

TR2-FC-G04-Z

Efficient Free Cooling Chiller for Large Data Centres

The **TR2-FC-G04-Z** is an high efficiency free-cooling chiller designed for hyperscale and colocation data centres. Available in both standard and No Glycol (-NG) versions, it features oil-free centrifugal compressors optimised for low GWP R1234ze refrigerant, operating in 3 modes: total free-cooling, hybrid free-cooling and mechanical cooling.

The innovative new free-cooling control logic enhances the system's EER throughout the year, providing up to 20% annual energy savings compared to previous control logics.

The **TR2-FC-G04** also ensures top-tier efficiency through cutting-edge technology: magnetic levitation centrifugal compressors, a flooded evaporator, 910 mm diameter EC fans, and advanced control and optimization algorithms. The chiller's performance is further enhanced by the innovative 3-layer microchannel heat exchanger (MCHX) and the new low lift pump, which maximize cooling density and extend the compressor operating range.

The **TR2-FC-G04-Z** is the result of our extensive approach to sustainability, reducing consumption while at the same time ensuring maximum efficiency.



R1234ze

Key Features & Benefits:

- Best-in-class Energy Efficiency Ratio (EER)
- Low GWP R1234ze refrigerant*
- Highly efficient components throughout: magnetic levitation centrifugal compressors, large diameter EC fans and advanced control and optimisation algorithms.
- Designed for chilled water with higher temperatures up to 26°C and high ΔT of up to 20K, ideal for the modern hyperscale data centre
- New Free Cooling management allows up to 20% annual energy saving
- New low lift pump extends the compressor operating range and increases the unit performance in hybrid mode
- V-block design improves maintenance and increase the cooling density with the patented Reduced Exergy Depletion (R.E.D) Cooler
- New EC fans improve free cooling performance and heat rejection
- Wide set of new options: fan diffusers, discharge air plenum, fast restart with ultracap, and energy monitoring amongst many others



*IPCC AR5



Specifications

TR2-FC-G04-Z			1232	1653	1803	1232	1653	1803
VERSION						-NG	-NG	-NG
PERFORMANCE								
MECHANICAL COOLING - GROSS VALUE¹								
COOLING CAPACITY	kW		1216	1619	1771	1249	1662	1819
TOTAL POWER INPUT	kW		252.1	338.4	381.9	253.0	339.6	383.3
EER	kW/kW		4.82	4.78	4.64	4.94	4.89	4.75
FREE-COOLING @ 10°C AMBIENT - GROSS VALUE²								
COOLING CAPACITY	kW		1178	1507	1654	1042	1341	1466
FREE-COOLING KW / NOMINAL KW	%		97	93	93	83	81	81
TOTAL FREE-COOLING (GROSS VALUE)²								
TOTAL FREE-COOLING AMBIENT ³	°C		9.3	8.4	8.4	5.6	4.7	4.7
TOTAL POWER INPUT	kW		22.4	28.0	30.8	27.9	33.5	36.3
EER	kW/kW		54.29	57.82	57.50	44.77	49.61	50.11
HEAT EXCHANGER IN COOLING¹								
GLYCOL	User Side	%	30	30	30	0	0	0
WATER FLOW	User Side	l/s	26.7	35.6	38.9	25.0	33.3	36.4
PRESSURE DROP		kPa	74.8	97.5	100	71.2	88.9	94.4
ELECTRICAL DATA								
POWER SUPPLY		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
F.L.A. ⁴	Total	A	537	787	796	537	787	796
EXCHANGERS								
MINIMUM WATER FLOW	Evaporator	l/s	16.7	20.8	22.2	16.7	20.8	22.2
MINIMUM WATER CONTENT	Plant	l	5000	5000	5000	5000	5000	5000
FANS								
QUANTITY		No.	16	20	22	16	20	22
AIRFLOW		m ³ /s	78.4	104.2	113.1	78.4	104.2	113.1
REFRIGERANT CIRCUIT								
COMPRESSORS		No.	2	3	3	2	3	3
CIRCUITS		No.	1	1	1	1	1	1
REFRIGERANT			R1234ze	R1234ze	R1234ze	R1234ze	R1234ze	R1234ze
REFRIGERANT CHARGE ⁵		kg	680	840	860	680	840	860
SOUND LEVELS								
TOTAL SOUND PRESSURE ⁶		dB(A)	68	69	70	68	69	70
TOTAL SOUND POWER LEVEL IN COOLING ⁷		dB(A)	101	102	103	101	102	103
DIMENSIONS & WEIGHT⁸								
WIDTH (A)		mm	9500	11700	12800	9500	11700	12800
DEPTH (B)		mm	2260	2260	2260	2260	2260	2260
HEIGHT (H)		mm	2500	2500	2500	2500	2500	2500
OPERATION WEIGHT		kg	10700	12700	14000	11800	14100	15400

Notes:

*1 Plant (side) cooling exchanger water (in/out) 32°C/20°C; Source (side) heat exchanger air (in) 35°C.

*2 Plant (side) cooling exchanger water (in/out) 32°C/20°C.

*3 Maximum ambient temperature where free-cooling capacity >= nominal cooling capacity, as stated above.

*4 Data valid for standard units without any additional options and only indicative. Safety values to be considered when cabling the unit for power supply and line-protection. Refer to Databook.

*5 Theoretical - refer to serial plate for actual charge volumes.

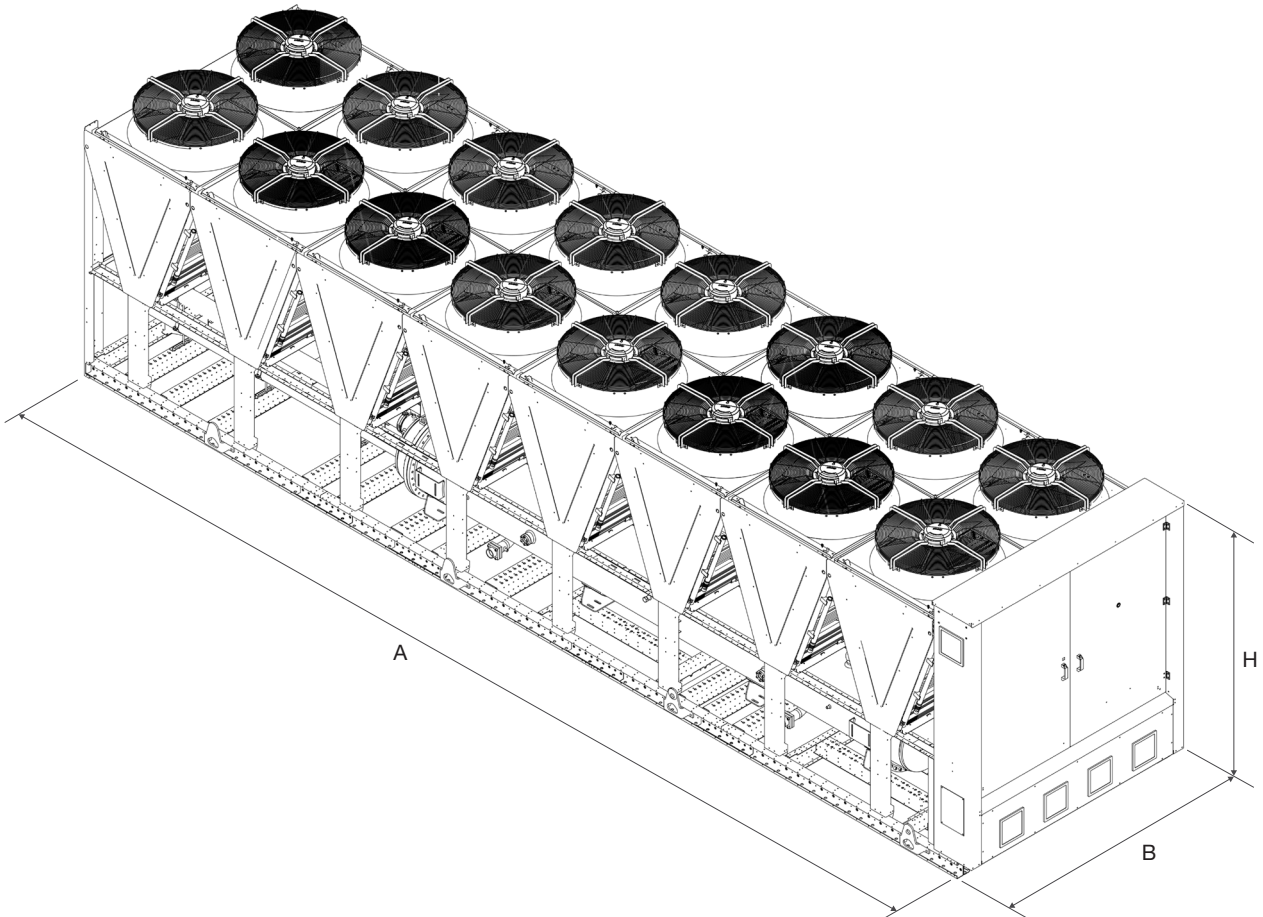
*6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

*7 Sound power on the basis of measurement taken in compliance with ISO 9614. Sound power level in cooling, outdoors.

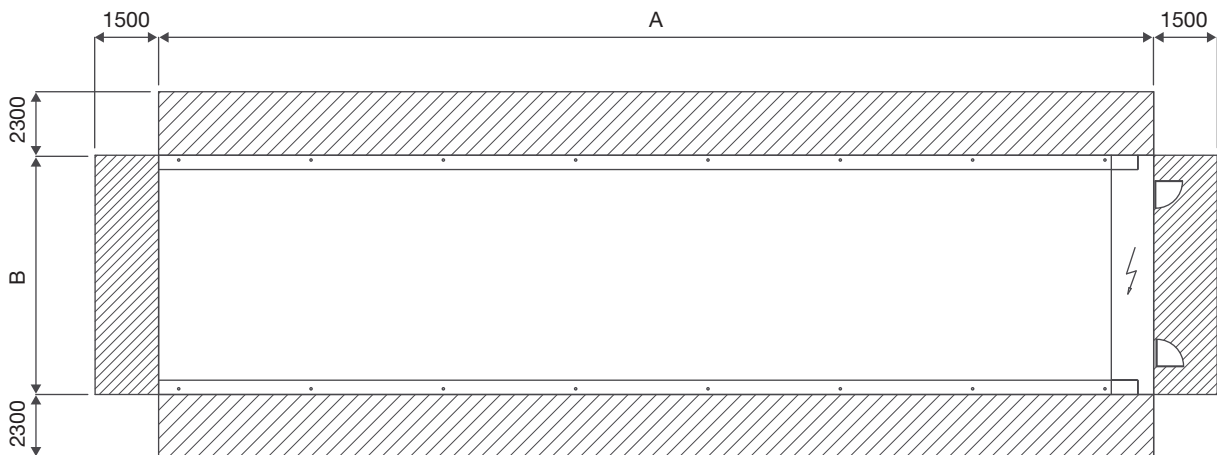
*8 Unit in standard configuration, without optional accessories.

TR2-FC-G04-Z DIMENSIONS

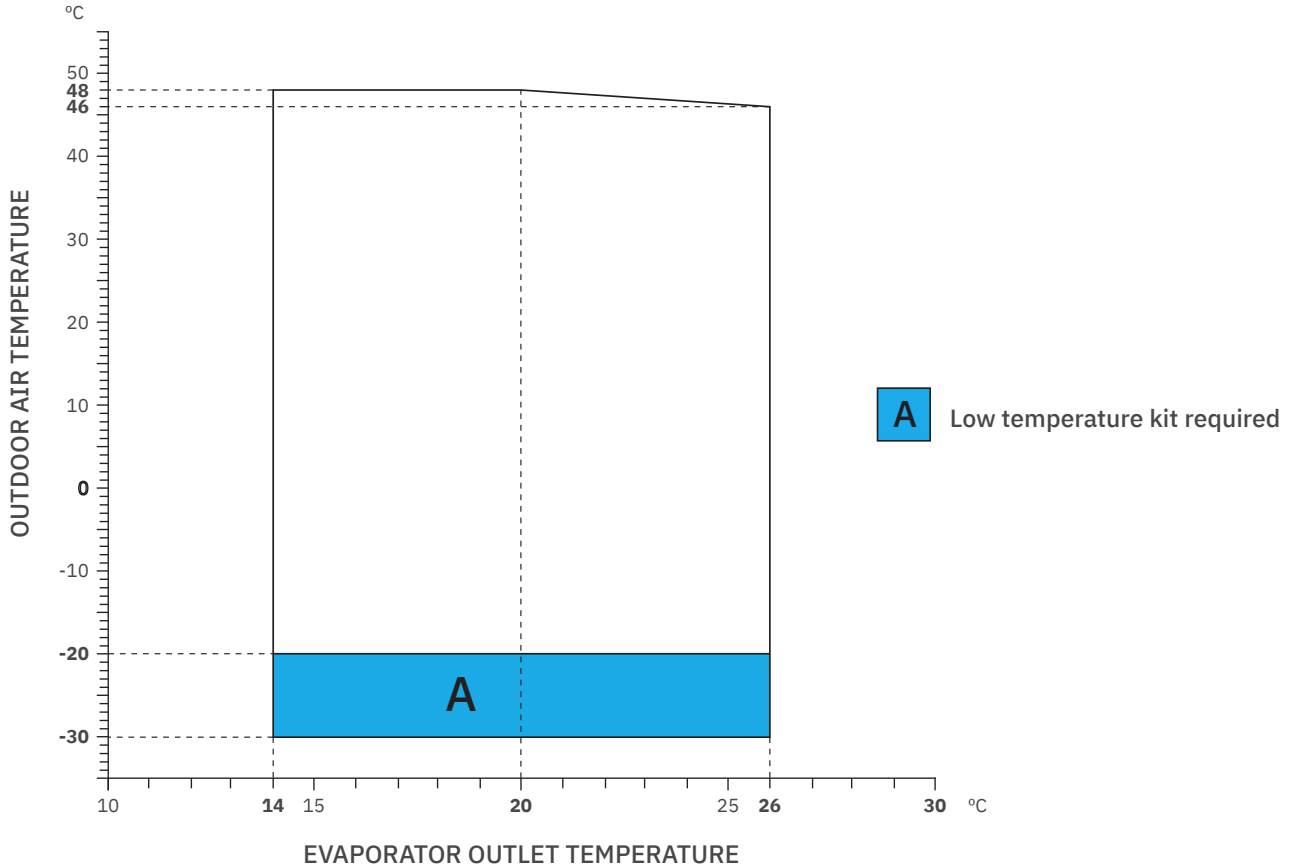
All dimensions are in millimetres.



TOP VIEW



TR2-FC-G04-Z OPERATING ENVELOPES



Note: For specific limits of each model, please consult your local sales representative.



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Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R290 (GWP:3), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of June 2024

