# mRC-C-450-100/240




## main dimensions [mm]




The mRC-C-450-100/240 mini recirculating chiller features a vapor compression circuit and a closed, pressurized recirculating water circuit. On the refrigeration side, a miniature rotary compressor as well as customized condensers and evaporators are utilized to reduce the size.

The compressor's BLDC motor is speed controlled by an inverter, eliminating annoying switching noise of hot gas bypass known from ON/OFF compressors. Throughout its speed range, the compressor twin pump design offers low vibration and low noise. Compact centrifugal pumps on the water circuit side also contribute to the compact size.

Since the water circuit is pressurized, the mRC-C-450-100/240 manages with a very small tank – without the risk of cavitation in the smoothly operating centrifugal pump. Overpressure on the cooling system also prevents the ingress of bacteria and oxygen and thus extends the maintenance intervals.

The mRC-C-450-100/240 features full chiller power and up to 450 W cooling capacity in a shoe box form factor. Its universal 90 to 264 VAC power supply allows it to be plugged in anywhere in the world.

## key features

- recirculating water chiller
- ideal for water cooling tasks up to 450 W
- compact size, easy to be integrated in customer application
- 90 to 264 VAC, 24 VDC derivative available
- PID parameters and fan speed adjustable
- smooth, low-noise operation
- valved and non-valved water connections available

| specifications | |
|---|---|
| power supply | 90 to 264 VAC |
| power consumption | < 300 W |
| cooling capacity | 300 W ($T_{WATER}$ = +20°C, $T_{AMBIENT}$ = +40°C) to 500 W ($T_{WATER}$ = +20°C, $T_{AMBIENT}$ = +20°C) |
| ambient temperature range | +10°C to +45°C |
| set coolant temperature range | +10°C to +30°C |
| temperature stability | ±0.05 K continuous operation, +2/-1.5 K over-/undershoot @250 W heat load ON/OFF |
| available pressure head | 1.5 bar @1 lpm, 0.5 bar @5.5 lpm |
| cabinet | bench-top |
| weight | 13 kg |
| dimensions | 350 mm × 280 mm × 230 mm, main body without filter |
| noise level | 63 dBA (fan 40%, compressor 100%) |
| control | local, USB/serial, internet (web browser) via Ethernet |
| interlock I/O alarms | liquid level, tank pressure, coolant feed temperature, coolant flow rate, condenser pressure |
| approval | CE |

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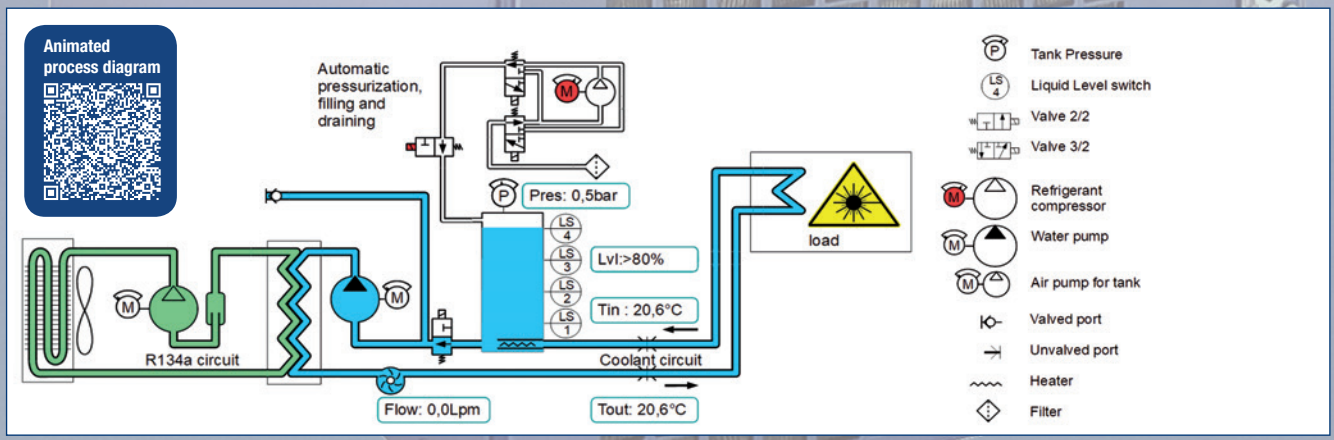
## mRC-C-450-100/240 – process & instrumentation diagram



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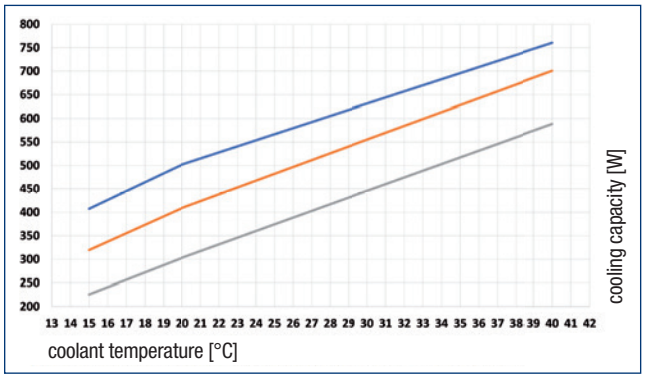
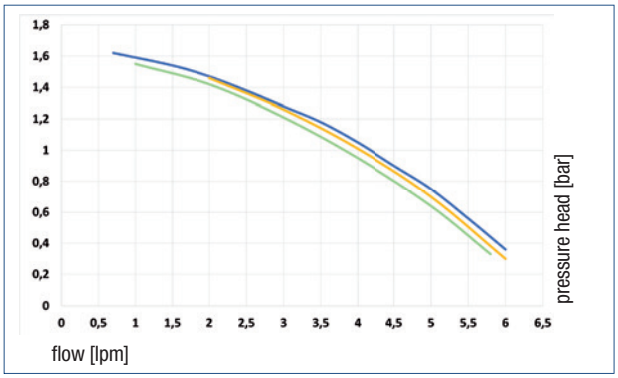
## cooling performance / pressure head

### mRC-C-450-100/240 cooling capacity
(compressor 100 rps, fan 100%)



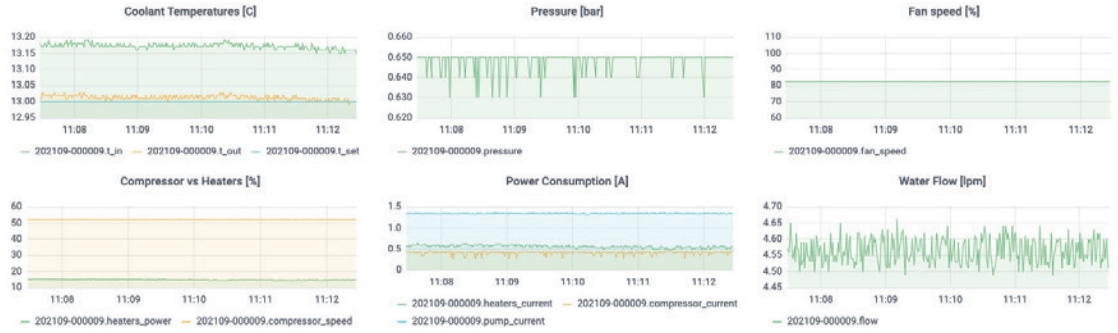

### mRC-C-450-100/240 pressure head vs. flow




## automatic fill & drain

Using automatic air and water pump technology integrated into the unit, the cooling water in the tank and pipe system of the mRC-C-450-100/240 can be automatically filled and drained at the push of a button – without the need for time-consuming tilting or removing the unit or the tank from the system and avoiding annoying spills or leaks.

## IoT ready




An integrated Ethernet interface allows access to system parameters of the mRC-C-450-100/240 as well as remote control of the cooling system via a web browser

■ remote operation:
- switch on/off
- set regulation temperature
- set fan speed

■ remote monitoring:
- water loop: temperature setpoint, inlet temperature, outlet temperature, cooling water flow, pressure, cooling water level in tank
- coolant loop: compressor speed setpoint, condenser temperature, heater power, fan speed
- current and voltage: supply voltage, control board current, compressor current, heater current, pump current, fan current, valves current
- alarms: liquid level low, cooling loop over-pressure, outlet temperature out of range, flow out of range, supply voltage out of range
- other: system internal temperature, time & date
- all data can be kept on memory card or/and in real-time database

■ remote service:
- switch on/off components individually: compressor, heaters, fan, pump, coolant and pressure valves
- setting of alarms thresholds
- setting of filling and draining timeout
- clear alarms
- PID settings
- filling and draining procedure (not recommended, remote hands needed)
- power-on-test on/off

■ remote update of firmware

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