EEDEN07-432

technical data

Fan Coil Units

FWF - Ceiling mounted cassette unit

FWF - Ceiling Mounted Cassette Unit

In all of us, a green heart

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.

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

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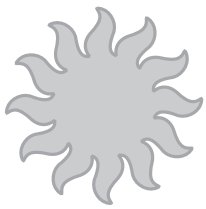
Fan coil units

FWF - ceiling mounted cassette unit

Cooling only

Heating only



Heat pump

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FWF

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	m³/h	662	662	731
		Medium	m³/h	630	630	695
		Low	m³/h	594	594	662
	Speed			3 steps : high, medium, low		
	Quantity			1	1	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		m²	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

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 facia (JIS C 9612)		
	Sound pressure measured at 1,5m below the facia (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		mm²	1.5	1.5	1.5

3 Control systems

Control systems for FWC-FWF-FWT

		Operation mode		Basic Controls			Energy saving mode	Timer setting	Air distribution	Faster cooling/heating
Controller	Application	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	
MERCA	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)

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				
Entering water temperature °C	0	20	40	60	Pressure Drop
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

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

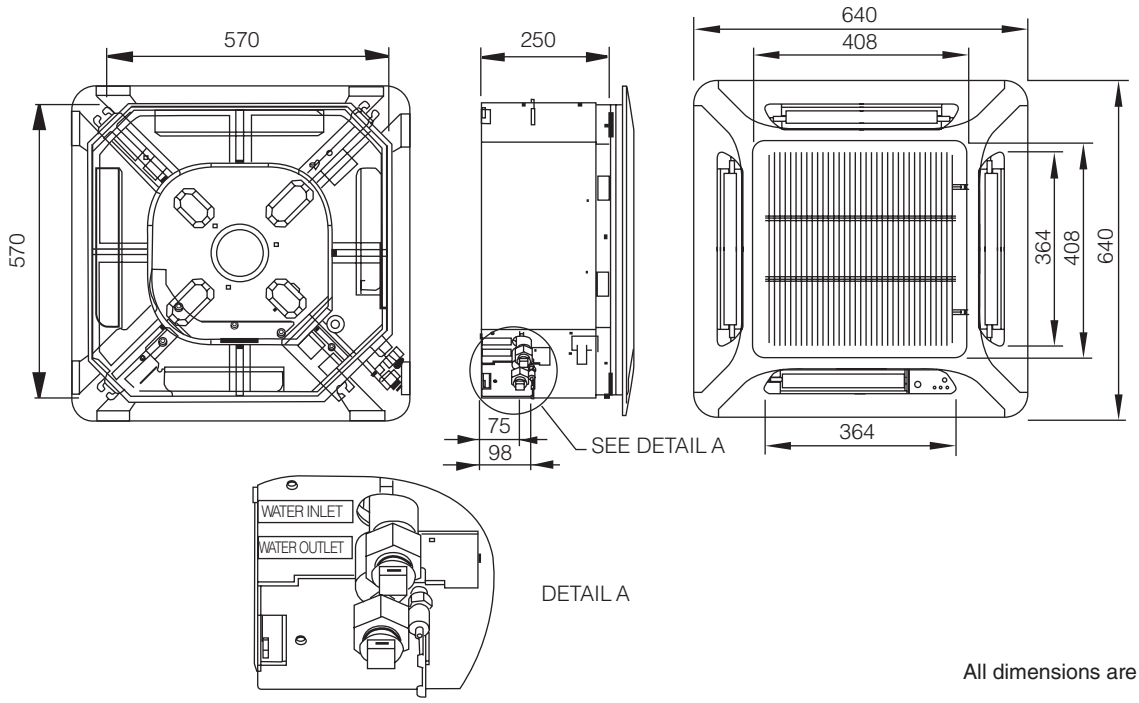
Heating correction factor

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

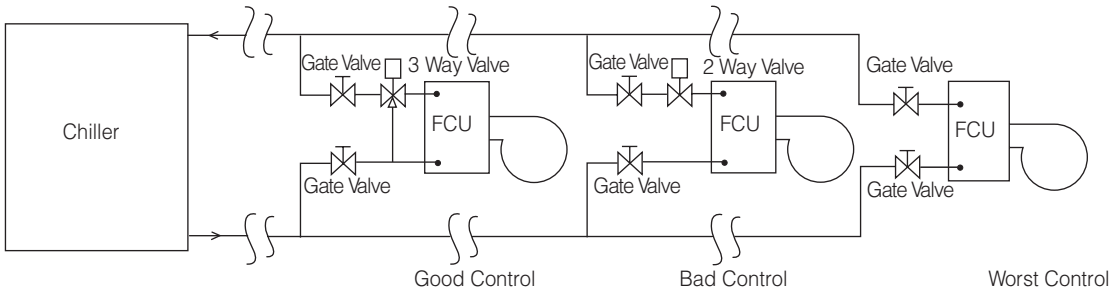
FWF



All dimensions are in mm/ (in)

6 Piping diagram

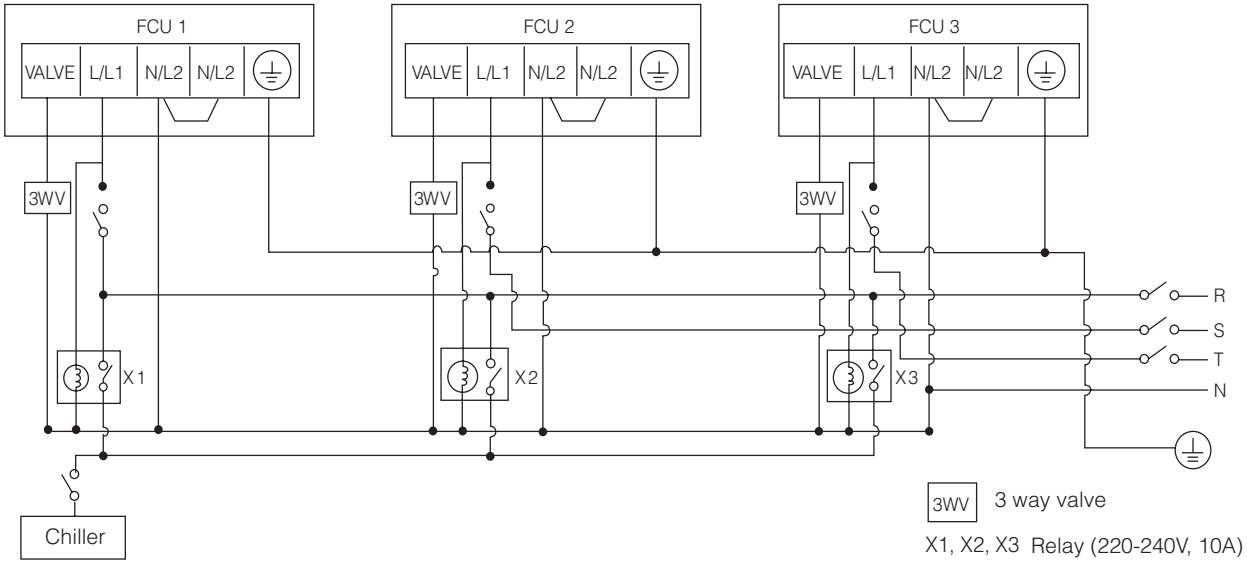
FWF (Water piping diagram)



7 Wiring diagram

7 - 1 Wiring diagram

FWF



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

FWF

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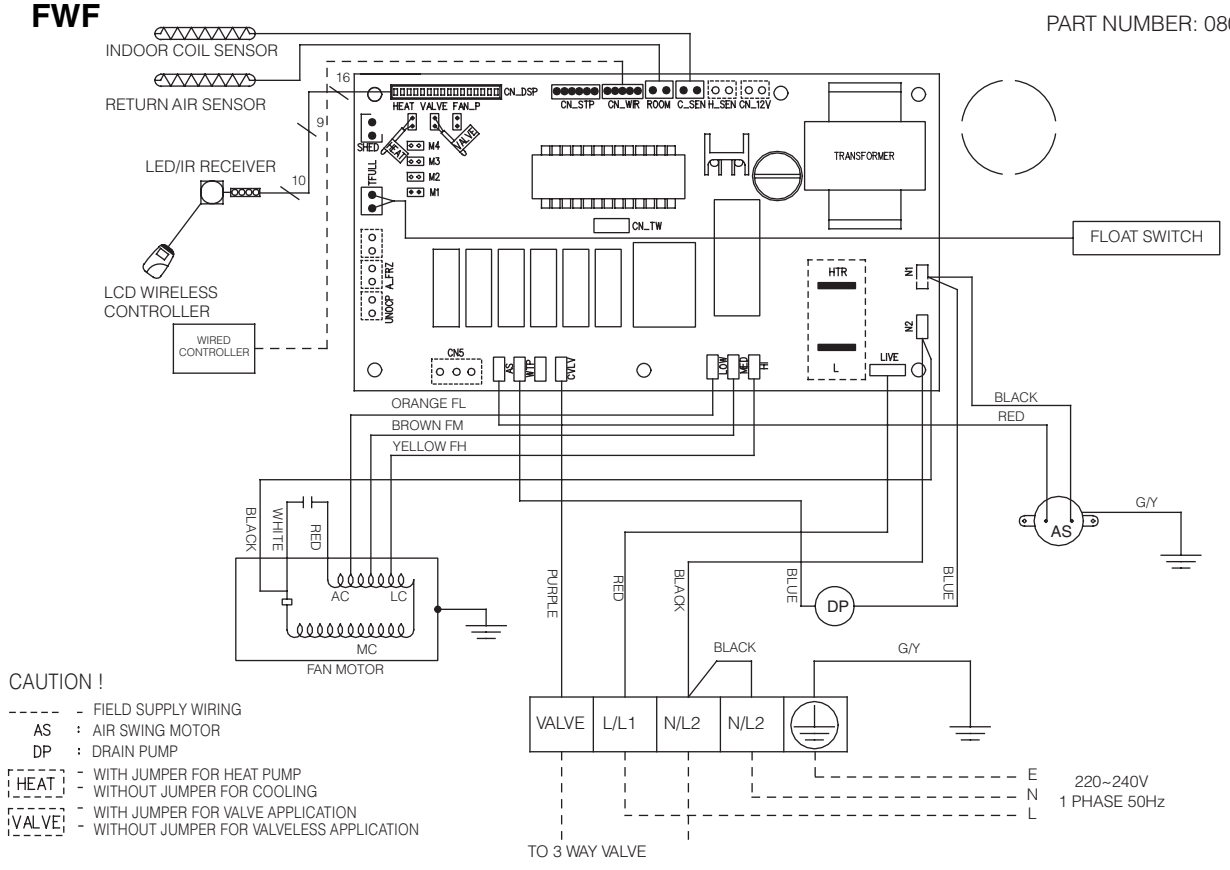

Note : Unit comes in standard heatpump and for valve application.

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

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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

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