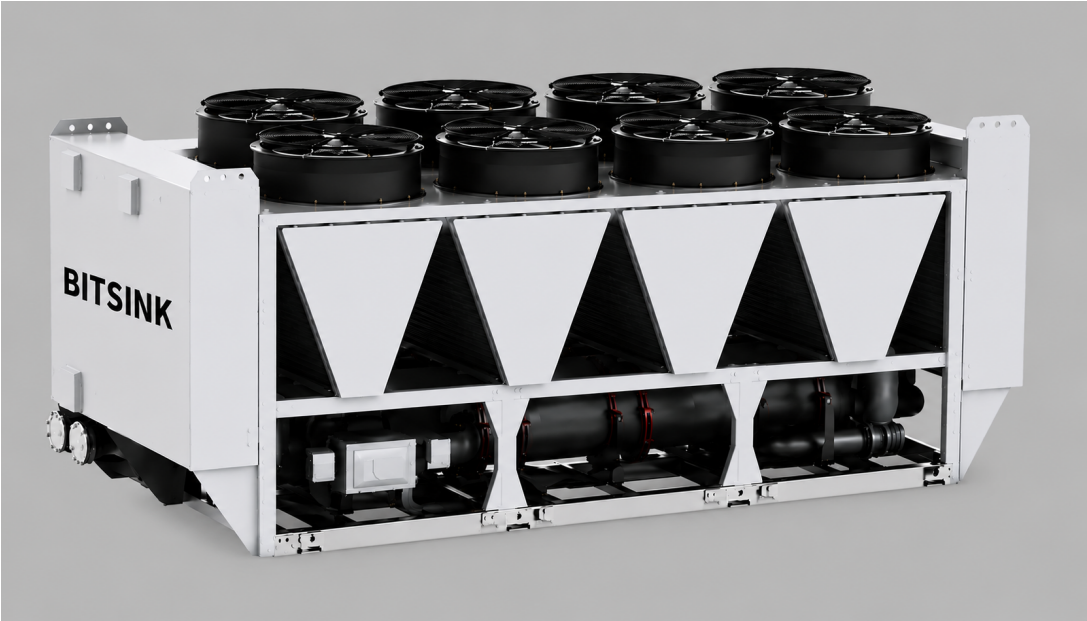


BITSINK AI CHILLER 1000

1,000 kW AIR-TO-WATER TRIM CHILLER | ENGINEERING DESIGN BASIS



DESIGN PARAMETER	ENGINEERING VALUE
Application	Trim chiller downstream of dry cooler for 7 x GB300 rack facility loop
Nominal cooling capacity	1,000 kW / 284 RT
Required peak-summer trim duty	~806 kW calculated
Guaranteed selection target	>= 900 kW net at 95°F ambient
Design ambient	95-104°F / 35°C
Entering facility fluid	40.0°C / 104°F
Leaving facility fluid	30.5°C / 86.9°F
Nominal facility flow	350 GPM / 79.5 m³/h
Fluid	70% DI water / 30% inhibited propylene glycol
Evaporator pressure drop target	<= 15 psi / 103 kPa
Water-side working pressure	150 psig minimum
Refrigerant	R-1234ze(E), A2L
Refrigeration circuits	4 independent circuits
Circuit capacity	~250 kW each
Compressor architecture	4 x VSD semi-hermetic screw compressors
Evaporator architecture	4 x dedicated refrigerant-to-glycol plate heat exchangers
Condenser architecture	V-bank microchannel air-cooled condenser
Fans	8 x large-diameter EC axial fans; 2 rows x 4
Full-load chiller input target	~230-275 kW at design point
Full-load heat rejection target	~1,250-1,300 kW
Electrical service	480 V / 3 phase / 60 Hz
Estimated MCA	~430 A preliminary
Recommended MOCP	500 A preliminary
Controls	PLC/HMI; BACnet/IP; Modbus TCP/RTU

Selection note: Exact compressor model, refrigerant charge, MCA/MOCP, airflow and PHE model require final OEM selection software at the stated duty point.

SYSTEM OPERATING

OPERATING STAGE	FLUID CONDITION / DUTY
Chiller to CDU	~30.5°C / 86.9°F
CDU return at ~980 kW rack load	~42°C / 107.6°F at ~350 GPM
Dry cooler	42°C entering -> 40°C leaving
Dry cooler heat rejection	~170-175 kW at stated condition
Residual trim-chiller duty	~805-810 kW
Chiller leaving target	30.5°C maximum

PRELIMINARY PERFORMANCE MAP

AMBIENT	EWT	LWT	NET CAP.	INPUT	COP
75°F / 24°C	38°C	30.5°C	~1,080 kW	~200 kW	~5.4
85°F / 29°C	40°C	30.5°C	~1,030 kW	~220 kW	~4.7
95°F / 35°C	40°C	30.5°C	~1,000 kW	~245 kW	~4.1
105°F / 41°C	40°C	30.5°C	~930 kW	~275 kW	~3.4
115°F / 46°C	40°C	30.5°C	~860 kW	~305 kW	~2.8

PRELIMINARY PHYSICAL / ELECTRICAL

Overall dimensions	240 x 96 x 96 in (6,096 x 2,438 x 2,438 mm)
Operating weight target	~11,850 lb
Facility connections	6 in minimum; final by velocity / pressure-drop review
Fan quantity	8 EC axial fans - 2 rows x 4
Estimated MCA	~430 A preliminary
Recommended MOCP	500 A preliminary
Sound target	<= 78 dBA at 10 ft - subject to final fan/coil selection

CONTROL INTENT Dry cooler operates as the first-stage economizer. Chiller enables when dry-cooler outlet cannot maintain the facility target and modulates to hold approximately 30.5°C leaving fluid. The 1 MW nominal rating provides margin above the calculated ~806 kW peak-summer trim duty.