
HORIZONTAL
MINI AIR
HANDLING
UNIT

HAHU
[AC MOTOR]
HAHU-EC
[EC MOTOR]

VERTICAL
MINI AIR
HANDLING
UNIT

VAHU-EC
[EC MOTOR]

MINI AHU DUCTED FAN COILS





MINI AHU DUCTED Intelligent Fan Coils

HAHU-EC
HAHU-AC

PRODUCT FEATURES

Structure. Made from frameless integrated folded steel structure, it uses a sandwich panel consisting of two walls with inner insulation. Both walls are made of pre-coated steel 1" thickness. These units have been designed with a 25mm thickness sandwich panel with polyurethane (density 40kg/m³). The intake panel is equipped with a flange for fitting to any air channels.

Water Coils. Built with seamless copper tubes and headers, with the tubes mechanically expanded into corrugated aluminum fin material for a permanent primary to secondary surface bond. We test the coils at 35 bar, and the maximum operating limit we recommend is at 20 bar. It includes manual air vent and water purge valve.

Fan Blowers. Made of hot-dip galvanized steel housing center plate fixed impeller, riveting compression on the end ring; galvanized steel sheet mounting feet to ensure adequate strength and DC motor.

The side panel includes inlet cones whose inlet conditions are designed for optimum aerodynamics. The forward-curved blades feature an advanced aerodynamic design for maximum efficiency and minimum noise level.

Condensate Pans. Painted Steel drain pans with

3/16" of insulation on the outer wall and isolated in aluminum in the inner wall, positively sloped, coated with self-extinguishing closed cell expanded polyethylene with thermal properties. The drain pan outlet is 3/4" (standard on the same side of coil connections).

Filtration. Washable filters, made of double-layer acrylic with an aluminum frame containing an G4 (Merv 8) efficiency class. F8 (Merv14) efficiency filters are optional.

Performance. Built with optimized water circuit designs and tested in accredited thermal test rooms to guarantee dependable performance and low water pressure drops. These series can supply up to 8000m³/h airflow at highest External Static Pressure (ESP), of up to 300Pa.

Motors. EC motors with included driven controls PCB, constant torque, permanent magnet, with 3 speeds pre-set to allow precise air balancing.

AC motors are 3-speed standard, permanently lubricated type with internal thermal overload protection.

Flexibility: This High Static range is available with left or right-hand water connections, which cannot be exchanged on site.

PRODUCT PRESENTATION

The Polar Air Mini AHU ranges have been specifically designed for Vertical (VAHU) or Horizontal (HAHU) installation and suitable for ducted air distribution. With sandwich panels to achieve low noise levels, integrated control box and panels to access components, these units represent one of the most cost-effective solutions to provide a comfortable environment for both commercial and industrial applications. Their design also reduces on-site installation time and labor costs.

PRODUCT RANGE

The Polar Air Horizontal Mini AHU units offer the following EC motor 230V/50Hz and AC 380-415V/50Hz ranges:

2 Pipe	EC Motor		AC Motor		4 Pipe	EC Motor		AC Motor				
	COOLING	HEATING	AIR FLOW	COOLING		HEATING	AIR FLOW	COOLING	HEATING	AIR FLOW		
	16.26 - 60.7 kW	15.04 - 57.7 kW	2329 - 8332 m ³ /h	20.6 - 86.1 kW	24.8 - 103.3 kW	3000 - 11899 m ³ /h	15.6 - 54.25kW	12.96 - 66.03 kW	2207 - 8332 m ³ /h	20.6 - 71.4 kW	25.6 - 89.4 kW	3000 - 11899 m ³ /h

COOLING HEATING AIR FLOW

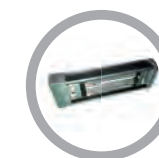
OPTIONAL ACCESSORIES*



Thermostat Controller



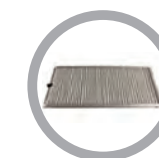
Wall Pad Controller



Electric Heater module
4.5 - 24 kW



Stainless steel drain pan



MERV8 | G4 Filter



MERV 14 | F8 Filter



Valve kit
2 or 3-way 1-1/4" or 1" on/off or modulating

(*): Please refer to page 146 for further information on accessories

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 4 row, 2 pipe with EC Motor

UNIT GENERAL SPECS	HAHU-4R-[Size]-V-EC			200	300	400	600	800
	Configuration			2 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60				
AIR	Air Flow	H	m³/h	1396	2565	3533	5131	7065
		M		1187	2181	3003	4361	6005
		L		838	1539	2120	3079	4239
	Available ESP Pressure	H	Pa	200				
		M						
		L						
COOLING	Cooling Capacity	H	kW	11.03	18.4	25.16	36.29	47.83
		M		9.64	16.21	22.24	31.96	42.27
		L		7.38	12.26	16.95	24.17	32.23
	Sensible Cooling Capacity	H	kW	7.55	12.88	17.48	25.27	33.57
		M		6.56	11.28	15.35	22.13	29.48
		L		4.94	8.38	11.52	16.43	22.13
HEATING	Heating Capacity	H	kW	13.24	22.08	30.2	43.55	57.41
		M		11.56	19.45	26.69	38.36	50.73
		L		8.86	14.71	20.34	29.01	38.68
	Max. Electric Heater			4.5	6	7.5	9	9
SOUND ¹	Max. sound pressure		db(A)	62	66	72	71	75
	Max. sound power			71	75	81	80	84
ELECTRICAL (Fan Motor)	Power Input ²		W	375	501	504	1001	1005
	Running Current			A	1.63	2.17	2.17	4.34
HYDRONIC	Cooling Water Flow Rate	H	L/h	1892	3155	4313	6220	8200
		M		1652	2779	3812	5479	7247
		L		1266	2101	2906	4144	5525
	Cooling Pressure Drop	H	kPa	11.96	11.04	21.21	44.79	37.71
		M		9.37	8.78	16.98	35.64	30.19
		L		5.8	5.31	10.42	21.55	18.52
	Heating Water Flow Rate	H	L/h	1892	3155	4313	6220	8200
		M		1652	2779	3812	5479	7247
		L		1266	2101	2906	4144	5525
	Heating Pressure Drop	H	kPa	10.76	9.94	19.09	40.31	33.94
		M		8.43	7.91	15.28	32.08	27.17
		L		5.22	4.78	9.38	19.4	16.67
Water Content		L	7.38	9.12	10.9	12.6	15.2	

TESTING CONDITIONS

Cooling mode: Return air temperature: 27°C DB / 19°C WB Inlet / outlet water temperature: 7°C / 12°C
 Heating mode: Return air temperature: 20°C Water temperature: 50°C
 Water flow same to cooling mode

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 6 row, 2 pipe with EC Motor

UNIT GENERAL SPECS	HAHU-6R-[Size]-V-EC			200	300	400	600	800
	Configuration			2 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60				
AIR	Air Flow	H	m³/h	1135	2377	3355	4755	6711
		M		965	2021	2852	4041	5704
		L		681	1426	2013	2853	4026
	Available ESP Pressure	H	Pa	200				
		M						
		L						
COOLING	Cooling Capacity	H	kW	10.27	19.87	27.85	36.56	51.64
		M		9	17.46	24.45	32.12	45.33
		L		6.78	13.46	18.61	24.77	34.51
	Sensible Cooling Capacity	H	kW	6.83	13.37	18.73	25.18	35.46
		M		5.91	11.71	16.36	22.04	30.98
		L		4.48	8.86	12.21	16.68	23.13
HEATING	Heating Capacity	H	kW	12.33	23.85	33.43	43.88	61.98
		M		10.8	20.95	29.34	38.55	54.4
		L		8.13	16.16	22.34	29.73	41.41
	Max. Electric Heater			4.5	6	7.5	9	9
SOUND ¹	Max. sound pressure		db(A)	62	66	72	71	75
	Max. sound power			71	75	81	80	84
ELECTRICAL (Fan Motor)	Power Input ²		W	375	501	505	1001	1005
	Running Current			A	1.63	2.17	2.17	4.34
HYDRONIC	Cooling Water Flow Rate	H	L/h	1761	3406	4775	6268	8853
		M		1542	2992	4191	5506	7771
		L		1162	2308	3191	4246	5915
	Cooling Pressure Drop	H	kPa	5.22	18.83	38.12	10.09	21.2
		M		4.11	14.91	30.14	7.99	16.76
		L		2.47	9.34	18.45	5.01	10.26
	Heating Water Flow Rate	H	L/h	1761	3406	4775	6268	8853
		M		1542	2992	4191	5506	7771
		L		1162	2308	3191	4246	5915
	Heating Pressure Drop	H	kPa	4.7	16.95	34.31	9.08	19.08
		M		3.7	13.42	27.13	7.19	15.09
		L		2.22	8.41	16.6	4.51	9.23
Water Content		L	11.1	13.7	16.3	18.9	22.8	

TESTING CONDITIONS

Cooling mode: Return air temperature: 27°C DB / 19°C WB Inlet / outlet water temperature: 7°C / 12°C
 Heating mode: Return air temperature: 20°C Water temperature: 50°C
 Water flow same to cooling mode

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 4+1 row, (Auxiliary Heating coil), 4 pipe with **EC Motor**

UNIT GENERAL SPECS	HAHU-4+1R-[Size]-P-EC			200	300	400	600	800
	Configuration			4 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60				
AIR	Air Flow	H	m³/h	1240	2453	3426	4905	6853
		M		1054	2085	2912	4169	5825
		L		744	1472	2056	2943	4112
	Available ESP Pressure	H	Pa	200				
		M		200				
		L		200				
COOLING	Cooling Capacity	H	kW	10.02	17.74	24.72	34.99	47
		M		8.87	15.51	21.77	30.58	41.39
		L		6.65	11.88	16.47	23.43	31.3
	Sensible Cooling Capacity	H	kW	6.83	12.39	17.15	24.3	32.94
		M		5.99	10.78	15.02	21.15	28.86
		L		4.46	8.1	11.15	15.89	21.42
HEATING	Heating Capacity	H	kW	8.26	14.46	19.67	26.72	35.93
		M		7.23	12.76	17.28	23.58	31.56
		L		5.45	9.69	13.1	17.9	23.93
SOUND ¹	Max. sound pressure		db(A)	62	66	72	71	75
	Max. sound power			71	75	81	80	84
ELECTRICAL (Fan Motor)	Power Input ²		W	375	501	505	1001	1005
	Running Current			A	1.63	2.17	2.17	4.34
HYDRONIC	Cooling Water Flow Rate	H	L/h	1717	3042	4238	5998	8056
		M		1521	2659	3733	5243	7096
		L		1139	2037	2823	4016	5366
	Cooling Pressure Drop	H	kPa	10.05	10.34	20.54	41.95	36.53
		M		8.08	8.11	16.35	32.92	29.07
		L		4.8	5.02	9.89	20.37	17.58
	Heating Water Flow Rate	H	L/h	708	1239	1686	2290	3080
		M		620	1094	1481	2021	2705
		L		467	830	1123	1535	2051
	Heating Pressure Drop	H	kPa	15.66	7.01	13.73	26.69	16.63
		M		12.33	5.6	10.87	21.31	13.17
		L		7.4	3.41	6.61	12.98	8
	Cooling Water Content		L	7.38	9.12	10.85	12.59	15.19
	Heating Water Content			1.845	2.28	2.715	3.15	3.8

TESTING CONDITIONS

Cooling mode: Return air temperature: 27C DB / 19C WB Inlet / outlet water temperature: 7C / 12C
 Heating mode: Return air temperature: 20C Inlet / outlet water temperature: 65C / 55C

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 4+2 row, (Auxiliary Heating coil), 4 pipe with **EC Motor**

UNIT GENERAL SPECS	HAHU-4+2R-[Size]-P-EC			200	300	400	600	800
	Configuration			4 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60				
AIR	Air Flow	H	m³/h	1396	2565	3533	5131	7065
		M		1187	2181	3003	4361	6005
		L		838	1539	2120	3079	4239
	Available ESP Pressure	H	Pa	200				
		M		200				
		L		200				
COOLING	Cooling Capacity	H	kW	11.03	18.4	25.16	36.29	47.83
		M		9.64	16.21	22.24	31.96	42.27
		L		7.38	12.26	16.95	24.17	32.23
	Sensible Cooling Capacity	H	kW	7.55	12.88	17.48	25.27	33.57
		M		6.56	11.28	15.35	22.13	29.48
		L		4.94	8.38	11.52	16.43	22.13
HEATING	Heating Capacity	H	kW	13.71	23.38	31.09	43.83	58.06
		M		12.18	20.54	27.43	38.51	51.22
		L		9.28	15.57	21.01	29.2	39.23
SOUND ¹	Max. sound pressure		db(A)	62	66	72	71	75
	Max. sound power			71	75	81	80	84
ELECTRICAL (Fan Motor)	Power Input ²		W	375	501	505	1001	1005
	Running Current			A	1.63	2.17	2.17	4.34
HYDRONIC	Cooling Water Flow Rate	H	L/h	1892	3155	4313	6220	8200
		M		1652	2779	3812	5479	7247
		L		1266	2101	2906	4144	5525
	Cooling Pressure Drop	H	kPa	11.96	11.04	21.21	44.79	37.71
		M		9.37	8.78	16.98	35.64	30.19
		L		5.8	5.31	10.42	21.55	18.52
	Heating Water Flow Rate	H	L/h	1175	2004	2665	3757	4976
		M		1044	1760	2351	3301	4390
		L		795	1335	1801	2502	3363
	Heating Pressure Drop	H	kPa	11.36	10.86	9.06	18.77	11.44
		M		9.19	8.6	7.23	14.87	9.13
		L		5.63	5.23	4.48	9.03	5.65
	Cooling Water Content		L	7.38	9.12	10.85	12.59	15.19
	Heating Water Content			3.69	4.56	5.43	6.3	7.6

TESTING CONDITIONS

Cooling mode: Return air temperature: 27C DB / 19C WB Inlet / outlet water temperature: 7C / 12C
 Heating mode: Return air temperature: 20C Inlet / outlet water temperature: 65C / 55C

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 4 row, 2 pipe with AC Motor

UNIT GENERAL SPECS	HAHU-4R-[Size]-V			300	510	680	950	1200
	Configuration			2 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			380-415 / 3 / 50 380-415 / 3 / 60				
AIR	Air Flow	H	m ³ /h	2574	4376	5834	8008	10209
	External Static Pressure	H	ESP	200				
COOLING	Maximum total capacity		kW	18.4	30.36	40.52	50.05	63.72
	Maximum sensible capacity			12.88	21.3	28.35	36.38	46.08
HEATING	Maximum capacity		kW	22.08	36.44	48.62	60.06	76.47
	Max. Electric Heater			6	9	12	18	24
SOUND	Sound pressure		db(A)	64	70	74	74	79
	Sound power			73	79	83	83	88
ELECTRICAL	Max. Power Input		W	795	1450	2150	2900	4300
	Max. current		A	1.68	3.12	4.7	6.24	9.4
HYDRONIC	Cooling Water Flow Rate		L/h	3155	5205	6946	8580	10923
	Cooling Pressure Drop		kPa	9.2	24.68	32.87	8.14	13.52
	Heating Water Flow Rate		L/h	3155	5205	6946	8580	10923
	Heating Water Pressure Drop		kPa	8.28	22.21	29.58	7.33	12.17
	Water Content		L	9.12	10.9	13.7	16.7	18.7

TESTING CONDITIONS

Cooling mode: Return air temperature: 27°C DB / 19°C WB Inlet / outlet water temperature: 7°C / 12°C
 Heating mode: Return air temperature: 20°C Water temperature: 50°C
 Water flow same to cooling mode

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 6 row, 2 pipe with AC Motor

UNIT GENERAL SPECS	HAHU-6R-[Size]-V			300	510	680	950	1200
	Configuration			2 PIPE				
	Number of Fan Blowers			1		2		
	Power Supply (V/Ph/Hz)			380-415 / 3 / 50 380-415 / 3 / 60				
AIR	Air Flow	H	m ³ /h	2390	4062	5416	7434	9478
	External Static Pressure	H	ESP	200				
COOLING	Maximum Total Capacity		kW	20.07	31.88	41.22	57.28	72.74
	Sensible Cooling Capacity			13.49	22.24	28.53	39.55	49.97
HEATING	Maximum capacity		kW	24.08	38.26	49.47	68.75	87.3
SOUND	Max. sound pressure		db(A)	64	70	74	74	79
	Max. sound power			73	79	83	83	88
ELECTRICAL	Fan Motor Power		W	795	1450	2150	2900	4300
	Max. current		A	1.68	3.12	4.7	6.24	9.4
HYDRONIC	Cooling water flow rate		L/h	3440	5464	7066	9820	12470
	Cooling water pressure drop		kPa	16.74	5.94	7.99	15.42	25.57
	Heating water flow rate		L/h	3440	5464	7066	9820	12470
	Heating water pressure drop		kPa	15.07	5.35	7.19	13.87	23.01
	Water content		L	13.7	16.3	20.5	25.1	28.1

TESTING CONDITIONS

Cooling mode: Return air temperature: 27°C DB / 19°C WB Inlet / outlet water temperature: 7°C / 12°C
 Heating mode: Return air temperature: 20°C Water temperature: 50°C
 Water flow same to cooling mode

(1): Sound Power in compliance with EN9614-2.
 (2): Fan motor power includes PCB power input.
For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Horizontal Mini AHU Ductable Unit, 4+2 row, (Auxiliary Heating coil), 4 pipe with AC Motor

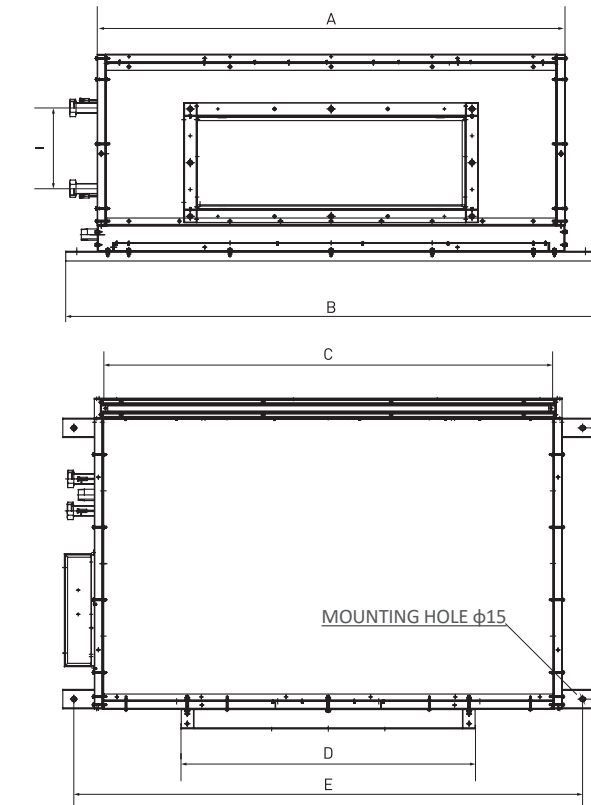
UNIT GENERAL SPECS	HAHU-4+2R-[Size]-P		300	510	680	950	1200	
	Configuration		4 PIPE					
	Number of Fan Blowers		1			2		
	Power Supply (V/Ph/Hz)		380-415 / 3 / 50 380-415 / 3 / 60					
AIR	Air Flow	H	m ³ /h	2390	4062	5416	7434	9478
	External Static Pressure	H	ESP	200				
COOLING	Maximum total capacity		kW	17.42	28.73	38.35	47.37	60.31
	Maximum sensible capacity			12.14	20.08	26.73	34.3	43.45
HEATING	Maximum capacity		kW	21.45	34.07	44.37	60.08	74.83
SOUND	Sound pressure		db(A)	64	70	74	74	79
	Sound power			73	79	83	83	88
ELECTRICAL	Max. Power Input		W	795	1450	2150	2900	4300
	Max. current		A	1.68	3.12	4.7	6.24	9.4
HYDRONIC	Cooling water flow rate		L/h	2986	4926	6574	8120	10338
	Cooling water pressure drop		kPa	8.33	22.35	29.77	7.37	12.25
	Cooling water content		L	9.12	10.9	13.7	16.7	18.7
	Heating water flow rate		L/h	1838	2920	3803	5150	6414
	Heating water pressure drop		kPa	9.29	10.72	4.42	8.83	14.36
	Heating water content		L	4.56	5.43	6.84	8.36	9.37

TESTING CONDITIONS

Cooling mode: Return air temperature: 27°C DB / 19°C WB Inlet / outlet water temperature: 7°C / 12°C
 Heating mode: Return air temperature: 20°C Inlet / outlet water temperature: 65°C/55°C

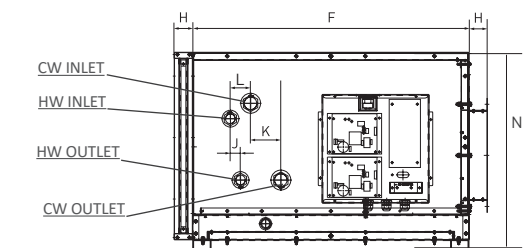
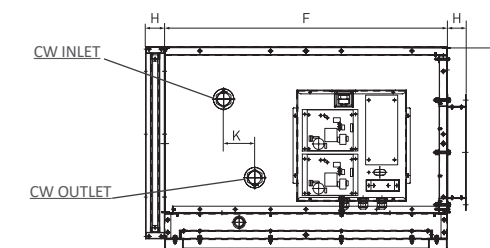
For High ΔT Condition Requirements, please refer to Selection Software.

DIMENSIONAL DRAWINGS, DATA & WEIGHTS



2 PIPE

4 PIPE



Model ¹	Unit Dimensions (mm)												
	A	B	C	D	E	F	G	H	I	J	K	L	N
HAHU-200	1080	1280	1020	680	1210	900	840	60	250	33	99	66	640
HAHU-300	1280	1480	1220	780	1410								
HAHU-400	1480	1680	1420	930	1610								
HAHU-600	1680	1880	1620	1330	1810								
HAHU-800	1980	2180	1920	1450	2110								

HAHU			200	300	400	600	800
CONNECTIONS	Water	Type	Socket (Threaded Female)				
		In / Out	31.75 (1-1/4") (CW) / 25.4 (1") (HW)				
	Condensate Drainage	mm (in)	25.4 (1")				
WEIGHT	Net	kg	from 175 to 273				

1.-For HAHU-AC unit dimensions, please refer to the correspondent Technical Manual.



VERTICAL MINI AHU

Intelligent Fan Coils

VAHU-EC

PRODUCT PRESENTATION

The Polar Air Mini AHU ranges have been specifically designed for Vertical (VAHU) or Horizontal (HAHU) installation and suitable for ducted air distribution. With sandwich panels to achieve low noise levels, integrated control box and panels to access components, these units represent one of the most cost-effective solutions to provide a comfortable environment for both commercial and industrial applications. Their design also reduces on-site installation time and labor costs. MVAHU range has been designed for exposed vertical installation directly in the room or required application spaces. With internal insulation panel, this product is distinguished by its compact design and low noise level.

PRODUCT RANGE

The Polar Air Vertical Mini AHU units offer the following EC motor 230V/50Hz range with the following capacities at H speed:

2 Pipe	11.14 - 56.83 kW	4 Pipe	11.14 - 56.83 kW
	10.52 - 54.37 kW		12.77 - 63.69 kW
1398 - 8332 m ³ /h	1398 - 8332 m ³ /h		

COOLING HEATING AIR FLOW

PRODUCT FEATURES

Structure. Made from frameless integrated folded steel structure, it uses a sandwich panel consisting of two walls with inner insulation. Both walls are made of pre-coated steel 1" thickness.

These units have been designed with a 25mm thickness sandwich panel with polyurethane (density 40kg/m³). The intake panel is equipped with a flange for fitting to any air channels.

Water Coils. Built with seamless copper tubes and headers, with the tubes mechanically expanded into corrugated aluminum fin material for a permanent primary to secondary surface bond. It includes manual air vent and water purge valve.

Fan Blowers. Made of hot-dip galvanized steel housing center plate fixed impeller, riveting compression on the end ring; galvanized steel sheet mounting feet to ensure adequate strength and DC motor. All impellers and motors are fully balanced according to ANSI/AMCA-204 standard.

Condensate Pans. Painted Steel drain pans with 3/16" of insulation on the outer wall and isolated in aluminum in the inner wall, positively sloped,

coated with self-extinguishing closed cell expanded polyethylene with thermal properties.

Filtration. Washable filters, made of double-layer acrylic with an aluminum frame containing an G4 (Merv 8) efficiency class. F8 (Merv14) efficiency filters are optional. The filter is compliant with the EN779 standard positioned at intake.

Performance. Built with optimized water circuit designs and tested in accredited thermal test rooms to guarantee dependable performance and low water pressure drops. These series can supply up to 8000m³/h airflow at highest External Static Pressure (ESP), of up to 300Pa.

Motors. EC motors with included driven controls PCB, constant torque, permanent magnet, with 3 speeds pre-set to allow precise air balancing.

AC motors are 3-speed standard, permanently lubricated type with internal thermal overload protection.

Flexibility: This High Static range is available with left or right-hand water connections, which cannot be exchanged on site.

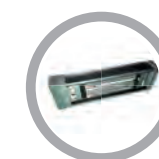
OPTIONAL ACCESSORIES*



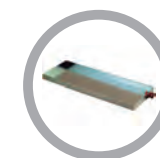
Thermostat Controller



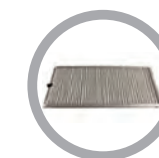
Wall Pad Controller



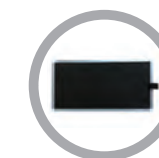
Electric Heater module
4.5 - 9 kW



Stainless steel drain pan



MERV8 | G4 Filter



MERV 14 | F8 Filter



Valve kit
24VAC 3/4" modulating
2 - 3 way ball

(*): Please refer to page 146 for further information on accessories

TECHNICAL SPECIFICATIONS

Hydronic Vertical Mini AHU Ductable Unit, 4 row, 2 pipe with **EC Motor**

UNIT GENERAL SPECS	VAHU-4R-[Size]-V-EC			200	300	400	600	800	
	Configuration			2 PIPE					
	Number of Fan Blowers			1		2			
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60					
AIR	Air Flow	H	m³/h	1396	2565	3533	5131	7065	
		M		1187	2181	3003	4361	6005	
		L		838	1539	2120	3079	4239	
	Available ESP Pressure	H	Pa	200					
		M							
		L							
COOLING	Total Cooling Capacity	H	kW	11.14	18.04	24.98	36.41	50.11	
		M		9.73	15.89	22.08	32.07	44.28	
		L		7.45	12.02	16.83	24.25	33.76	
	Sensible Cooling Capacity	H	kW	7.58	12.74	17.48	25.44	34.77	
		M		6.58	11.16	15.35	22.29	30.54	
		L		4.96	8.29	11.52	16.55	22.92	
HEATING	Heating Capacity	H	kW	10.52	17.96	24.41	35.36	47.94	
		M		9.19	15.82	21.57	31.15	42.37	
		L		7.04	11.96	16.45	23.56	32.3	
	Max. EH capacity				4	6	7.5	9	9
SOUND ¹	Max Sound Pressure		dB(A)	70	75	77	78	80	
	Max Sound Power			79	84	86	87	89	
ELECTRICAL	Max Power Input		W	375	501	505	1001	1005	
	Max Current		A	3.26	5.65	6.65	11.3	13.3	
HYDRONIC	Cooling Water Flow Rate	H	L/h	1910	3093	4282	6242	8590	
		M		1668	2725	3785	5498	7591	
		L		1278	2061	2885	4158	5787	
	Cooling Pressure Drop	H	kPa	14.08	5.71	11.38	24.6	50.01	
		M		11.03	4.54	9.11	19.58	40.04	
		L		6.83	2.75	5.59	11.84	24.57	
	Heating Water Flow Rate	H	L/h	1803	3079	4185	6062	8218	
		M		1575	2712	3699	5340	7263	
		L		1803	2474	3183	4871	6250	
	Heating Pressure Drop	H	kPa	8.9	3.93	7.64	16.49	32.93	
		M		6.97	3.13	6.12	13.12	26.37	
		L		4.32	1.89	3.75	7.94	16.18	
	Water content		L		7.52	9.84	12.16	14.47	17.94

TESTING CONDITIONS

Cooling mode: Return air temperature: 27C DB / 19C WB Inlet / outlet water temperature: 7C / 12C
 Heating mode: Return air temperature: 20C Inlet / outlet water temperature: 45C / 40C

(!): Sound Power in compliance with EN9614-2.

For High ΔT Condition Requirements, please refer to Selection Software.

TECHNICAL SPECIFICATIONS

Hydronic Vertical Mini AHU Ductable Unit, 4+2 row, 4 pipe with **EC Motor**

UNIT GENERAL SPECS	VAHU-4R+2-[Size]-V-EC			200	300	400	600	800	
	Configuration			2 PIPE					
	Number of Fan Blowers			1		2			
	Power Supply (V/Ph/Hz)			230 / 1 / 50 220 / 1 / 60					
AIR	Air Flow	H	m³/h	1135	2377	3355	4755	6711	
		M		1980	2752	3541	5504	7082	
		L		681	1426	2013	2853	4026	
	Available ESP Pressure	H	Pa	200					
		M							
		L							
COOLING	Total Cooling Capacity	H	kW	9.47	16.91	24.1	34.12	48.35	
		M		8.29	14.85	21.16	29.97	42.44	
		L		6.25	11.46	16.11	23.12	32.3	
	Sensible Cooling Capacity	H	kW	6.39	11.89	16.82	23.74	33.47	
		M		5.53	10.41	14.7	20.79	29.24	
		L		4.2	7.88	10.97	15.73	21.83	
HEATING	Heating Capacity	H	kW	10.88	20.92	28.8	38.95	53.82	
		M		9.53	18.38	25.51	34.23	47.68	
		L		7.12	14.06	19.24	26.18	35.95	
SOUND ¹	Max Sound Pressure		dB(A)	70	75	77	78	80	
	Max Sound Power			79	84	86	87	89	
ELECTRICAL	Max Power Input		W	412	650	765	1300	1530	
	Max Current		A	3.58	5.65	6.65	11.3	13.3	
HYDRONIC	Cooling Water Flow Rate	H	L/h	1624	2899	4132	5849	8288	
		M		1422	2547	3627	5138	7275	
		L		1071	1964	2761	3963	5538	
	Cooling Pressure Drop	H	kPa	10.51	5.08	10.67	21.89	46.9	
		M		8.28	4.02	8.44	17.33	37.09	
		L		4.97	2.52	5.16	10.86	22.7	
	Heating Water Flow Rate	H	L/h	932	1793	2469	3338	4614	
		M		817	1576	2187	2934	4086	
		L		610	1205	1649	2244	3082	
	Heating Pressure Drop	H	kPa	1.25	4.67	9.45	2.62	5.44	
		M		0.98	3.7	7.6	2.07	4.37	
		L		0.58	2.28	4.57	1.28	2.63	
	Cooling Water Content		L		7.52	9.84	12.16	14.47	17.94
	Heating Water Content		L		3.76	4.92	6.08	7.24	8.97

TESTING CONDITIONS

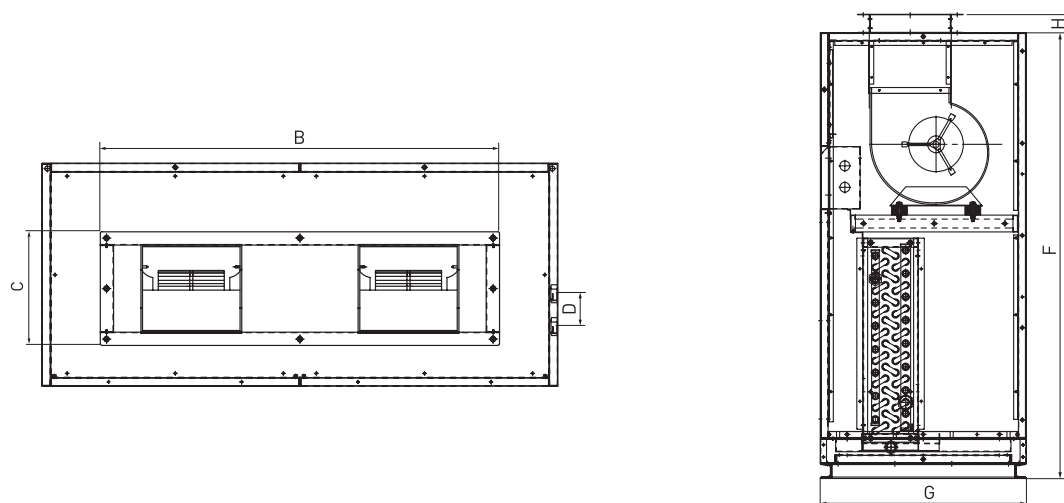
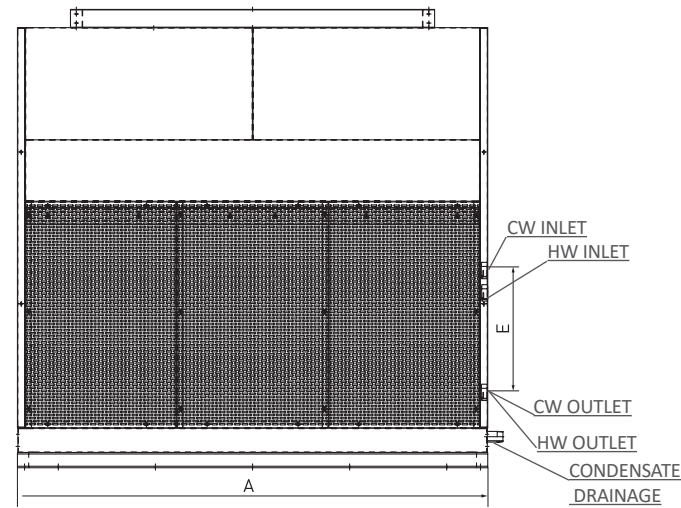
Cooling mode: Return air temperature: 27C DB / 19C WB Inlet / outlet water temperature: 7C / 12C
 Heating mode: Return air temperature: 20C Inlet / outlet water temperature: 45C / 40C

(!): Sound Power in compliance with EN9614-2.

For High ΔT Condition Requirements, please refer to Selection Software.

DIMENSIONAL DRAWINGS, DATA & WEIGHTS

No decorative grille

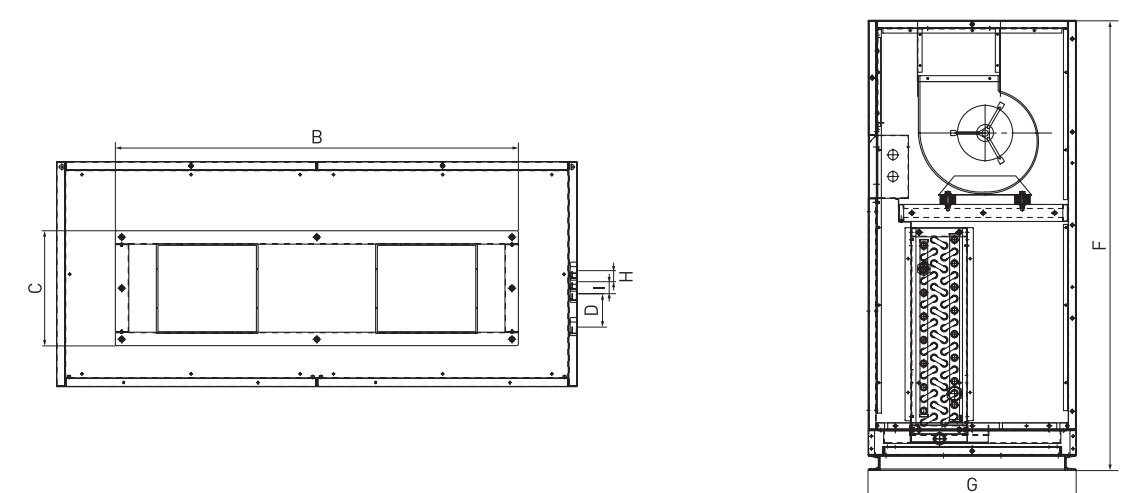
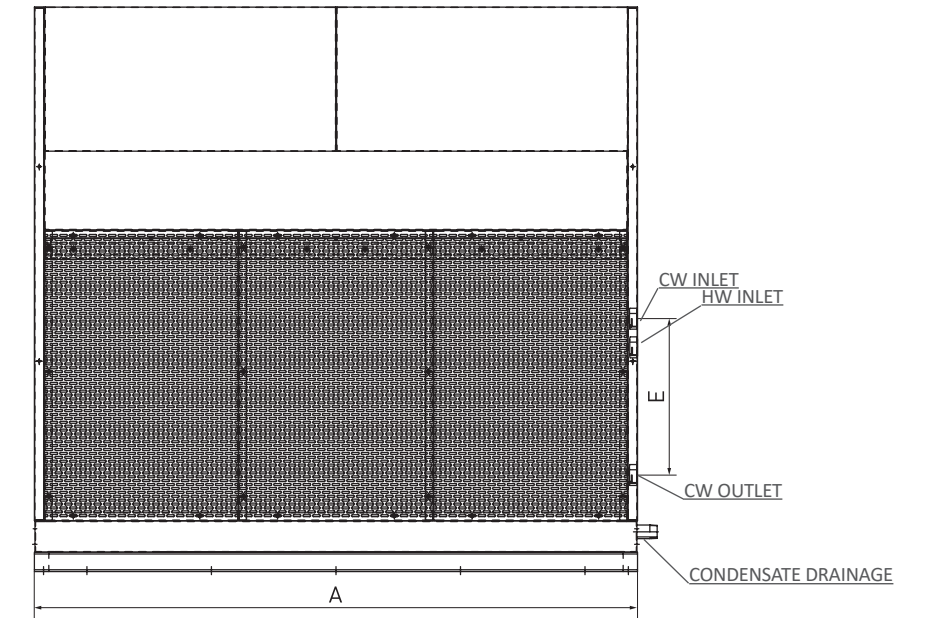


Model	Unit Dimensions (mm)							
	A	B	C	D	E	F	G	H
VAHU-200	850	540	342	99	402	1450	670	33
VAHU-300	1050	680	342	99	402	1450	670	33
VAHU-400	1250	780	371	99	402	1450	670	33
VAHU-600	1550	1200	342	99	402	1450	670	33
VAHU-800	1880	1350	371	99	402	1450	670	33

VAHU			200	300	400	600	800
CONNECTIONS	Water	Type	Socket (Threaded Male)				
		In	31.75 (1-1/4") (CW) / 25.4 (1") (HW)				
	Out	25.4 (1")					
	Condensate Drainage	mm (in)	25.4 (1")				
WEIGHT	Net	kg	176	188	219	263	304

DIMENSIONAL DRAWINGS, DATA & WEIGHTS

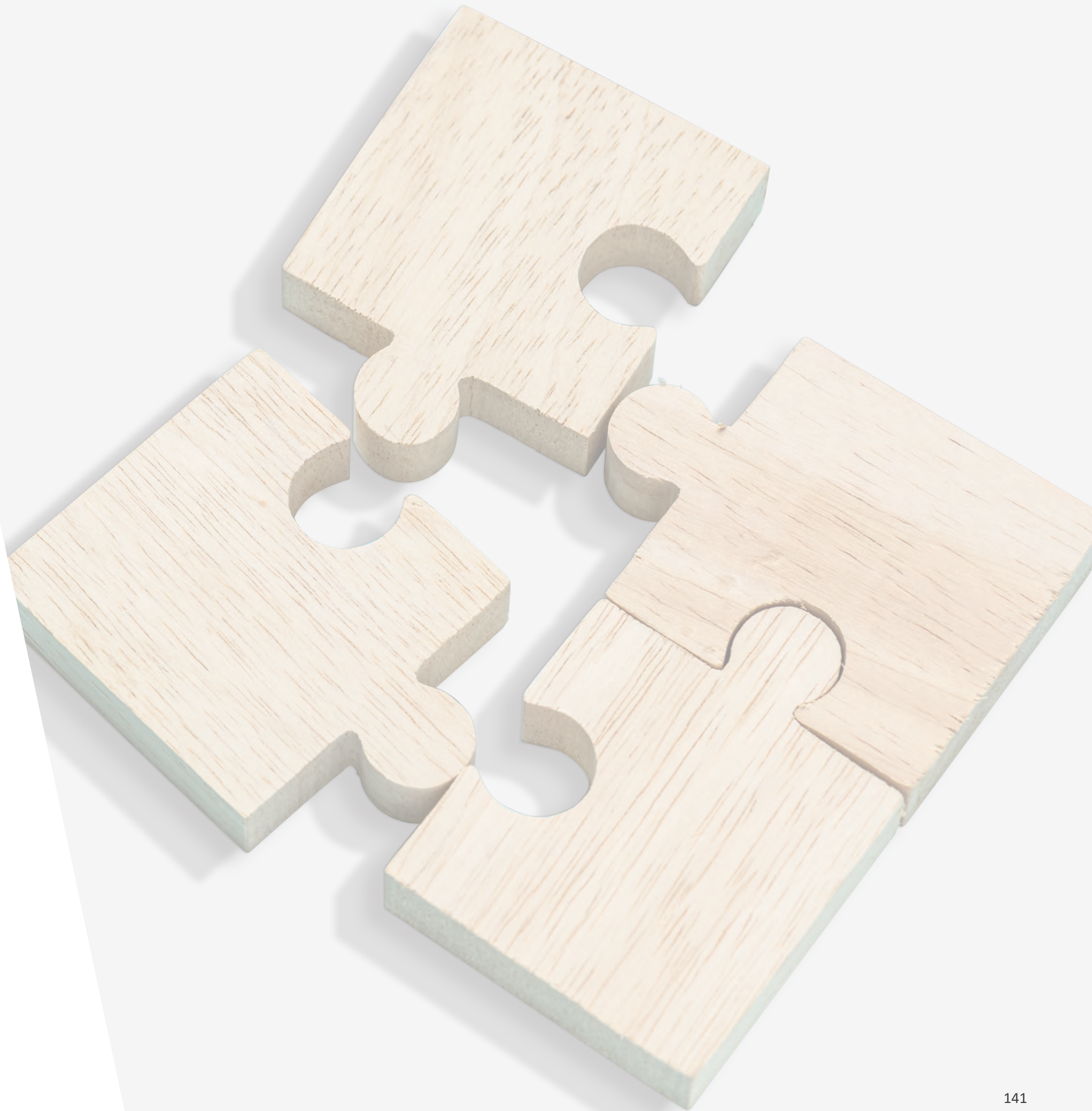
With decorative grille



Model	Unit Dimensions (mm)								
	A	B	C	D	E	F	G	H	I
MVAHU-200	850	50	342	99	402	1450	670	33	33
MVAHU-300	1050	680	342	99	402	1450	670	33	33
MVAHU-400	1250	780	371	99	402	1450	670	33	33
MVAHU-600	1550	1200	342	99	402	1450	670	33	33
MVAHU-800	1880	1350	371	99	402	1450	670	33	33

VAHU			200	300	400	600	800
CONNECTIONS	Water	Type	Socket (Threaded Male)				
		In	31.75 (1-1/4") (CW) / 25.4 (1") (HW)				
	Out	25.4 (1")					
	Condensate Drainage	mm (in)	25.4 (1")				
WEIGHT	Net	kg	45	50	58	65	75

ACCESSORIES FOR FAN COILS



01. CONTROLLERS

[WWP-V3] WIRED WALL PAD CONTROL (FOR TOTAL CONTROL)

Features: 7 days ON/OFF timer program | Addressable Main and Secondary units allowing control of up to 32 Secondary units via a single Main Unit with set or check of each unit parameters individually | Error display with addressable error diagnostic (Main unit Wall Pad displays Secondary unit address and error type) | One-Touch Global Control (Global Control Main Unit Wall Pad controls all units in the group) | Onboard Room Air Temperature Sensor.



[IRHS-V1] REMOTE INFRARED HANDSET (FOR TOTAL CONTROL)

With Global Control functionality for Main and Secondary Unit groups.



02. CONTROL OPTIONS

ABS LED RECEIVER

IR receiver in ABS housing with up to 180cm (70in) length prewiring, which can be connected with TOTAL controls only. LED lights show working mode or error mode.



DIFERENTIAL PRESSURE TRANSDUCER

This device converts the air pressure difference to a proportional electrical output (0-10 VDC/0-5 VDC/4-20 mA). It is suitable for detecting abnormal airflow at the fan coil unit for safety (cutting off electric heater) or maintenance (air filter cleaning) purposes.



03. VALVE KITS

2 or 3 WAY BYPASS THERMOELECTRIC VALVES

2-way or 3-way valve bodies with ON/OFF or modulating actuators integrated with copper piping connection kits.

* Piping connection kits vary among the different ranges.



2 or 3 WAY BYPASS BALL VALVES

2-way or 3-way bypass ball valve bodies with motorized or 24VAC modulating actuators integrated with Copper Piping Connection Kits.

* Piping connection kits vary among the different ranges.



04. UPGRADED FILTERS

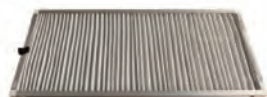
All our fan coils come with an standard nylon filter installed as standard. If you want an upgrade on those filters, you can choose between:

G4 (MERV 8)

Available with 3M HAF grade.

F8 (MERV 14)

Range	G4 (MERV 8)		F8 (MERV 14)
	STANDARD	WITH 3M HAF GRADE	
PCGH-3R EC and AC	X	X	
CHV2 EC and AC	X	X	
PDWA EC and AC	X	X	
PDL EC	X	X	
PDWD EC	X	X	
PDWC EC and AC	X	X	
PDWB EC and AC	X	X	X
HAHU EC and AC	X	X	X
VAHU EC	X	X	X
PFWB(C) EC and AC	X	X	



05. ELECTRIC HEATERS

PTC ELECTRIC HEATER KIT⁽¹⁾

With 2-stage safety cut-out and can be configured as booster heaters or primary heaters.



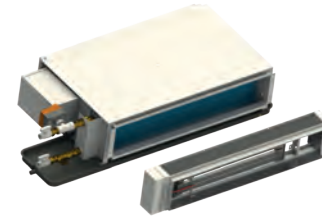
TUBE ELECTRIC HEATER KIT⁽¹⁾

With 2-stage safety, cut-outs can be configured as booster heaters or primary heaters. It can be easily installed on-site or in stock via plug-and-play wiring and brackets.



MODULE ELECTRIC HEATER KIT⁽¹⁾

The electric heater module is supplied for winter heating as an alternative to the auxiliary hot water coil. We offer a complete range of electric heaters kits, easy to connect to control box, with mounting fixture. The electric heater configuration is selectable by the DIP switch on the internal control board.



Range	Module EH Kit	PTC EH Kit	Tube EH Kit
SWC EC	-	From 0.75 to 1.5 KW	-
PCGH-3R EC	-	-	From 1 to 4 KW
PCSL EC	-	From 0.5 to 1 KW	-
PDWA EC	From 1 to 6 KW	-	-
PDL EC	From 3 to 9 KW	-	-
PDWSL EC	From 1.5 to 3 KW	-	-
PDWB EC	From 3 to 9 KW (380V/3Ph)	-	-
HAHU EC	From 4.5 to 24 KW (400V/3Ph)	-	-
VAHU EC	From 4.5 to 9 KW (400V/3Ph)	-	-
PFWB(C) EC	-	From 1 to 3 KW	-

* Non-standard electric heater sizes available under request. Contact us for further information.

**The Electric Reheater Kits can be retrofitted to the Ducted 4-Pipe ranges on special request.

(1) **ELECTRIC HEATER SAFETIES** Each Heater Kit includes an Auto-Klixon Thermal Switch, a Fuse & Contact Relay factory wired & tested. Additional Safeties including Manual Overheat Stat & Air Pressure Safety are available under request

06. DRAIN PANS

STAINLESS STEEL DRAIN PAN

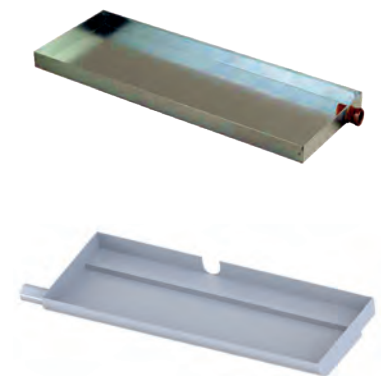
To choose between left or right side coil connections.

PAINTED STEEL DRAIN PAN

For Horizontal installations: Painted steel drain pans for built-in horizontal floor standing fixed wall installations with right or left-sided coil connections.

For Vertical installations: Painted steel drain pans for suspended ceiling installations with right or left-sided coil connections.

Range	Stainless Steel	Painted Steel for Horizontal Installations	Painted Steel for Vertical Installations
PDWA EC and AC	X		
PDL EC	X		
PDWSL EC	X		
PDWD EC	X		
PDWC EC and AC	X		
PDWB EC and AC	X		
HAHU EC and AC	X		
PFWB(C) EC and AC	X	X	X



07. FLANGES

FLANGES

For Fresh Air: Allows up to 15% of unit airflow up to a maximum of 100m³/h (59CFM) as fresh air intake (per connection). Cassette comes with knock out fresh air connection holes. ABS plastic flanges use only two screws for fixture to unit. Available for PCGH-3R Cassette range.



For Branch Duct: For delivery of treated air to adjacent spaces with 2 connectors per single fan model. Available for PCGH-3R Cassette ranges.



OUR FAN COILS

INTELLIGENT FAN COIL SYSTEMS

With more than 20 years specialized in the design, production and commercialization worldwide of hydronic products, we have the firm conviction that the fan coil terminals are one of the most critical parts of a water-based HVAC system, as they provide comfort and energy conditions directly demanded by the end-users.

This conviction led us to create the intelligent fan coils, a new fan coil generation conceived as an individual intelligent point of control, designed to provide reliable performance and the highest efficiency operation with ultimate design flexibility.

The Intelligent fan coils are produced with the highest quality materials, the most efficient components and best manufacturing practices to make them the best comfort and efficiency solution for water-based HVAC projects.



THE WIDEST RANGE

Polar Global HVAC Systems has the widest range of fan coils in the world, adapted to each specific market requirement with a wide variety of accessories and options.

We have a complete range of EC and AC hydronic fan coils, Eurovent and AHRI performance and sound listed, as well as CE and ETL approvals. Note within the +1800 models/sizes we produce, ducted unit designs vary between the USA, EU and the Middle East.

We understand the need that many projects require special solutions, and we do our best to offer the maximum levels of flexibility to customize products according to the project requirements.

INTELLIGENT EFFICIENT MOTORS

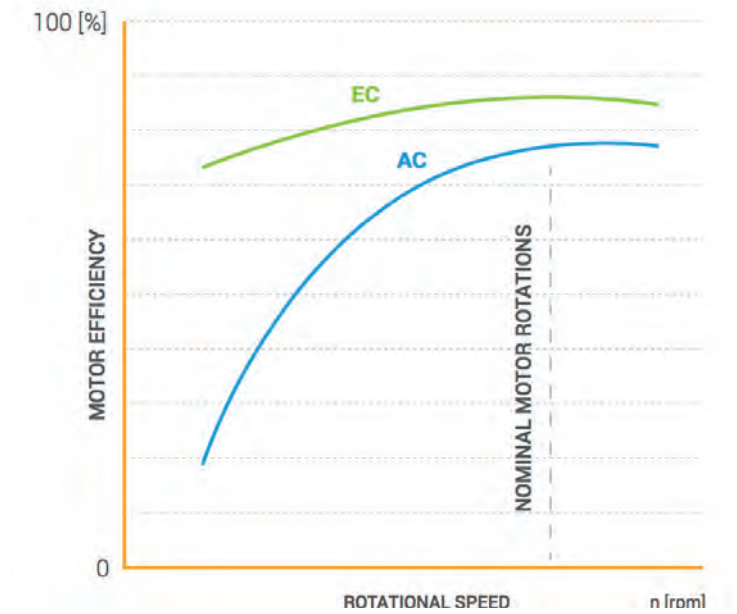
The Intelligent fan coils offer energy-efficient products that use DC motors with variable speed modulation using an integrated EC motor driver.

The units with EC motors have energy savings at set H/M/L speeds between 30% to 50% compared to traditional on/off AC motors. In auto mode, as airflow continuously varies between 20% and 100% of the maximum high-speed airflow (step-less progression), energy savings are between 50 - 70% , while precisely meeting the required cooling and heating loads of the space.

This innovation eliminates the need for the motor to turn off and on periodically to maintain the desired temperature of the environment, leading to total energy savings of up to 50% on an installation/project basis. Modulation of airflow to meet the heating and cooling requirements of the space will also result in reducing temperature fluctuations within the space and reducing fan noise.

A 0-5VDC signal originated from an inverter board integrated into the onboard unit controller drives the motor, using PID logic to modulate within 0-10V speed RPMs in Energy Saving Auto - Mode (ESM).

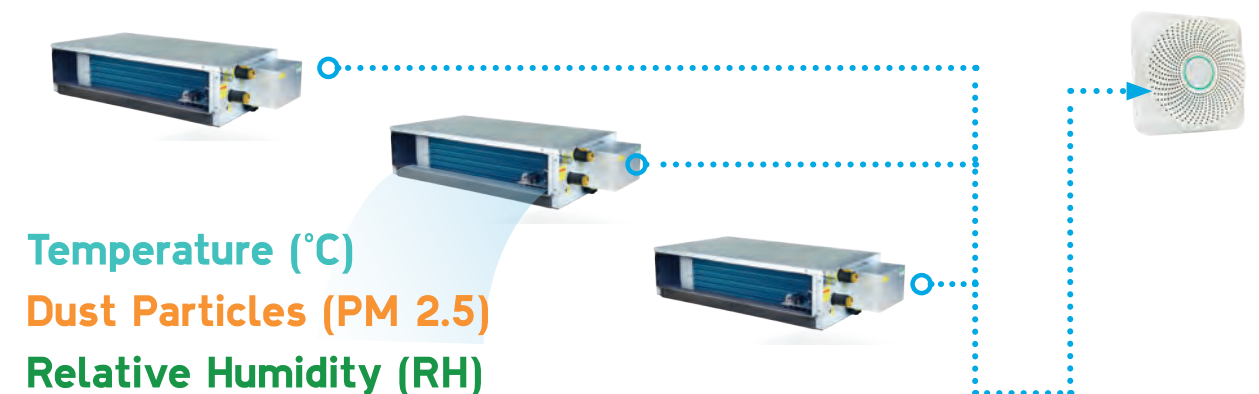
COMPARISON OF MOTOR EFFICIENCY



INTELLIGENT AIR QUALITY CONTROL

The Intelligent fan coil system's integrated control logic continuously checks air quality data such as PM2.5 or CO² coming from the AQI transducer to provide the utmost air quality comfort.

Polar Air fan coil systems also offer high-efficiency filter options to ensure efficient air cleaning and allow fresh air ducts to be connected directly to the units.



LOW/MEDIUM STATIC DUCTED

Up to 150 Pa ESP | 2.33 to 24.85 kW cooling

MEDIUM/HIGH STATIC DUCTED

Up to 400 Pa ESP | 2.56 to 59.8 kW cooling

DECORATIVE APPLICATIONS

2.93 to 14.12 kW cooling

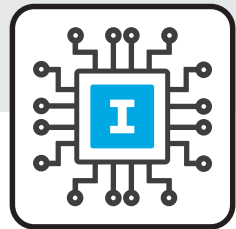
CASSETTE

1.26 to 14.12 kW cooling

DIFFERENT CONTROL OPTIONS TO OFFER FLEXIBILITY

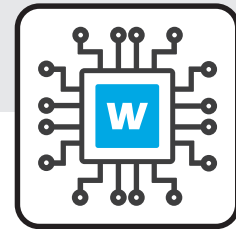
All Polar Air fan coil units offer maximum levels of control flexibility, allowing configuration by two types of control logic to satisfy specific application requirements.

Both types of controls are built-in. We offer user-friendly controllers, such as wall pads, remote handsets or thermostats as optional accessories to control the units, depending on the selected control type and project requirements.



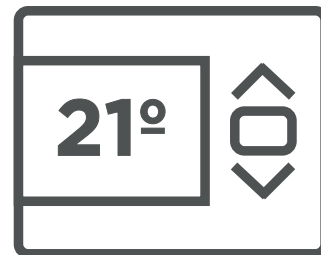
[I-TYPE CONTROL]

CONTROLLED WITH POLAR AIR WALL PAD AND IR HANDSET



[W-TYPE CONTROL]

CONTROLLED WITH EXTERNAL 3RD PARTY THERMOSTAT.



TOTAL CONTROL PCB WITH INTELLIGENT FUNCTIONALITY [I-TYPE]

The PCB (printed circuit board) microprocessor intelligent control board controls the operation of the indoor fan motor, ON/OFF or modulating water valves, and electric heaters (if fitted) to maintain room conditions at a user-defined set point.

This control type is field programmable using easy to set configuration directly through the wired wall pad or dipswitches (on specific models) and controlled via infra-red handset and/or the wired wall pad (optional items).

- Full control logic connectivity via Modbus RTU with a BMS/PMS or using a gateway with other communication protocols, allowing local configurations.
- Auto Fan Speed control for EC motor adjusting motor signal input from 0 to 5VDC by PID calculation every 10 seconds, and airflow adjustment from 15 to 100%.
- Modulating Valve Control Under Energy Saving Mode to adjust the water flow 100% according to the room temperature and set temperature. The controller adjusts the modulating valve signal via Modbus.
- Auto Restart function using non-volatile memory to save the set operation parameters when the system is turned off or in case of system failure or cessation of power supply.
- Master-Slave connectivity with up to 255 terminal units network connection using Modbus open protocol and controlled via our Wired Wall Pad controller. (Global or Addressable)
- Drain Pump control (If installed)
- Autodynamic balancing function for Variable Water Flow system installations. The water flow is controlled with temperature difference ΔT between the water inlet and outlet to ensure correct heat transfer from water to air.

FLEXIBLE CONTROL PCB [W-TYPE]

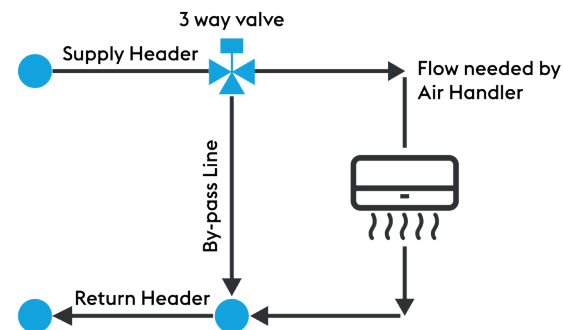
This control option features flexible functionality for external thermostat applications, allowing the independent control of drain pumps, offering zone control product operations, and limited LED diagnostics. In products where louvers are required, this control allows the stepping motors to open the louver at the maximum position or close them when the power of the unit is OFF.

- Independent control of drain pumps (if installed)
- Zone control operations
- Limited LED Diagnostics
- Louver control (when applicable).

CONSTANT VS VARIABLE FLOW APPLICATIONS

In Constant flow installations, typically using 3-way valves, the amount of water flowing through the system does not change as the load changes. When the load on the system is 100%, all of the water flows through the terminal unit coil. When less cooling or heating is needed, the 3-way valve starts to divert the water flow to the bypass and away from the terminal unit coil. As a result, there is less flow going through the terminal unit coil, but the total volume of water going through the fan coil "circuit" is the same. This system design negatively affects the overall energy efficiency of chillers and boilers because the differential temperature in the system remains low. The water leaving the coils blends with the water bypassed, which results in the low temperature differential (ΔT). Furthermore, since the flow in the system remains constant at ALL loads, there is no opportunity to use a speed-controlled pump to save energy. Constant flow designs are not suitable for energy-efficient buildings with the current energy efficiency regulations.

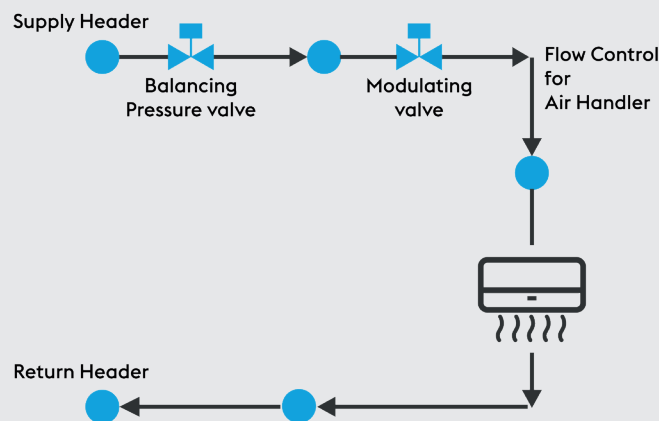
CONSTANT FLOW DIAGRAM



The suitable design for new installations requires the use of variable water flow systems.

In Variable flow installation, 2-way valves control the water through the terminal units. When the load is 100%, the valve is fully opened, and when less cooling or heating is needed, it closes to reduce the flow. Variable flow systems can be very energy efficient because there is a flow reduction in the installation when there is no need for full capacity. On average, an installation runs on 40 to 60% of its capacity most of the time, and pumping costs have significant savings when there is efficient pump speed control. Variable flow can also maximize the differential temperature in the system, which means that chillers and boilers run at optimal efficiency. Proper design and good commissioning (balancing) of a system with 2-way valves are critical to its operation. The system must be appropriately balanced to ensure the correct flows during full and partial load conditions using pressure compensating balancing valves (not manual circuit setters). This process adds additional components, added material cost and additional labour to install and balance.

VARIABLE FLOW DIAGRAM

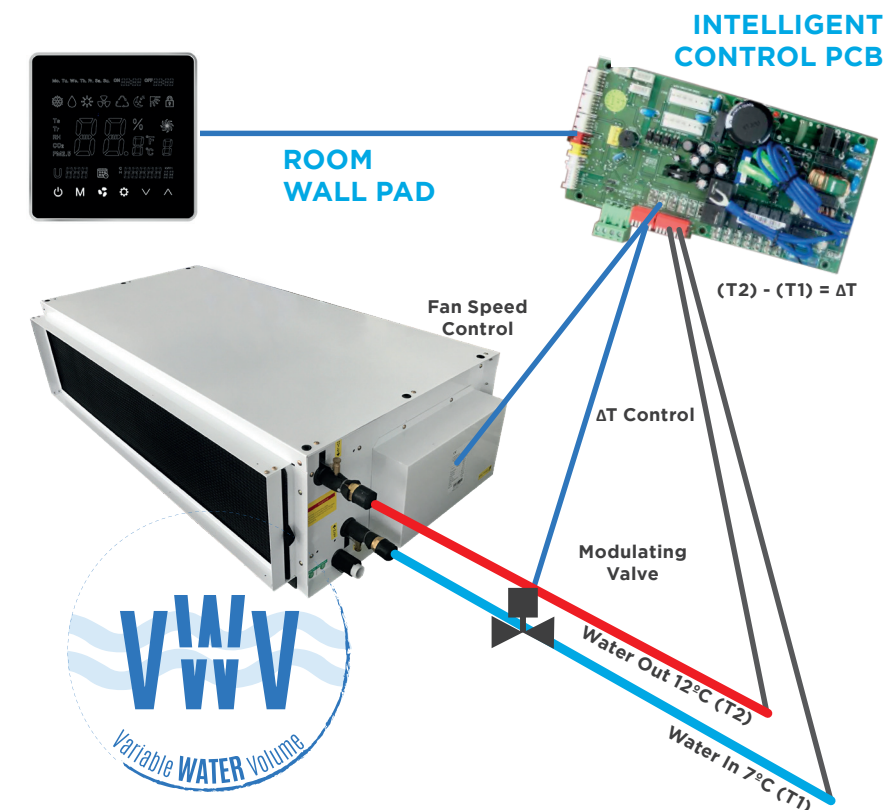


AUTODYNAMIC BALANCING SYSTEMS

Variable water flow system designs depend on differential pressure control valves (DPCV) to maximize energy savings and operational benefits. This type of system design aims to match the system's energy output to the building's load requirements in real-time. When a room thermostat indicates a comfort need in an area, the control system drives the valve actuators to open or close accordingly.

As the valves open or close, the flow rate changes, allowing the system pump to adjust the speed according to the new demand. With the variation of pump speed, the overall energy output of the entire system also changes, which affects the output of the heat pump or the chiller.

From the pump perspective, energy savings are easily understood since they represent about 6% of the total energy consumption of the HVAC system. Pumping energy is proportional to the cube of pump speed so reducing the speed of the pump to 50% can reduce the energy input by 87.5%! Characterized Modulating 2-way valves have been designed to operate on a direct linear relationship between the required energy output and valve position (50% open equals 50% output) but only when the differential pressure in the system is kept constant. This becomes difficult in a system with constantly variable pumping.



The Polar Air intelligent FCUs control logic includes auto dynamic-balancing function to compensate for the pressure differential by measuring the delta (Δ) at the inlet and outlet water temperature points. The water flow is controlled with temperature difference ΔT between the water inlet and outlet to ensure correct heat transfer from water to air. Keeping water temperature ΔT constant keeps the unit running efficiently and reduces the overall installation system's operating costs.

The autodynamic balancing function uses an inlet-outlet coil sensor that allows the unit to maintain a constant water temperature delta T and manage the water demand. The algorithms of the unit controller modify the fan motor speed and the opening of the valves accordingly. Therefore, the fan coil will adjust its operation most efficiently to reach comfort space requirements. This allows the optimization of the 2-way valve modulation and increases the energy efficiency of the variable flow system while eliminating the need to add expensive DPCVs.