

Platform **TRF Evolution**

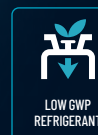
# TRF DX F

DATA CENTER

INDUSTRIAL

**PERIMETER MOUNTED UNITS  
FOR DATA CENTERS  
WITH INDIRECT FREE-COOLING**

23-150 kW



TRF DX F units are water-condensed perimeter-mounted cabinets that are able to exploit **the effect of indirect water-based Free-Cooling**. The F Series uses Dry Cooler water as both a cooling source for Free-Cooling and a heat exchange fluid for condensing the cooling circuit. TRF DX F units are monobloc units inside which the **entire cooling circuit is concentrated**. Condensation takes place through a brazed-plate heat exchanger made of AISI 304 stainless steel.

## Maximum energy saving

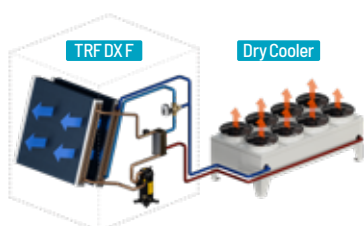
In periods when the air outside is cooler than the warm air inside the Data Center, the cold water produced by the dry cooler directly feeds the heat exchange coil, which is able to provide a part or all of the required cooling capacity. Before returning to the dry cooler, the water is reused inside the plate exchanger, serving the compressor. The entire process is regulated by a 3-way valve **directly controlled by HiRef software, which maximizes the Free-Cooling effect and checks the cooling circuit**. In this way the work of the compressor is significantly reduced, and shuts down when a state of Free-Cooling is fully reached, **with a significant reduction in the system's PUE**.



## Safety in the server room

All models in the TRF DX F range feature heat exchange coils with hydrophilic coating as standard. This special coating - together with an adequate selection of air through-flow speeds - **aids condensate collection during the dehumidification process, preventing any dripping on the inside and outside of the unit**.

## INDIRECT WATER-SIDE FREECOOLING



- Refrigerant R410A or R513A
- EC Fans
- Scroll on/off compressors
- Advanced control comes as standard
- Temperature control through heating and post-heating systems with electric heating elements (optional)
- Humidity control through dehumidification and humidification (optional)
- Broad choice of accessories, including base modules and plenums for ducting
- Air filter class G3 as standard. Air Filters G4, M5, F7 (optional)
- Double power supply with automatic switch (optional)
- Constant-flow (airflow control) or constant available overpressure ( $\Delta P$  control) ventilation modulation (optional)
- Electronic expansion valves (optional)



## Easier scheduled maintenance

The unit has been painstakingly designed to ensure frontal access to components even with the units running. This makes **routine maintenance easier** in full compliance with safety standards.



## Efficiency

The performance, reliability and efficiency of HiRef units are guaranteed **by using the best quality components and by cleverly designed internal and external layouts.**

## Green

HiRef is constantly committed to the search for refrigerants with ever-lower environmental impact. The use of ASHRAE Class A1 refrigerants, non-toxic and non-flammable, is essential for the close control application. TRF DX F units are available with R134a and R513A refrigerants.

## Dual circuit

Double-circuit versions are already available at low power levels. This solution offers **maximum unit redundancy and ensures continuity of service, more precise refrigerating power and less absorption for partial Data Center loads.**

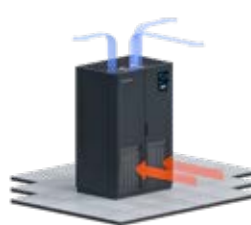
## AIRFLOW CONFIGURATIONS



Upflow



Downflow



Displacement



TRF DX F		0241	0261	0291	0331	0361	0391	0441	0481	0521	0382	0432	0492	0532	0602	0632	0682	0762	0802	0872	0962	1204	1304		
		R410A - Indoor air 30°C - 35% / Water 40°C - 47°C / Free-cooling water 12°C / Glycol 30%																							
Cooling capacity	kW	26	28.4	31.4	36	38.7	42.7	46.1	51.5	55.9	42.5	47.9	51.8	57.7	62.1	69.1	74.5	81.2	88.3	97.7	103.3	125.2	136.3		
Total absorbed power	kW	7.1	7.5	8.7	9	9.9	11.1	12.4	13.5	14.9	11.1	12.6	14.6	15.4	17.7	18	19.9	22.4	24.4	27.1	29.9	36.3	40.2		
EER		4.38	4.45	4.14	4.83	4.61	4.47	4.23	4.75	4.57	5.06	4.76	4.35	4.55	4.12	4.68	4.47	4.24	4.62	4.48	4.19	4.07	3.93		
SHR		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Free-Cooling capacity	kW	24	24.7	25.5	32.4	33.4	34.4	35.3	47.9	49.3	43.8	45.1	49.3	49.3	50.7	57.5	60.8	62.5	77.9	80.1	82.3	109.6	109.6		
SHR Free-Cooling		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
		R410A - Inside air 35°C - 30% / Water 40°C - 47°C / Free-cooling water 17°C / Glycol 30%																							
Cooling capacity	kW	28.8	31.4	34.5	39.9	42.9	47	50.7	57.2	61.8	47	53.1	57.6	63.9	68.9	76.7	82.6	90.1	98.4	108.1	114.3	137.8	149.9		
Total absorbed power	kW	7.1	7.4	8.7	8.9	9.8	11	12.4	13.4	14.9	11.1	12.6	14.6	15.2	17.6	17.9	19.8	22.4	24.3	27	29.9	36.2	40		
EER		4.85	4.98	4.59	5.41	5.17	4.94	4.67	5.34	5.07	5.61	5.29	4.83	5.1	4.61	5.23	5.01	4.71	5.18	4.97	4.65	4.49	4.34		
SHR		1	1	1	0.98	1	0.99	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Free-Cooling capacity	kW	25.6	26.3	26.4	34.5	34.5	35.7	36.6	50.9	50.9	46.9	47.9	50.9	50.9	53.9	61.1	62.7	63	80.4	82.6	85.2	112.7	113.3		
SHR Free-Cooling		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
		R513A - Indoor air 30°C - 35% / Water 40°C - 47°C / Free-Cooling water 12°C / Glycol 30%																							
Cooling capacity	kW	24	26.3	28	34	38	-	-	43.2	-	-	49.6	52.8	56.8	-	66.6	75.1	-	80.9	-	-	95.8	112.7		
Total absorbed power	kW	6.5	7.4	8.2	9.6	11.2	-	-	12.3	-	-	13.3	15.1	16.5	-	18.9	22	-	24.5	-	-	28.3	35.1		
EER		4.55	4.25	4.01	4.27	3.97	-	-	4.56	-	-	4.74	4.3	4.16	-	4.31	4.07	-	4.34	-	-	4.51	4.02		
SHR		1	1	1	1	1	-	-	1	-	-	1	1	1	-	1	1	-	1	-	-	0.98	1		
Free-Cooling capacity	kW	24.5	25.2	26	34.1	35.1	-	-	47.4	-	-	48.9	50.3	51.8	-	62.1	62.1	-	77.3	-	-	97.3	103.3		
SHR Free-Cooling		1	1	1	1	1	-	-	1	-	-	1	1	1	-	1	1	-	1	-	-	1	1		
		R513A - Indoor air 35°C - 30% / Water 40°C - 47°C / Free-cooling water In 17° / Glycol 30%																							
Cooling capacity	kW	26.8	29.3	31.3	37.9	42.5	-	-	48.7	-	-	55.8	59.2	63.4	-	74.3	83.5	-	90.9	-	-	108	126		
Total absorbed power	kW	6.6	7.5	8.3	9.7	11.3	-	-	12.5	-	-	13.4	15.3	16.7	-	19.2	22.2	-	24.7	-	-	28.5	35.4		
EER		5.03	4.68	4.42	4.69	4.41	-	-	5.06	-	-	5.26	4.76	4.58	-	4.75	4.47	-	4.82	-	-	5.03	4.44		
SHR		1	1	1	0.99	1	-	-	1	-	-	1	1	1	-	1	1	-	1	-	-	1	1		
Free-Cooling capacity	kW	25.4	26.1	26.9	35.3	36.2	-	-	50.6	-	-	52	53.4	54.9	-	64.1	65.8	-	80	-	-	103.8	109.6		
SHR Free-Cooling		1	1	1	1	1	-	-	1	-	-	1	1	1	-	1	1	-	1	-	-	1	1		
Rated air flow	m³/h	8000			10800				15500			15000			15500			18600			24500			31800	
Power supply	V/ph/Hz	400/3+N/50																							
Number of circuits		1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2		
Lp @ nominal rpm; dist.=2m Q=2	db(A)	61	62	62	65	65	65	65	71	71	71	71	71	71	71	65	65	65	69	69	69	66	66		
Dimensions [LxHxD]	mm	1010x2000x890			1270x2000x890				1760x2000x890				2020x2000x890				2510x2000x890			3160x2000x960					

Also available with 60 Hz power supply. | Height of model Displacement 2250 mm.