



technical data



Fan Coil Units

FWF - Ceiling mounted cassette unit

FWF - Ceiling Mounted Cassette Unit



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intension to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment.



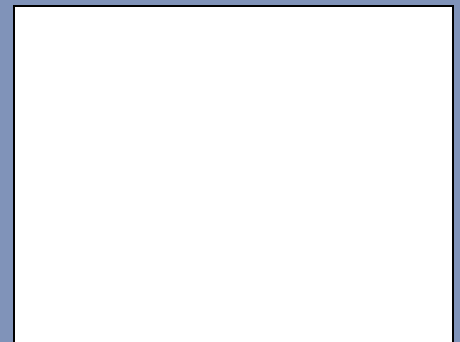
Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. participates in the Eurovent Certification Programme for Air Conditioners (AC), Liquid Chilling Packages (LCP) and Fan Coil Units (FC); the certified data of certified models are listed in the Eurovent Directory.

Specifications are subject to change without prior notice

The present publication is drawn up by way of information only and does not constitute an offer binding upon Daikin Europe N.V.. Daikin Europe N.V. has compiled the content of this publication to the best of its knowledge. No express or implied warranty is given for the completeness, accuracy, reliability or fitness for particular purpose of its content and the products and services presented therein. Specifications are subject to change without prior notice. Daikin Europe N.V. explicitly rejects any liability for any direct or indirect damage, in the broadest sense, arising from or related to the use and/or interpretation of this publication. All content is copyrighted by Daikin Europe N.V..



DAIKIN EUROPE N.V.

Naamloze Vennootschap
Zandvoordestraat 300
B-8400 Oostende, Belgium
www.daikin.eu
BTW: BE 0412 120 336
RPR Oostende



EEDEN07-432

technical data



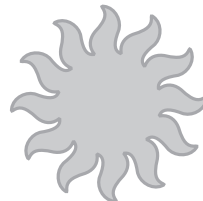
Fan coil units

FWF - ceiling mounted cassette unit

Cooling only



Heating only



Heat pump



TABLE OF CONTENTS

FWF

1	Features	4
2	Specifications	5
	Nominal capacity and nominal input	5
	Technical Specifications	5
	Electrical Specifications	6
3	Control systems	7
4	Capacity tables	8
	Cooling capacity tables	8
	Capacity tables with glycol for process cooling applications	9
	Heating capacity tables	10
	Capacity correction factor	11
5	Dimensional drawing & centre of gravity	12
	Dimensional drawing	12
6	Piping diagram	13
7	Wiring diagram	14
	Wiring diagram	14
8	Sound data	15
	Sound power spectrum	15
9	Operation range	16
10	Hydraulic performance	17
	Water pressure drop curve evaporator	17

1 Features

- Wide operating range
- Quiet operation with auto-swing comfort
- Easy to install and maintain
- 3 speed fan motor
- Double-intake centrifugal fans
- 4 way air discharge and air swing
- Air suction from underneath
- High power air flow
- Slim front panel and aesthetic design
- Tile size decoration panel
- Removable washable air filter (self-extinguishing class 1)
- Built-in high pressure drain pump (up to 700mm condensate water can be pumped)
- Wireless controller as standard with decoration panel kit



2 Specifications

2-1 NOMINAL CAPACITY AND NOMINAL INPUT			FWF02AT	FWF03AT	FWF04AT	
Power Input	High	W	51	75	78	
	Medium	W	49	74	75	
	Low	W	46	71	71	
Cooling capacity	Total capacity	High	kW	2.34	4.10	4.25
		Medium	kW	2.17	3.81	4.10
		Low	kW	2.03	3.66	3.95
	Sensible capacity	High	kW	1.97	3.06	3.24
		Medium	kW	1.88	2.89	3.12
		Low	kW	1.76	2.70	2.90
Heating capacity (2-pipe)	High	kW	3.22	5.12	5.42	
	Medium	kW	3.07	4.98	5.13	
	Low	kW	2.93	4.68	5.04	

2-2 TECHNICAL SPECIFICATIONS				FWF02AT	FWF03AT	FWF04AT
Dimensions	Unit	Height	mm	250	250	250
		Width	mm	570	570	570
		Depth	mm	570	570	570
	Unit with packing	Height	mm	317	317	317
		Width	mm	630	630	630
		Depth	mm	630	630	630
Weight	Machine weight	kg	22.0	23.0	23.0	
	Operation weight	kg	23.0	24.0	24.0	
	Gross weight	kg	23.0	24.0	24.0	
Material	Electro-galvanised mild steel (ABS)					
Sound level	Sound pressure	High	dBA	44	44	47
		Medium	dBA	43	42	46
		Low	dBA	42	41	44
	Sound power	High	dBA	54	53	56
		Medium	dBA	53	52	55
		Low	dBA	51	50	53
Water flow	Cooling	l/h	402	705	731	
	Heating	l/h	402	705	731	
Water pressure drop	Cooling	kPa	67.3	68.6	68.8	
	Heating	kPa	61.9	70.5	71.2	
Fan	Type	Direct drive turbo fan				
	Air flow rate	High	m ³ /h	662	662	731
		Medium	m ³ /h	630	630	695
		Low	m ³ /h	594	594	662
	Speed	3 steps : high, medium, low				
Quantity	1					
Motor	Type	Induction				
Standard heat exchanger	Rows	mm	1	2	2	
	Stages	mm	4*(1) + 6*(1)	4	4	
	Fin pitch	mm	1.59	1.27	1.27	
	Face area	m ²	0.24	0.309	0.309	
	Water volume	l	0.56	1.15	1.15	
Air filter	Washable Sarannet					
Insulation material	PE					
Vibration insulation	Rubber Bush (Fan Motor)					
Water connections	Std. heat exchanger	inch	3/4			
Drain			mm	19.05	19.05	19.05

2 Specifications

1
2

2-2 TECHNICAL SPECIFICATIONS	FWF02AT	FWF03AT	FWF04AT
Notes	Rating conditions cooling 2 pipe: air 27		
	Rating conditions heating 2 pipe : air 20		
	Sound power level according to ISO3741		
	Sound pressure measured at 1 m in front of the unit and 0.8 m below the vertical centre line of the unit. (JIS C 9612)		
	Sound pressure measured at 1,4m below the fascia (JIS C 9612)		
	Sound pressure measured at 1,5m below the fascia (JIS B 8615)		
	Rating conditions heating 4 pipe : air 20		

2-3 ELECTRICAL SPECIFICATIONS			FWF02AT	FWF03AT	FWF04AT
Current input	High	A	0.22	0.30	0.34
	Medium	A	0.21	0.29	0.32
	Low	A	0.20	0.28	0.30
Required power supply	V / f / Hz	220-240 / 1 / 50			
Required fuses	A	2	2	2	
Required wire section	mm ²	1.5	1.5	1.5	

3 Control systems

Control systems for FWC-FWF-FWT

Controller	Application	Operation mode		Basic Controls			Energy saving mode	Timer setting	Air distribution	Faster cooling/heating
		Manual	Automatic	Temperature setting	Automatic Fan Speed	Fan speed: high/medium/low	Sleep mode	ON/OFF	Automatic air swing	Turbo
WRC	2-pipe	x		x	x	x	x	x	option	x
	4-pipe	x	x	x	x	x	x	x	option	x
SRC	2-pipe	x		x	x	x	x	x	option	
	4-pipe	x	x	x	x	x	x	x	x	
MERC	2-pipe	x		x	x	x	x	x	x	
	4-pipe	x	x	x	x	x	x	x	x	

Operation mode:

- Cooling only: Cool, Dry and Fan
- Heating mode: Auto, Cool, Dry, Fan and Heat
- Automode is only available for 4-pipe applications

Temperature Setting: To set the desired room temperature

Fan speed: high, medium, low or automatic

Sleep Mode: energy saving option while optimising comfort conditions by temperature adjustment

Timer setting: to turn ON/OFF the air conditioner at the desired time

Automatic air swing: air distribution according to a specific direction

4 Capacity tables

4 - 1 Cooling capacity tables

Cooling capacities FWF (2 pipe)

1
4

Air temperature (°C DB - °C WB)		22-16															
Water temperature (Entering °C - Leaving °C)		6-11				7-12				8-13				9-14			
Model	Air Flow m ³ /hr	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	1.73	1.73	0.30	40.81	1.63	1.63	0.28	37.19	1.53	1.53	0.26	33.63	1.43	1.43	0.25	30.30
	630	1.65	1.65	0.28	37.88	1.56	1.56	0.27	34.58	1.46	1.46	0.25	31.33	1.37	1.37	0.24	28.28
	595	1.54	1.54	0.27	34.25	1.46	1.46	0.25	31.33	1.37	1.37	0.24	28.46	1.28	1.28	0.22	25.76
FWF03AT	663	3.14	2.74	0.54	41.93	2.85	2.61	0.49	35.32	2.50	2.48	0.43	27.97	2.34	2.34	0.40	24.88
	630	2.91	2.59	0.50	36.75	2.65	2.46	0.46	31.01	2.34	2.34	0.40	24.86	2.21	2.21	0.38	22.55
	595	2.80	2.42	0.48	34.25	2.55	2.30	0.44	28.93	2.24	2.19	0.38	23.02	2.07	2.07	0.36	20.13
FWF04AT	731	3.17	2.92	0.54	41.49	2.85	2.75	0.49	34.32	2.60	2.60	0.45	29.13	2.46	2.46	0.42	26.12
	695	3.06	2.78	0.53	38.95	2.75	2.62	0.47	32.21	2.48	2.48	0.43	26.63	2.34	2.34	0.40	23.87
	663	2.95	2.65	0.51	36.52	2.65	2.50	0.46	30.19	2.36	2.36	0.41	24.45	2.23	2.23	0.38	21.91

Air temperature (°C DB - °C WB)		25-18															
Water temperature (Entering °C - Leaving °C)		6-11				7-12				8-13				9-14			
Model	Air Flow m ³ /hr	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	2.23	1.84	0.38	61.96	2.07	1.75	0.36	54.71	1.83	1.65	0.32	44.52	1.59	1.55	0.27	35.53
	630	2.06	1.75	0.36	54.51	1.92	1.67	0.33	48.24	1.70	1.57	0.29	39.43	1.48	1.47	0.25	31.65
	595	1.93	1.64	0.33	48.86	1.80	1.56	0.31	43.33	1.59	1.47	0.27	35.57	1.38	1.38	0.24	28.72
FWF03AT	663	3.98	2.89	0.69	64.73	3.68	2.76	0.63	56.02	3.35	2.63	0.58	46.87	3.01	2.49	0.52	38.57
	630	3.70	2.73	0.64	56.56	3.42	2.61	0.59	48.99	3.11	2.48	0.54	41.04	2.80	2.35	0.48	33.84
	595	3.55	2.55	0.61	52.61	3.29	2.44	0.57	45.59	2.99	2.32	0.51	38.23	2.69	2.20	0.46	31.55
FWF04AT	731	4.10	3.08	0.71	65.52	3.78	2.92	0.65	56.67	3.42	2.77	0.59	47.16	3.05	2.62	0.52	38.44
	695	3.96	2.93	0.68	61.52	3.65	2.77	0.63	53.21	3.30	2.63	0.57	44.28	2.94	2.49	0.51	36.09
	663	3.82	2.80	0.66	57.69	3.52	2.64	0.61	49.90	3.18	2.51	0.55	41.52	2.84	2.37	0.49	33.83

Air temperature (°C DB - °C WB)		27-19															
Water temperature (Entering °C - Leaving °C)		6-11				7-12				8-13				9-14			
Model	Air Flow m ³ /hr	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	2.49	2.05	0.43	75.02	2.34	1.97	0.40	67.23	2.09	1.87	0.36	55.24	1.84	1.77	0.32	44.56
	630	2.31	1.96	0.40	65.80	2.17	1.88	0.37	59.06	1.94	1.78	0.33	48.70	1.70	1.69	0.29	39.46
	595	2.16	1.84	0.37	58.81	2.03	1.76	0.35	52.87	1.81	1.67	0.31	43.74	1.59	1.58	0.27	35.60
FWF03AT	663	4.40	3.19	0.76	77.96	4.10	3.06	0.71	68.15	3.77	2.93	0.65	58.18	3.44	2.79	0.59	49.01
	630	4.09	3.02	0.70	68.06	3.81	2.89	0.66	59.53	3.50	2.76	0.60	50.86	3.19	2.64	0.55	42.90
	595	3.93	2.82	0.68	63.27	3.66	2.70	0.63	55.37	3.36	2.58	0.58	47.33	3.07	2.47	0.53	39.95
FWF04AT	731	4.57	3.41	0.79	79.30	4.25	3.24	0.73	69.62	3.88	3.09	0.67	59.16	3.52	2.94	0.61	49.49
	695	4.41	3.24	0.76	74.45	4.10	3.08	0.71	65.36	3.75	2.94	0.64	55.55	3.39	2.80	0.58	46.47
	663	4.25	3.09	0.73	69.81	3.96	2.94	0.68	61.29	3.61	2.80	0.62	52.09	3.27	2.67	0.56	43.57

Air temperature (°C DB - °C WB)		30-22															
Water temperature (Entering °C - Leaving °C)		6-11				7-12				8-13				9-14			
Model	Air Flow m ³ /hr	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Total cooling capacity kW	Sensible cooling capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	3.22	2.22	0.55	118.75	3.04	2.12	0.52	106.67	2.81	2.02	0.48	92.12	2.57	1.92	0.44	78.72
	630	2.99	2.12	0.51	103.61	2.82	2.02	0.49	93.15	2.60	1.93	0.45	80.58	2.38	1.83	0.41	68.98
	595	2.80	1.98	0.48	92.12	2.64	1.89	0.45	82.91	2.44	1.81	0.42	71.82	2.23	1.72	0.38	61.61
FWF03AT	663	5.97	3.61	1.03	137.44	5.70	3.46	0.98	125.76	5.34	3.33	0.92	110.85	4.98	3.19	0.86	96.88
	630	5.55	3.41	0.95	119.81	5.30	3.27	0.91	109.64	4.96	3.14	0.85	96.66	4.62	3.02	0.80	84.51
	595	5.33	3.19	0.92	111.27	5.09	3.05	0.88	101.83	4.77	2.94	0.82	89.79	4.44	2.82	0.76	78.52
FWF04AT	731	6.12	3.84	1.05	133.54	5.76	3.69	0.99	119.25	5.37	3.53	0.92	104.97	4.98	3.36	0.86	91.55
	695	5.91	3.66	1.02	125.32	5.55	3.51	0.96	111.92	5.18	3.36	0.89	98.52	4.80	3.20	0.83	85.95
	663	5.70	3.49	0.98	117.45	5.36	3.35	0.92	104.90	4.99	3.20	0.86	92.36	4.63	3.05	0.80	80.57

4 Capacity tables

4 - 2 Capacity tables with glycol for process cooling applications

Glycol correction factor

FWF	Cooling capacity				Pressure Drop
	Entering water temperature °C	0	20	40	
0%	1	1	1	1	1
10%	0.955	0.969	0.973	0.980	1.060
20%	0.929	0.941	0.955	0.964	1.120
30%	0.898	0.913	0.929	0.939	1.180
40%	0.863	0.882	0.899	0.911	1.240

4 Capacity tables

4 - 3 Heating capacity tables

1
4

Heating capacities FWF (2 pipe)

Air temperature (°C DB - °C WB)		20								
Water temperature (Entering °C - Leaving °C)		50 - 45			60 - 50			70 - 60		
Model	Air Flow m ³ /hr	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	3.51	0.60	124.11	3.14	0.27	32.29	3.58	0.31	37.69
	630	3.40	0.58	117.36	3.02	0.26	30.50	3.45	0.30	35.56
	595	3.28	0.56	109.92	2.88	0.25	28.57	3.29	0.28	33.25
FWF03AT	663	5.40	0.93	110.28	5.03	0.43	26.68	5.66	0.49	31.57
	630	5.32	0.91	107.24	4.95	0.43	25.93	5.57	0.48	30.66
	595	4.99	0.86	95.28	4.61	0.40	22.96	5.19	0.45	27.12
FWF04AT	731	5.81	1.00	124.16	5.25	0.45	29.46	5.95	0.51	35.35
	695	5.46	0.94	111.32	4.90	0.42	26.05	5.56	0.48	31.36
	663	5.40	0.93	109.10	4.84	0.42	25.46	5.49	0.47	30.66

Air temperature (°C DB - °C WB)		22								
Water temperature (Entering °C - Leaving °C)		50 - 45			60 - 50			70 - 60		
Model	Air Flow m ³ /hr	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa	Heating capacity kW	Water flow m ³ /hr	Water pressure drop kPa
FWF02AT	663	3.27	0.56	109.15	2.92	0.25	29.11	3.38	0.29	34.61
	630	3.17	0.54	103.20	2.81	0.24	27.55	3.25	0.28	32.68
	595	3.05	0.52	96.61	2.68	0.23	25.83	3.11	0.27	30.57
FWF03AT	663	5.02	0.86	96.24	4.72	0.41	23.86	5.38	0.46	28.83
	630	4.94	0.85	93.59	4.64	0.40	23.20	5.29	0.46	28.01
	595	4.64	0.80	83.14	4.32	0.37	20.57	4.93	0.42	24.79
FWF04AT	731	5.38	0.92	108.34	4.90	0.42	26.06	5.63	0.48	32.12
	695	5.06	0.87	97.25	4.58	0.39	23.00	5.26	0.45	28.45
	663	5.01	0.86	95.31	4.52	0.39	22.47	5.20	0.45	27.81

4 Capacity tables

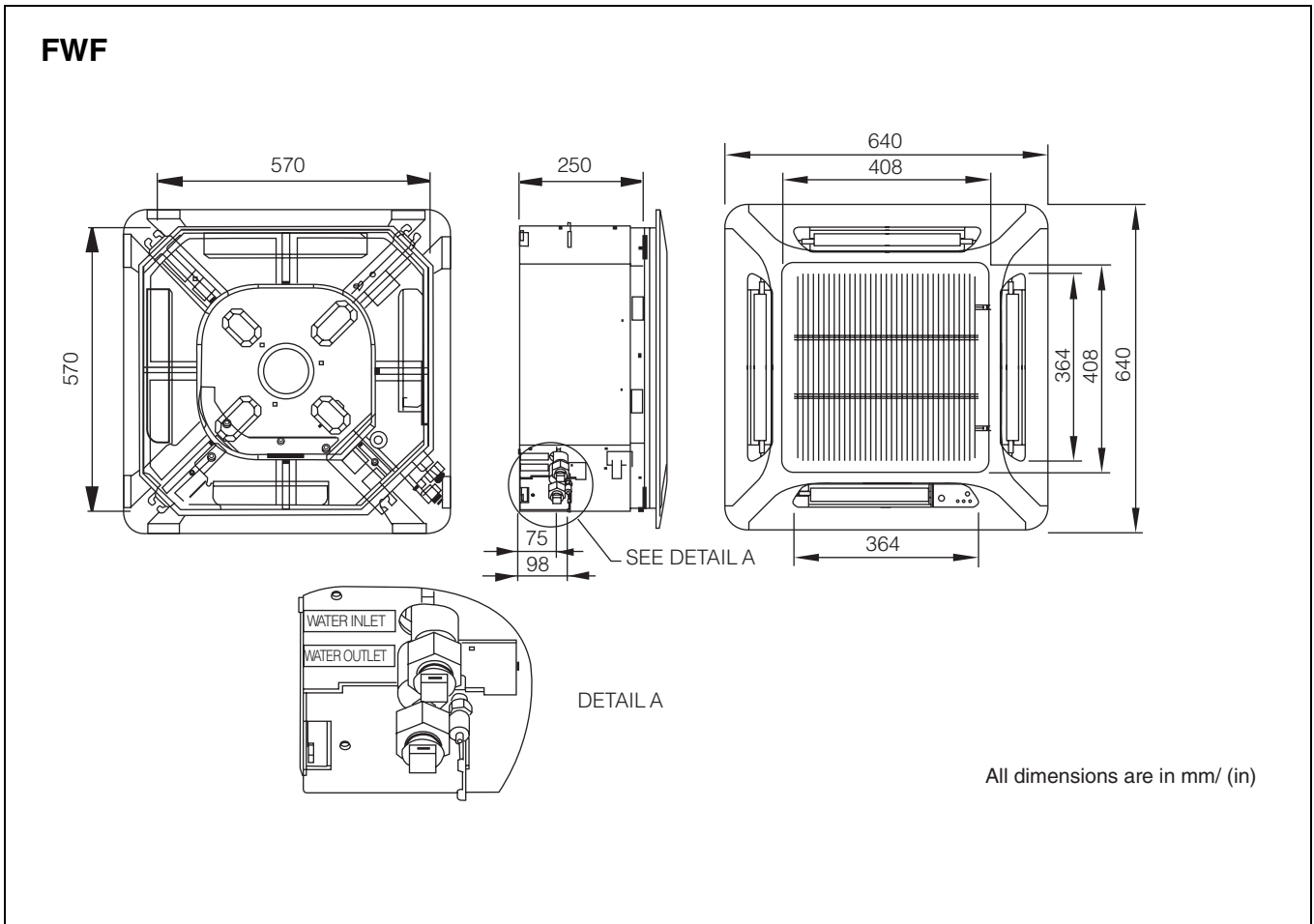
4 - 4 Capacity correction factor

Heating correction factor

Entering Air temperature °C	FWF												
	Entering Water temperature °C												
	37.8	43.3	45.0	48.8	50.0	54.4	60.0	65.5	70.0	71.1	76.7	82.2	87.7
4.4	1.338	1.376	1.388	1.414	1.422	1.452	1.491	1.529	1.559	1.569	1.605	1.643	1.683
7.2	1.257	1.297	1.310	1.338	1.347	1.379	1.421	1.462	1.497	1.507	1.547	1.586	1.630
10.0	1.176	1.221	1.235	1.265	1.275	1.311	1.356	1.401	1.433	1.444	1.488	1.531	1.577
12.7	1.093	1.140	1.155	1.187	1.198	1.235	1.284	1.331	1.370	1.381	1.426	1.476	1.523
15.5	1.010	1.061	1.077	1.113	1.124	1.165	1.217	1.268	1.306	1.318	1.368	1.420	1.471
18.3	0.958	0.999	1.013	1.044	1.054	1.095	1.149	1.199	1.242	1.255	1.308	1.363	1.419
20.0	0.877	0.933	0.950	0.989	1.000	1.046	1.103	1.159	1.204	1.216	1.274	1.330	1.386
21.1	0.824	0.890	0.910	0.953	0.965	1.014	1.074	1.134	1.179	1.192	1.251	1.308	1.364
23.9	0.758	0.819	0.838	0.880	0.894	0.943	1.005	1.066	1.115	1.129	1.191	1.252	1.312
26.7	0.677	0.741	0.761	0.806	0.820	0.871	0.937	1.001	1.052	1.067	1.133	1.197	1.259

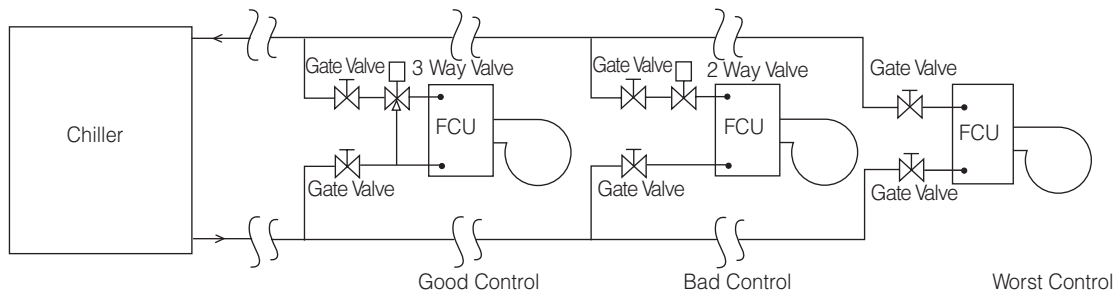
5 Dimensional drawing & centre of gravity

5 - 1 Dimensional drawing



6 Piping diagram

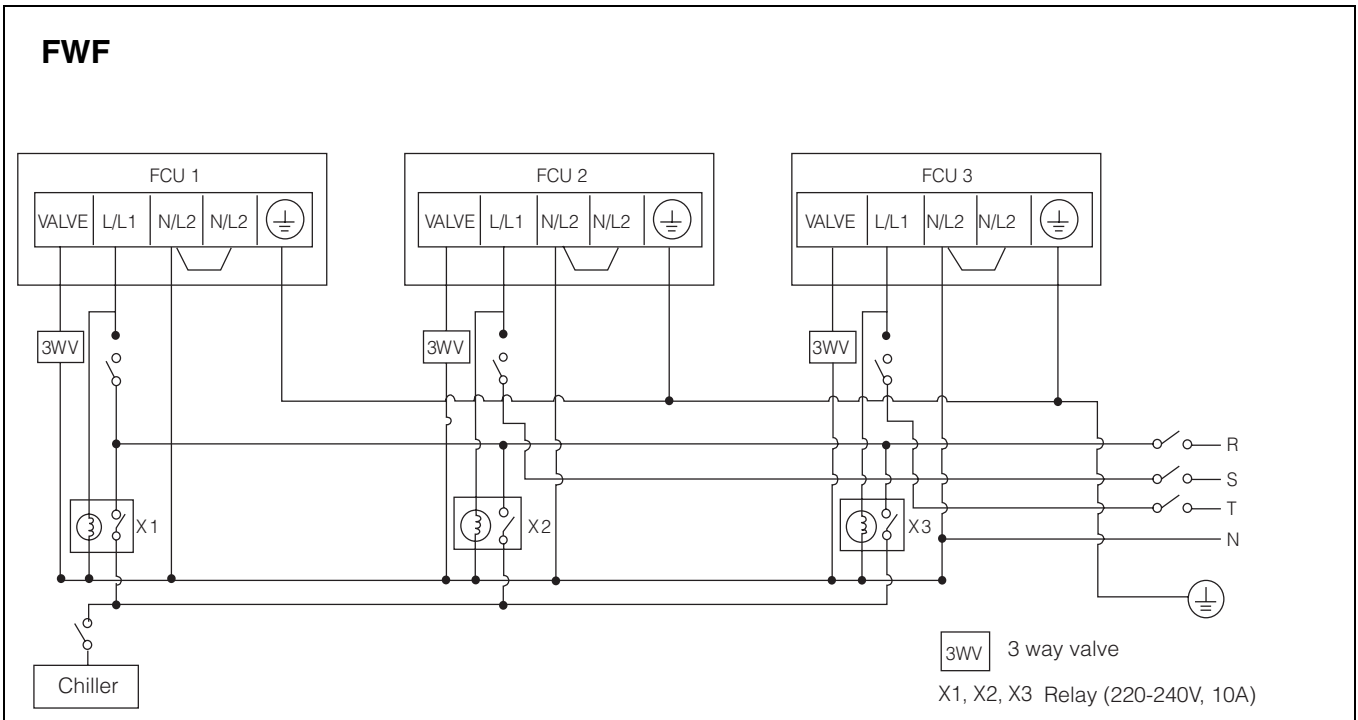
FWF (Water piping diagram)



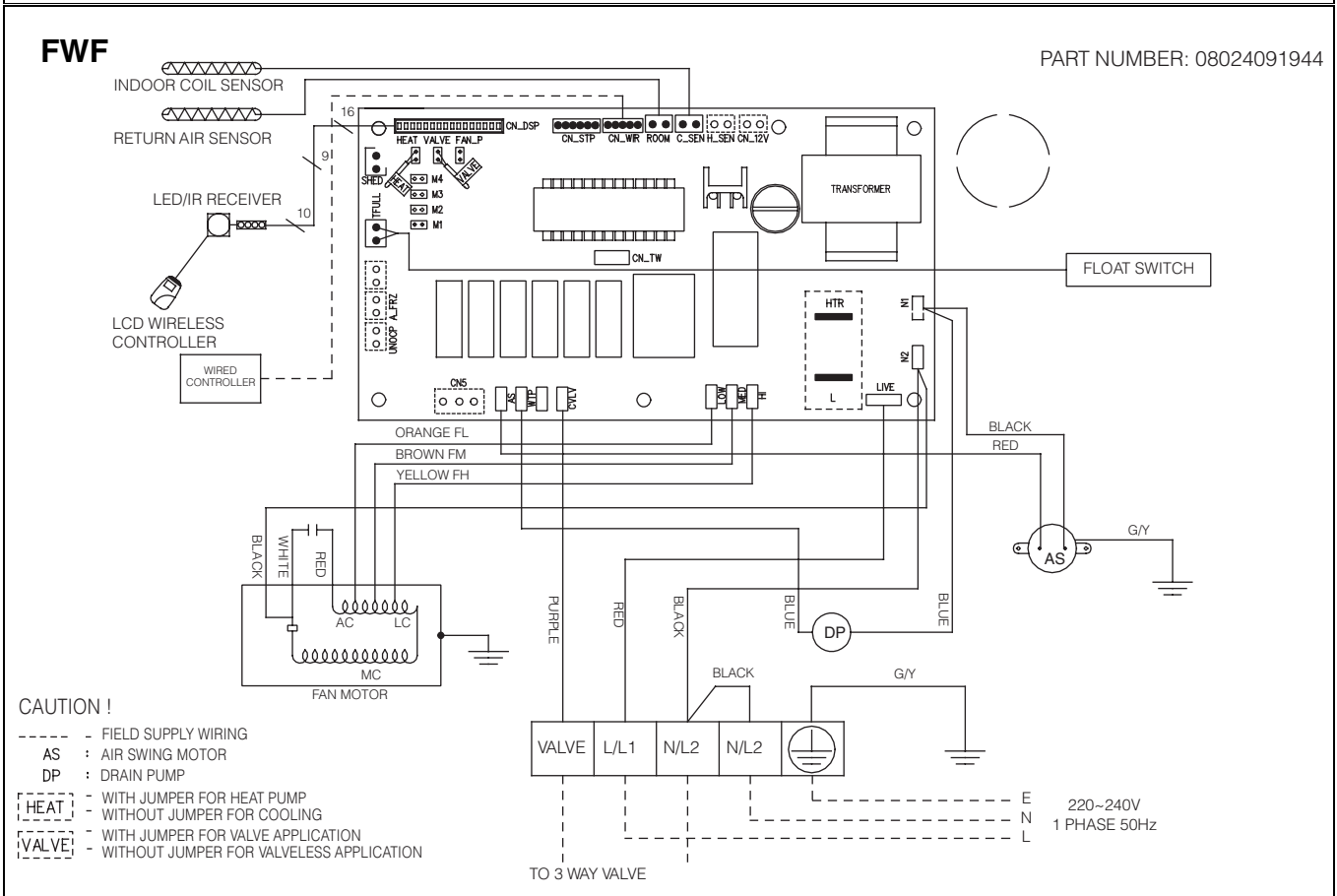
7 Wiring diagram

7 - 1 Wiring diagram

1
7



This is proposed wiring connection. It may change subject to the chiller unit and must comply with the local and national code and regulations.



CAUTION !

- FIELD SUPPLY WIRING
- AS : AIR SWING MOTOR
- DP : DRAIN PUMP
- [HEAT] - WITH JUMPER FOR HEAT PUMP
- WITHOUT JUMPER FOR COOLING
- [VALVE] - WITH JUMPER FOR VALVE APPLICATION
- WITHOUT JUMPER FOR VALVELESS APPLICATION

Note : Unit comes in standard heatpump and for valve application.

8 Sound data

8 - 1 Sound power spectrum

FWF (2 PIPE)

Model	Freq	1/1 Octave Sound Power Level (dB, reference 1pW)							Overall (dBA)
		125	250	500	1000	2000	4000	8000	
FWF02AT	Hi	54	57	53	49	42	39	31	54
	Me	53	55	52	48	41	37	30	53
	Lo	52	54	51	46	39	35	28	51
FWF03AT	Hi	55	55	52	48	42	38	30	53
	Me	54	54	51	47	41	37	30	52
	Lo	54	52	49	46	39	34	28	50
FWF04AT	Hi	56	58	54	51	45	47	34	56
	Me	55	57	53	50	43	45	32	55
	Lo	54	55	51	48	41	42	28	53

Microphone position: FWF 1.4m below the facia

9 Operation range

FWF

1
9

OPERATING RANGE

Operating Limits:

Thermal carrier : Water

Water temperature : 5 ~50°C

Maximum water pressure : 16 bar

Air temperature : (as below)

Cooling Mode

Temperature	Ts °C/°F	Th °C/°F
Minimum indoor temperature	16.0 / 60.8	11.0 / 51.8
Maximum indoor temperature	32.0 / 89.6	23.0 / 73.4
Minimum outdoor temperature	16.0 / 60.8	-
Maximum outdoor temperature	46.0 / 114.8	-

Heating Mode

Temperature	Ts °C/°F	Th °C/°F
Minimum indoor temperature	16.0 / 60.8	-
Maximum indoor temperature	30.0 / 86.0	-
Minimum outdoor temperature	-5.0 / 23.0	-6.0 / 21.2
Maximum outdoor temperature	24.0 / 75.2	18.0 / 64.4

Ts: Dry bulb temperature.

Th: Wet bulb temperature.

10 Hydraulic performance

10 - 1 Water pressure drop curve evaporator

FWF

FWF (2 PIPE) cooling			
Water flow m ³ /hr	Water pressure drop (kPa)		
	FWF02AT	FWF03AT	FWF04AT
0.1	11.03	4.14	0.11
0.2	22.70	8.46	6.10
0.3	41.19	15.32	14.00
0.4	66.38	24.66	23.80
0.5	98.11	36.43	35.47
0.6	136.24	50.59	48.99
0.7	180.64	67.08	64.34
0.8		85.85	81.50
0.9		106.86	100.45
1.0		130.05	121.17
1.1		155.37	143.64
1.2			167.85

1
10

FWF

FWF (2 PIPE) Heating			
Water flow m ³ /hr	Water pressure drop (kPa)		
	FWF02AT	FWF03AT	FWF04AT
0.1	10.88	4.05	0.11
0.2	22.29	8.28	6.29
0.3	39.01	14.99	14.45
0.4	61.27	24.13	24.55
0.5	89.30	35.65	36.59
0.6	123.31	49.51	50.54
0.7	163.53	65.65	66.37
0.8		84.02	84.08
0.9		104.58	103.63
1.0		127.27	125.01
1.1		152.06	148.20
1.2		178.88	173.17