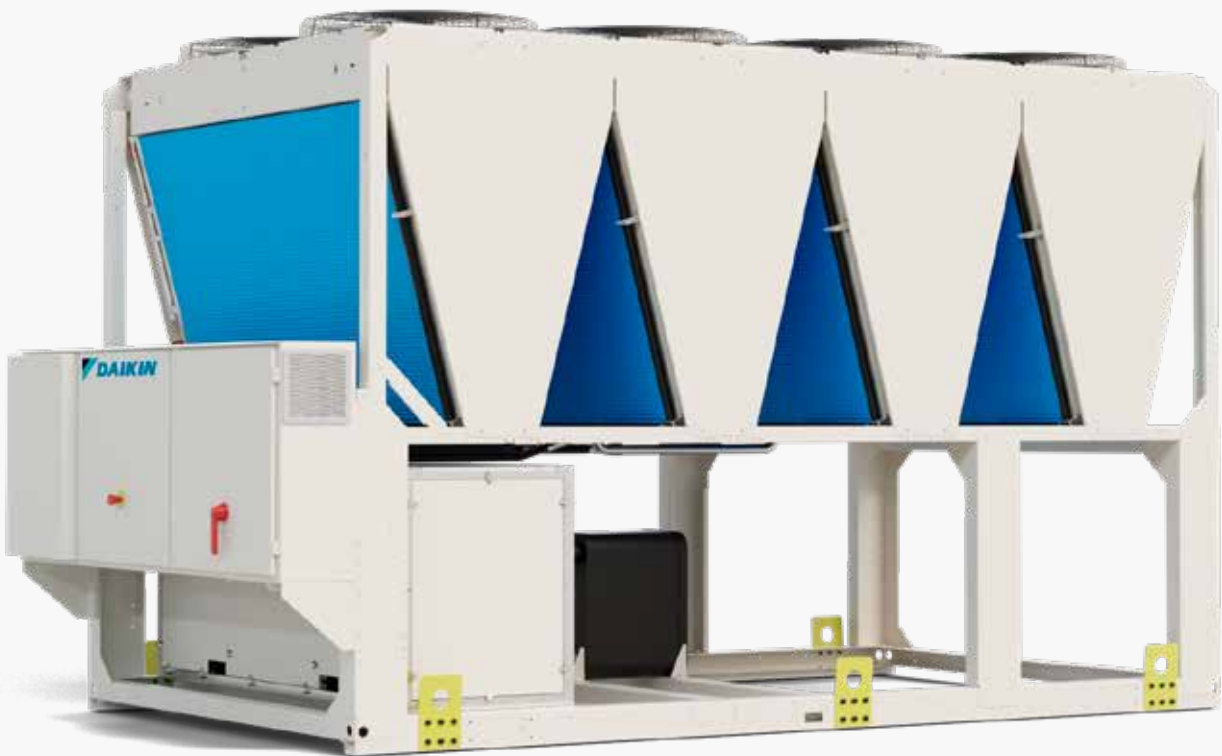


# EWAT-B

Multi scroll chiller  
with R-32 refrigerant



First air cooled chiller with environmental friendly R-32 refrigerant



Daikin, world's first company introducing a new generation of air cooled scroll chiller series with refrigerant R-32.

## Why choose Daikin?

**Daikin is continuously leading in chiller technology, striving again for innovation with the new generation of air cooled chillers with R-32 refrigerant, expanding it's Bluevolution range to larger capacities.**

With the highest efficiency at both partial and full load, installers and building owners can give end users better results all year round comfort – with lower noise levels and higher energy efficiency than ever before.

Thousands of sites around the world have relied on Daikin high efficiency products to reduce their running costs without compromising on climate comfort or performance.

With the R-32 Scroll-chiller, Daikin has once again improved the chiller performances, increasing the Seasonal efficiency ratio (SEER) by 10% in comparison to the version with R-410A refrigerant.





# Why has Daikin introduced R-32 models?

**A core element of Daikin's corporate philosophy is that the company strives to be a leader in applying environmentally friendly practices, with energy efficiency and refrigerant choice as key factors.**

Daikin, involved in both HVAC and refrigerant business, was the world first company to introduce R-32 in split air conditioners in 2012, and has expanded the range in the past years including commercial air conditioners and heat pumps. The global warming potential of R-32 refrigerant is 675, which is only one third compared to commonly used refrigerant R-410. Thanks to the lower flammability classification (R-32 refrigerant falls into category class A2L in ISO817), it can be safely used in many applications including chilled water systems. As a single component refrigerant, R-32 is also easier to recycle and reuse another environmental plus in its favour.

## What is GWP?

Global Warming Potential (GWP) is a number which expresses the potential impact that a particular refrigerant would have on global warming if it were released into the atmosphere. It is a relative value which compares the impact of 1kg of refrigerant to 1kg of CO<sub>2</sub> over a period of 100 years.

Although this impact can be avoided by preventing leaks and ensuring proper end of life recovery, choosing a refrigerant with a lower GWP and minimizing the volume of refrigerant will reduce the risk to the environment if a leak were to occur accidentally.



# Why choose EWAT-B chiller series?

## **R-32**

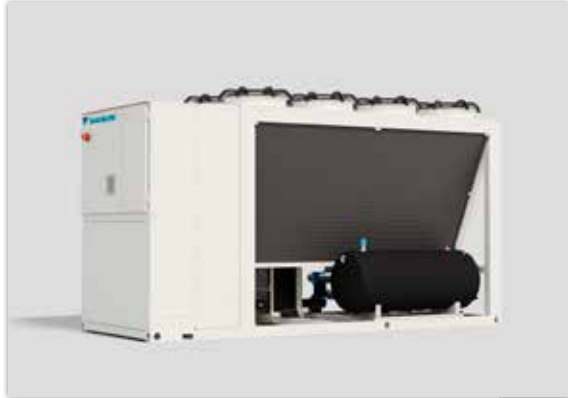
- ✓ Top class efficiency, SEER up to 4,84. Overcoming 2021 Eco-design requirements!
- ✓ Environmental friendly refrigerant  
→ First in the market
- ✓ R-32 optimized scroll compressors and heat exchangers
- ✓ The Global Warming Potential (GWP) of R-32 refrigerant is 675, which is only one third compared to commonly used refrigerant R-410
- ✓ The low GWP R-32 refrigerant falls into category class A2L in ISO817 and it can be safely used in many applications including chilled water systems
- ✓ As a single component refrigerant, R-32 is also easier to recycle and reuse another environmental plus in its favour
- ✓ Wide capacity range: 80 – 700 kW
- ✓ Microchannel condensing coil, for reduced refrigerant charge



- ✓ Silver and Gold efficiency versions
- ✓ Extensive option lists
- ✓ 3 sound configurations
- ✓ Fan speed modulation option (VFD)
- ✓ Full compatibility with Daikin on Site
- ✓ Hydronic Kit configurations (single and twin pump, inertial tank, VFD)
- ✓ Single and dual circuit version overlapping between 150 kW and 350 kW
  - > Single circuit units fits 2 or 3 compressors
  - > Dual circuit units fits 4 or 5 or 6 compressors



# Two different layouts



## Single-V Layout

- › Slim layout
- › Higher flexibility: three intermediate sound configuration for both Silver and Gold versions



## Modular-V Layout:

- › Better part load efficiency (SEER) vs previous generation:
  - › +4% with standard arrangement
  - › +7% with VFD fan option



# Extensive option lists

# Including options:

## Partial heat recovery

Introduction of condensation control allowing to maintain heat recovery capacity at lower ambient temperatures with unit operating at full capacity.

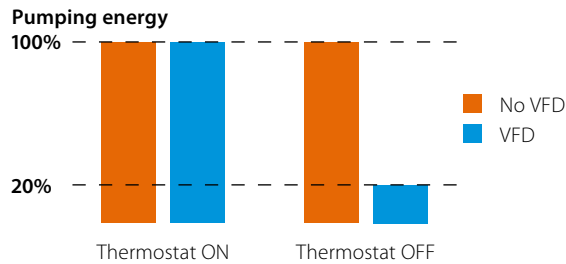
	HR @ 35°C ambient	HR @ 20°C ambient
Current	~ 15%	~ 3%
New	~ 15%	~ 15%

## Buffer tank

Unit mounted buffer tank available all across the range for plug and play solution.

## VFD pumps and variable flow control

- > Variable pump speed control via external 0-10 volt signal
- > "Thermostat on" and "thermostat off" pump speed management
- > Variable primary flow control



## Master/Slave supplied as standard

Master/Slave functionality allowing to manage up to 4 units on the same system without the need of external control devices.

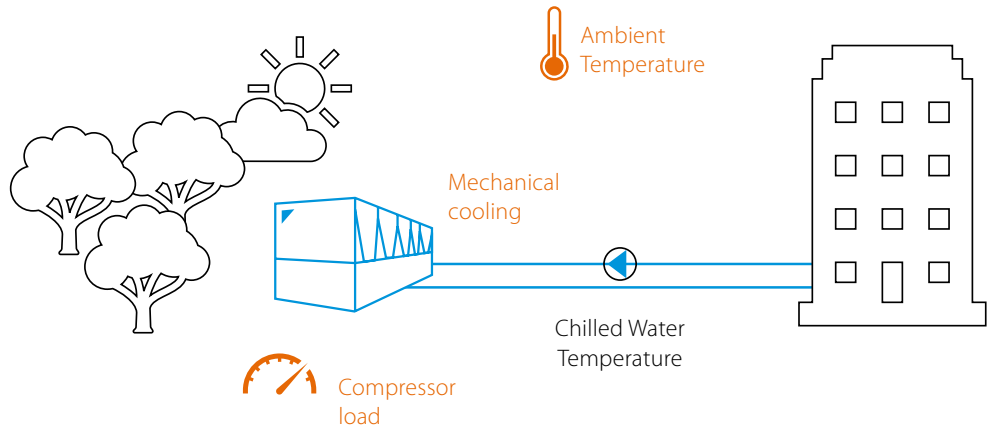
## Fan Silent Mode

The single V units and units with VFD option are standardly equipped with Fan Silent Mode, which reduces fan velocity and therefore unit sound emission on scheduled time bands, enhancing comfort during night operation.

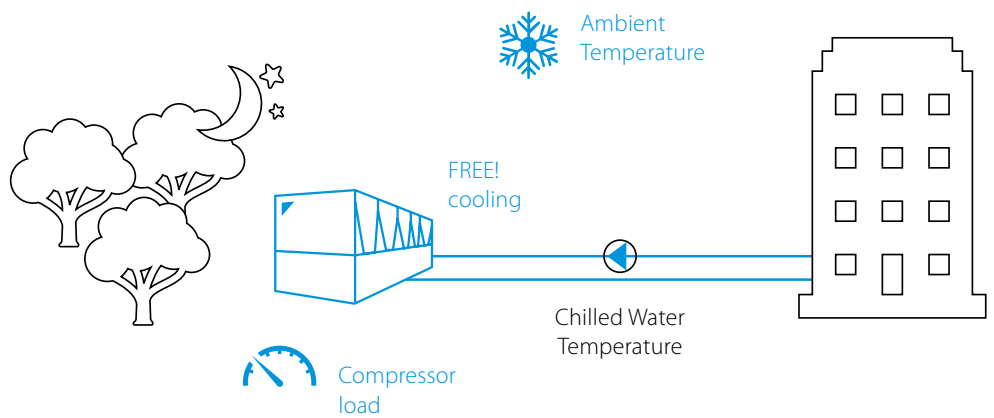
# Free-cooling options

## What is free cooling?

It's the capability of a system/equipment to cool air or water by taking advantage of the **favorable outdoor conditions** when ambient temperature is reducing, for example during winter or intermediate season or even during night time operation.



Free cooling operation allows to **reduce the power consumption** generated by traditional mechanical cooling (e.g. Compressors).



## Why free-cooling?

The use of the outdoor ambient as a source for cooling is the perfect way to answer to the **"EPBD Directive"** (Energy Performance of Buildings Directive):

All new buildings in the European Union shall be nZEB (**nearly Zero Energy Buildings**) from 31/12/2020 and public buildings shall lead the way and be nZEB compliant **from 31/12/2018**. From **2021** this will apply also to private buildings.



# BLUEEVOLUTION +



The Daikin R-32 chiller series can be offered with innovative free-cooling options to further improve energy efficiency and reduce running costs

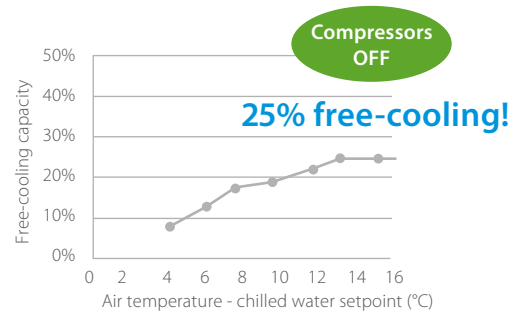


## Free-cooling - Light

Refrigerant migration system allowing to recover up to 25% of normal unit capacity

### Benefits

- > Glycol free solution
- > No refrigerant pump required
- > No extra footprint vs standard unit
- > No extra pressure drops on water side



## Free-cooling - Full

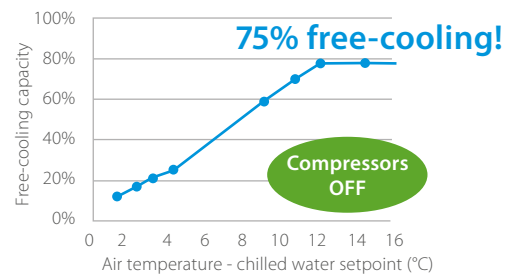


Refrigerant migration system allowing to recover up to 75% of normal unit capacity

### Benefits

- > 75% free-cooling due to additional "Shell & Tube" refrigerant to water exchanger (compared to Light version)
- > Glycol free solution
- > No refrigerant pump required
- > No extra footprint vs standard unit\*
- > No extra pressure drops on water side

(\* except 4 fans model)



# Connectivity

## mAP

- › Android app
- › Replicate the controller of the unit
- › Operate on the unit by remote smart device (tablet, smartphone, PC)
- › Soon available on PlayStore



## Daikin on Site

Fully compatible with Daikin on Site cloud based platform that allows a number of advanced functionalities including:

- › Remote monitoring,
- › System optimization
- › Preventive maintenance

Remote access with one click via LAN or GSM modem



## Connection to Intelligent Chiller Manager

In case of more complex installations Daikin can offer the Intelligent Chiller Manager option, allowing energy optimisation of the system and, when necessary, full customization of the control solutions to the specific installation's needs

- › High number of units
- › Peripheral controls





**R-32**

Cooling Only			EWAT-B-SRB		085	115	135	155	175	195	205	215	240	260	290	310	330	340	350	420	460	510	570	610	670		
Space cooling	A Condition 35°C	Pdc	kW	76.49	105	123.88	150.13	164.87	181.31	200.51	203.5	231.19	248.68	266.45	290.26	311.62	329.53	330.8	398.49	443.51	488.06	534.23	578.74	637.95			
	ηs,c		%	161	173	161	166.2	162.2	167.8	161	179.8	164.2	174.2	172.2	173.8	179	165	179	179.8	179.4		179					
SEER				4.1	4.4	4.1	4.23	4.13	4.27	4.1	4.57	4.18	4.43	4.38	4.42	4.55	4.2	4.55	5.57	4.56		4.55					
Cooling capacity	Nom.		kW	76	105	124	150	165	181	201	204	231	249	266	290	312	330	331	398	444	488	534	579	638			
Power input	Cooling	Nom.	kW	33.7	40.3	53	65.9	73	73.2	84.6	91.9	89	99.9	115	119	129	122	140	147	181	197	230	244	251			
Capacity control	Method			Step																							
	Minimum capacity		%	50	38	50	25	38	21	19	50	17	25	24	14	13	33	19	17	15	14	12	11	17			
EER				2.27	2.61	2.34	2.28	2.26	2.48	2.37	2.21	2.6	2.49	2.31	2.44	2.41	2.7	2.35	2.71	2.45	2.48	2.32	2.37	2.55			
IPLV				4.67	4.97	4.5	4.63	4.74	4.64	4.91	4.66	4.93	4.27	4.51	4.82	4.7	5	4.72	4.81	4.92	4.93	5.04	5.03	5.01			
Dimensions	Unit	Height	mm	1,801		1,822		1,801		1,822														2,540			
		Width	mm													2,236											
	Depth	mm	2,120	2,660	3,570	3,180	4,170	3,780	2,326				3,226				4,126				5,025	5,874					
		mm	691	777	821	1,028	994	1,187	1,179	1,194	1,815	1,842	2,004	2,289	2,317	2,434	2,345	2,824	3,066	3,223	3,484	3,918	4,279				
Weight	Operation weight	kg	696	783	830	1,035	1,006	1,198	1,190	1,210	1,826	1,853	2,020	2,308	2,336	2,454	2,364	2,852	3,094	3,251	3,526	3,960	4,321				
Water heat exchanger	Type			Braze plate																							
	Water volume		l	5	6	9	7	12	11	16	11	16	19	20	19	28				42							
	Water flow rate	Cooling	Nom.	l/s	3.7	5	5.9	7.2	7.9	8.7	9.6	9.7	11	11.9	12.7	13.9	14.9	15.7	15.8	19	21.2	23.3	25.5	27.6	30.4		
	Water pressure drop	Cooling	Nom.	kPa	24.6	32.2	23.8	58.5	37.5	41.6	49.9	36.8	64.5	73.5	59.9	42.1	47.8	71.7	53.2	50.4	61.1	72.7	58.9	68	81		
Air heat exchanger	Type			Microchannel																							
Compressor	Type			Scroll compressor																							
	Quantity			2		4		2		4		2		4		3		4		3		4		5		6	
Fan	Type			Direct propeller																							
	Quantity			4	6	8		10		4				5		6		5		7		8		9		11	
	Air flow rate	Nom.	l/s	4,929	7,396	11,352	9,838	14,202	12,325	17,064				21,330		25,596		21,330		29,862		34,128		38,394		46,926	
	Speed		rpm													780											
Sound power level	Cooling	Nom.	dBA	78.6	82.5	84.1	81.6	86.3	83.9	85.2	87.8	87	87.2	87.5	88.2	88.3	89.1	88.4	89.8	90.4	90.5	91	91.8				
Sound pressure level	Cooling	Nom.	dBA	61.2	64.7	66.4	63.3	68.3	65.3	66.6	69.4	68.1	68.2	68.5	68.7	68.8	69.6	68.9	69.8	69.9	70.5	70.6	71.1				
Refrigerant	Type/GWP			R-32/675																							
	Charge		kg	7.5	8.5	13	11	14.5	13	19	25.5	25	26	24	34.5	36	41	42	46.5	52.5							
	Circuits	Quantity		1		2		1		2		1		2		1		2		1		2					
Piping connections	Evaporator water inlet/outlet (OD)		76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9				114.3							
Unit	Starting current	Max	A	213	313	324	284	462	384	395	498	410	420	546	573	583	588	594	636	681	719	763	801	843			
		Cooling	Nom.	A	62	71	87	115	119	123	139	151	165	189	202	216	202	231	245	298	324	378	402	414			
	Running current	Max	A	73	86	96	143	132	156	167	168	182	193	216	243	254	258	265	307	351	389	433	471	513			
Power supply	Phase/Frequency	Hz	3~/50																								



**R-32**

			EWAT-B-XRB																	085	115	145	180	185	200	220	230	250	280	300	310	320	360	370	430	470	540	600	660	700
Cooling Only	Space cooling	A Condition 35°C Pdc	kW	81.86	108.59	135.62	168.03	166.16	187.56	208.44	224.52	238.22	264.73	284.94	284.65	301.84	328.88	346.48	394.41	439.5	501.51	571.63	621.1	659.28																
		ηs,c	%	213.28	179.4	166.6	177	164.6	186.6	179	169	177	186.6	185.8	183	173.8	180.6	176.2	181.8	179	183	187.4	185.4																	
SEER				4.13	4.56	4.24	4.5	4.19	4.74	4.55	4.3	4.5	4.74	4.72	4.65	4.42	4.59	4.48	4.62	4.55	4.65	4.76	4.71																	
Cooling capacity	Nom.		kW	82	109	136	168	166	188	208	225	238	265	285	302	329	346	394	440	502	572	621	659																	
Power input	Cooling	Nom.	kW	30.8	38.9	46.9	59.1	70.5	69.8	80.7	79.2	87.3	92.2	105	103	115	121	130	147	163	190	207	224	242																
Capacity control	Method			Step																																				
	Minimum capacity		%	50	38	50	25	38	21	19	50	17	16	24	14	22	33	19	17	25	14	12	11	17																
EER				2.66	2.79	2.89	2.84	2.36	2.69	2.58	2.84	2.73	2.87	2.72	2.76	2.63	2.71	2.67	2.69	2.64	2.76	2.77	2.72																	
IPLV				4.74	5.1	4.76	5.04	4.72	5.05	4.97	4.86	4.91	5.08	4.78	4.94	4.62	5.04	4.95	4.88	4.72	4.96	5.04	5.07	5.08																
Dimensions	Unit	Height	mm	1,801	1,822	2,540	1,822									2,540																								
		Width	mm		1,204		2,236	1,204									2,236																							
		Depth	mm	2,660	3,180	3,780	2,326	3,780		2,326				3,226					4,126		5,025	5,874	6,774																	
		Weight	kg	747	840	959	1,736	1,076	1,766	1,802	2,082	2,090	2,231	2,318	2,262	2,299	2,731	2,801	2,888	3,393	3,633	4,106	4,500	4,642																
Water heat exchanger	Operation	Type		Braze plate																																				
		Water volume	l	5	6	9	11	12	11	16	14	19	20	19	20	28	42	50																						
		Water flow rate	Cooling Nom. l/s	3.9	5.2	6.5	8	7.9	9	10	10.7	11.4	12.6	13.6	14.4	15.7	16.5	18.8	21	23.9	27.3	29.6	31.5																	
		Water pressure drop	Cooling Nom. kPa	27.8	34.2	28	36.3	38	44.2	37.7	44	48.2	35.6	55.1	40.6	45.1	71.4	57.9	49.5	60.2	52.5	66.5	62.6	69.7																
Air heat exchanger	Type		Microchannel																																					
Compressor	Type		Scroll compressor																																					
	Quantity		2	4	2	4	2	4	2	4	3	4	3	4	3	4	5	6																						
Fan	Type	Type		Direct propeller																																				
		Quantity		6	8	10	4	10	4	5	6	7	8	9	10	12	13	14																						
		Air flow rate	Nom. l/s	6,673	8,896	11,122	15,054	11,122	15,054	18,819	18,818	22,582	26,346	30,110	33,874	37,637	45,164	48,928	52,692																					
		Speed	rpm		1,108	700	1,108		700		700		700		700		700		700		700		700		700															
Sound power level	Cooling	Nom. dBA	77.9	81.9	84	84.2	86	84.5	84.8	86.2	85.8	86.6	87	86.7	86.9	87.7	87.6	88.3	88.9	89.3	90	90.4	90.7																	
Sound pressure level	Cooling	Nom. dBA	60.2	63.9	65.6	65.3	67.7	65.5	65.8	66.7	66.3	67.1	67.5	67.2	67.4	67.8	67.7	68.3	68.5	68.9	69.2	69.3	69.6																	
Refrigerant	Type/GWP		R-32/675																																					
	Charge	kg	9	10	11	12	20	23.5	24	27.5	28	27.5	32	31	36	43.5	49	55	60	66																				
	Circuits	Quantity	1	2	1	2	1	2	1	2	1	2	1	2	1	2	2																							
Piping connections	Evaporator water inlet/outlet (OD)		76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9	76.1	88.9																
Unit	Starting current	Max	A	215	315	328	290	464	388	399	506	414	543	554	564	592	602	640	678	727	779	817	855																	
		Running current	Cooling Nom. A	59	71	83	113	118	128	143	134	151	164	177	179	194	204	221	250	276	319	352	381	410																
		Max	A	75	87	100	149	134	160	171	176	186	213	224	235	262	273	311	348	397	449	487	525																	
Power supply	Phase/Frequency	Hz	3~/50																																					



EWAT-B installation at CERN - European Organization for Nuclear Research

# Future-proof choice in chillers



**BLUEEVOLUTION**

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