

mAC-KITs – mini Air Cooling Kits

compact and rugged cabinet cooling systems



- ❄ up to 460 W cooling capacity
($T_{\text{chilled cabinet air}} + 35^{\circ}\text{C}$, $T_{\text{ambient}} + 35^{\circ}\text{C}$, 55% r. h.)
- ❄ compressor-based: very compact & lightweight format, ± 0.05 K temperature stability
- ❄ Peltier-based: no moving parts except for fans, independent from orientation
- ❄ wide ambient temperature range: -40°C to $+70^{\circ}\text{C}$ (Peltier), $+10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ (compressor)
- ❄ good environmental protection – suitable for harsh environments
- ❄ 24 VDC supply – independent of mains AC voltage or frequency
- ❄ IoT enabled



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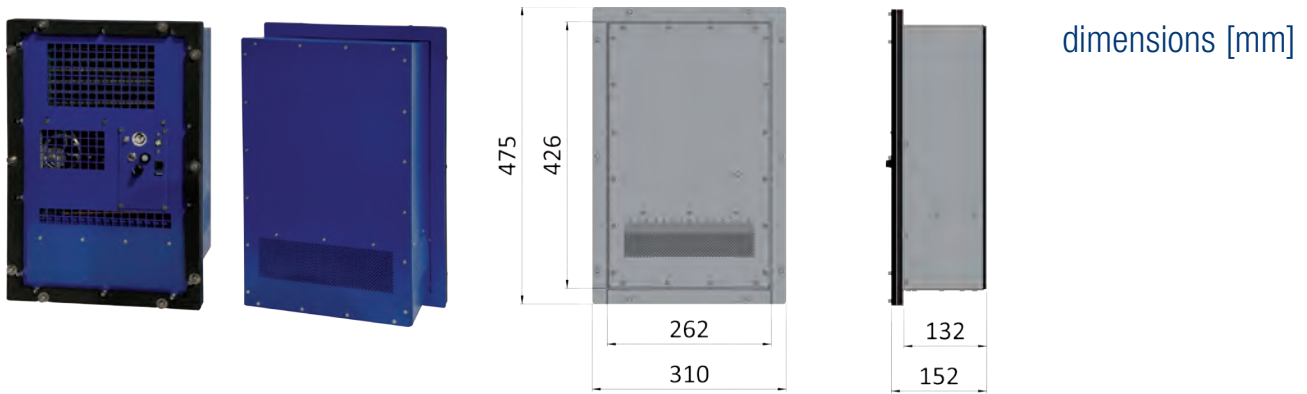


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THERMAL
MANAGEMENT

mAC-C-400-24



mini, compressor-based air cooler takes over where Peltier isn't powerful enough

mAC-C-400-24 ("mini Air Cooler") is a compact, compressor-based cabinet cooler for cooling capacities up to 400 W. Its integrated controller drives the speed of the miniature rotary compressor to maintain the set temperature to within ± 0.05 K. A powerful fan moves the cabinet internal air at 130 m³/h. The external fan is PWM speed controlled for noise reduction. Miniature rotary compressors as well as customized condensers and evaporators significantly reduce size and

weight compared to Peltier-based cabinet coolers, while providing a highly efficient vapor compression circuit. The mAC-C-400-24 can be operated on the cabinet's 24 VDC voltage rail, independent of mains voltage. The mAC-C-400-24 is "IoT ready" – an integrated Ethernet interface allows remote access to system parameters as well as remote control of the cooling system via web browser.

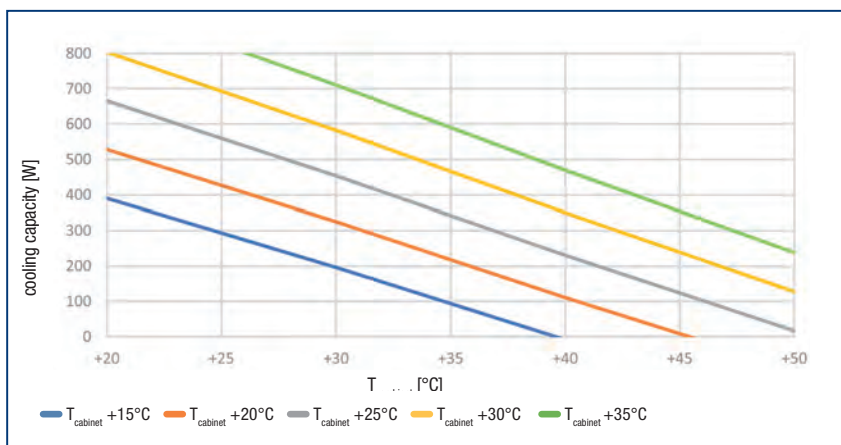
key features

- compressor-based air cooler
- ideal for cabinet cooling tasks up to 400 W
- compact size & lightweight, easy to be attached to customer cabinet
- integrated temperature controller: set temperature through manual turn dial or control via RS232/Ethernet
- speed-controlled compressor – no hysteresis, stabilized temperature to ± 0.05 K
- PWM speed-controlled fan for noise reduction
- 24 VDC power supply – independent of mains AC voltage or frequency
- PID parameters and fan speed adjustable
- IoT ready - integrated Ethernet interface allows remote access to system parameters & remote control

specifications	
cooling capacity	400 W
operating voltage	24 VDC
operating current	max. 13 A
power consumption	max. 310 W
dimensions	310 × 475 × 152 mm (W×H×D)
external working temperature range	+10 to +50°C
internal working temperature range	+15 to +35°C
temperature stability	± 0.05 K
temperature setting	local control, USB/serial, Ethernet
orientation	flush mount, side wall or door
duty cycle	100%
refrigerant	R134a, 130 g (0.19 tequCO2)
cooling circuit max. pressure	22.06 bar
environmental protection level, enclosure side	IP2X
environmental protection level, ambient side	IP65 – suitable for harsh environments
material	sheet steel
weight	15 kg
approvals	CE

performance (cooling capacity)

(on a 480 × 480 × 1000 mm cabinet with insulation $R_{th} = 0.1$ K/W)



your customized mAC-KIT

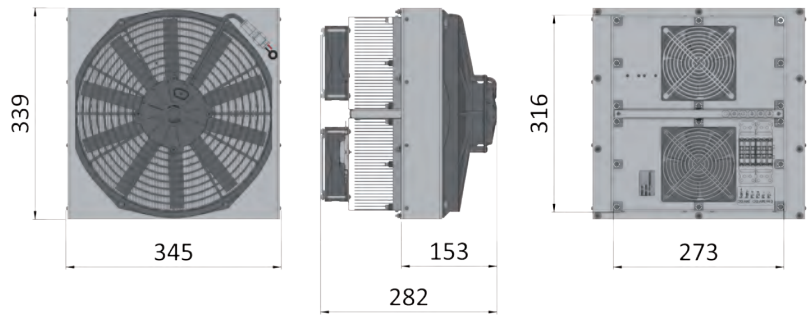
For customer requirements that cannot be covered by the mAC-C-400-24, our thermal management specialists at AMS Technologies are happy to develop a completely tailor-made solution and offer all services from development and proof-of-concept all the way to series production.



mAC-T-460-24-KIT



dimensions [mm]



mini, Peltier-based air cooler for environments too harsh for compressors

mAC-T-460-24-KIT ("mini Air Cooling"), a powerful thermoelectric cabinet cooler development kit, is the optimal solution for harsh environments where compressor-based coolers cannot withstand high temperatures, shock and vibration or operation on moving or turning

equipment. The Peltier modules can be operated at up to 36 VDC when necessary. At nominal 24 VDC and +35°C/+35°C (ambient/internal), it reaches a cooling capacity of 460 W and a coefficient of performance (COP) of 0,55.

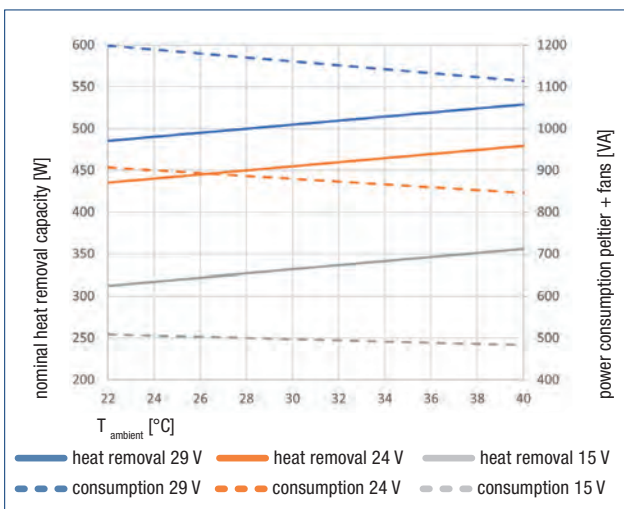
key features

- Peltier-based air cooling development kit
- ideal for cabinet cooling tasks up to 460 W ($T_{\text{chilled cabinet air}} +35^{\circ}\text{C}$, $T_{\text{ambient}} +35^{\circ}\text{C}$, 55% r.h.)
- solid state cooling, no moving parts except for fans
- independent from orientation
- wide ambient temperature range -40°C to +70°C (TBC)
- nominal 24 VDC / 38 A, max 30 V

specifications	
cooling capacity	460 W (+35°C/+35°C)
operating voltage	24 VDC
operating current	38 A (max. 43 A)
power consumption	863 W (max. 1200 W)
dimensions	345 x 339 x 282 mm (W×H×D) (+132 mm drop in cabinet)
external working temperature range	-40 to +70°C (TBC)
internal working temperature range	-40 to +70°C (TBC)
orientation	any
environmental protection level, enclosure side	IP2X
environmental protection level, ambient side	IP65
material	sheet steel
weight	21 kg

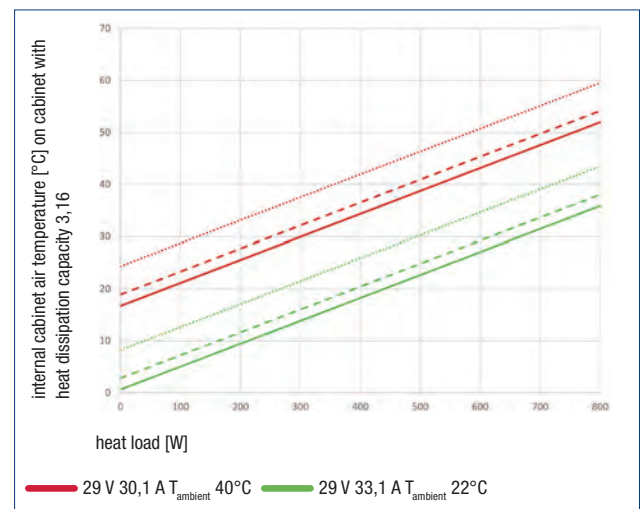
performance

nominal cooling capacity ($T_{\text{internal air}} = T_{\text{ambient air}}$) & power consumption



T_{cabinet} vs heat load cabinet

(approximation for $T_{\text{internal}} [^{\circ}\text{C}] = 0.044 \cdot \text{heatload [W]} + -11.54 \cdot \text{LN}(\text{peltier voltage [V]}) + 0.893 \cdot T_{\text{ambient}} [^{\circ}\text{C}] + 19.87$)



your customized mAC-KIT

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