

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,31	4,44	4,34	4,39	4,17	4,27	4,20	4,37	4,26	4,31	4,27	4,16	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,31	4,44	4,34	4,39	4,17	4,27	4,20	4,37	4,26	4,31	4,27	4,16	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,22	4,29	4,27	4,28	4,15	4,28	4,16	4,28	4,19	4,26	4,17	4,15	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
A7W45	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa
IP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,22	4,29	4,27	4,28	4,15	4,28	4,16	4,28	4,19	4,26	4,17	4,15	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
A7W45	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W18	Cooling capacity	61,2	72,4	81,7	91,3	108	123	138	156	172	198	224	254	kW
	Power input	16,2	18,9	21,6	24,2	29,6	34,0	37,7	42,2	46,7	54,5	60,6	70,6	kW
	EER	3,78	3,83	3,78	3,77	3,65	3,62	3,66	3,70	3,68	3,63	3,70	3,60	W/W
	Water flow rate	2,94	3,49	3,94	4,41	5,21	5,92	6,64	7,50	8,31	9,56	10,8	12,3	l/s
	Pressure drops	41	57	56	69	53	54	57	56	59	59	64	66	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W18	Cooling capacity	58,8	69,5	78,6	87,8	105	120	134	150	167	190	215	248	kW
	Power input	15,9	18,6	21,2	23,8	28,9	32,9	36,9	41,1	45,6	52,8	59,3	68,6	kW
	EER	3,70	3,74	3,71	3,69	3,63	3,65	3,63	3,65	3,66	3,60	3,63	3,62	W/W
	Water flow rate	2,83	3,35	3,79	4,24	5,06	5,78	6,45	7,21	8,03	9,17	10,40	11,9	l/s
	Pressure drops	38	53	52	64	50	51	54	51	55	54	60	62	kPa
A7W35	Heating capacity	52,4	61,9	69,9	78,6	93,8	107	120	134	149	171	192	220	kW
	Power input	12,7	14,9	17,1	19,3	23,2	26,2	29,4	32,7	36,5	42,3	47,2	54,4	kW
	COP	4,13	4,15	4,09	4,07	4,04	4,08	4,08	4,10	4,08	4,04	4,07	4,04	W/W
	Water flow rate	2,49	2,94	3,32	3,73	4,45	5,06	5,69	6,35	7,07	8,12	9,13	10,4	l/s
A7W35	Pressure drops	29	41	40	50	38	39	42	40	43	43	46	47	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C

A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C

A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	88	88	89	89	91	91	91	96	96	97	97	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	73	73	73	78	78	79	79	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	65	65	65	69	69	70	70	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	59	59	59	64	64	65	65	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level ^(E)	85	85	86	86	88	88	88	93	93	94	94	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	70	70	70	75	75	76	76	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	62	62	62	66	66	67	67	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	56	56	56	61	61	62	62	63	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2			
Power supply	400 - 3 - 50												V-ph-Hz		
Compressor type	scroll												-		
N° compressors / N° refrigerant circuits	2 / 1												n°		
Plant side heat exchanger type	stainless steel brazed plates												-		
Source side heat exchanger type	finned coil												-		
Fans type	centrifugal												-		
N° fans	1				2			3			4		n°		
Tank volume	200				400								460		l
Hydraulic fittings	2" VICTAULIC				2" 1/2 VICTAULIC										-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	74,9	80,5	95,0	109	117	145	169	188	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	41,9	47,3	58,3	67,3	72,8	88,7	103	113	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	218	269	264	278	278	370	394	384	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	148	179	180	194	194	222	279	277	A
Unit with high head modulating pump	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	49,3	54,9	62,8	68,2	81,0	86,6	101	118	126	153	179	198	A
FLI - Full load power input at maximum tolerated conditions	28,7	31,5	36,5	39,1	45,4	50,8	61,8	71,8	77,3	93,2	109	119	kW
MIC - Maximum instantaneous current of the unit	143	153	158	183	224	275	270	287	287	378	405	394	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	98,5	105	111	127	155	185	186	203	203	231	290	287	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	50	-15	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	14,5	16,7	19,4	21,5	26,6	30,5	33,8	37,7	41,6	48,8	54,1	63,1	kW
	EER	3,38	3,47	3,38	3,41	3,26	3,24	3,27	3,32	3,32	3,26	3,32	3,24	W/W
	HRE	4,36	4,48	4,36	4,4	4,21	4,18	4,22	4,28	4,29	4,21	4,29	4,19	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	14,2	16,9	19	21,3	25,1	28,6	32,1	36,2	40,3	46,3	52,3	59,4	kW
	Water flow rate recovery	0,68	0,81	0,91	1,02	1,2	1,37	1,53	1,73	1,93	2,21	2,5	2,84	l/s
	Water pressure drop recovery	7	10	13	16	21	16	20	12	15	20	25	20	kPa
IP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	47,1	55,8	63,1	70,4	84,6	96	107	120	133	153	173	199	kW
	Total power input	14,2	16,6	18,9	21,2	26	29,5	33	36,8	40,7	47,3	53,1	61,4	kW
	EER	3,32	3,36	3,33	3,33	3,25	3,25	3,25	3,27	3,27	3,24	3,26	3,24	W/W
	HRE	4,28	4,34	4,3	4,3	4,19	4,2	4,2	4,21	4,22	4,18	4,2	4,17	W/W
	Water flow rate	2,26	2,68	3,03	3,39	4,06	4,61	5,16	5,78	6,4	7,36	8,31	9,56	l/s
	Water pressure drop	24	34	33	41	32	33	35	33	35	35	38	40	kPa
	Heating recovery capacity	13,6	16,2	18,3	20,5	24,5	27,9	31,1	34,7	38,6	44,4	50,1	57,5	kW
	Water flow rate recovery	0,65	0,77	0,87	0,98	1,17	1,33	1,49	1,66	1,84	2,12	2,39	2,75	l/s
	Water pressure drop recovery	7	9	12	14	20	16	19	11	14	18	23	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	13,2	15,4	17,4	19,5	22,8	26,6	29,9	33,7	37,7	43	48,2	55,4	kW
	EER	3,72	3,76	3,77	3,75	3,81	3,72	3,7	3,71	3,66	3,7	3,73	3,7	W/W
	HRE	8,39	8,47	8,49	8,46	8,55	8,39	8,35	8,37	8,27	8,36	8,42	8,34	W/W
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	61,7	72,7	82,1	91,9	108	124	139	157	174	200	226	257	kW
	Water flow rate recovery	2,95	3,47	3,92	4,39	5,16	5,92	6,64	7,5	8,31	9,56	10,8	12,3	l/s
	Water pressure drop recovery	34	47	42	41	48	47	52	49	51	50	54	53	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

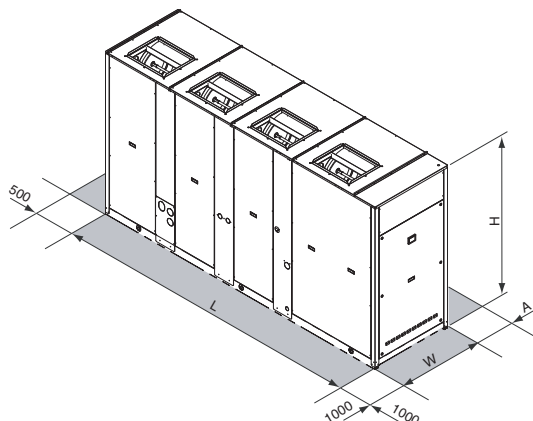
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
L		2501				3343			3343		4097		mm
W		954				1104			1104		1104		mm
H		1760				1760			2160		2160		mm
A			1600						2000				mm
Operating maximum weight*	1121	1125	1146	1189	1670	1751	1836	2051	2080	2124	2478	2520	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGW

AIR-WATER CHILLERS AND HEAT PUMPS FOR INDOOR INSTALLATION



Unit with closing panels

Available range

Unit type

IR	Chiller
IW	Heat pump (reversible on the water side)
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BW	Heat pump Brine (reversible on the water side)
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
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Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Unit description

This series of water-water chillers and heat pumps satisfies the cooling and heating requirements of commercial and industrial plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants, radiant floor plants and high efficiency radiators plants.

The refrigerant circuit is equipped with 2 scroll compressors, mounted on rubber vibration-damper supports, plant side heat exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch, source side exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation (IW, IP, BW, BP only) and differential pressure switch. (IP, BP only), thermostatic

expansion valve or electronic expansion valve (standard for IP, BP), 4-way valve, dehydrator filter, refrigerant circuit protected by refrigerant safety valve, low and high pressure switches, electrical panel for power and control complete with main breaker power supply with door lock function microprocessor controller with keyboard-display, and phase sequence controller (standard). When developing the range special attention has been paid to the choice of heat exchangers in order to obtain high efficiencies at full and partial loads to maximise the seasonal efficiency rating (ESEER) and therefore reduce consumption and running costs. The units can be chosen in Basic setting up (AB) (unit without closing panels), Low noise setting up (AS), featuring closing panels coated with acoustic material, Extra Low noise setting up (AX) featuring closing panels coated with superior acoustic material and soundproofing jackets on the compressors.

A wide range of accessories completes the commercial offer. These include pumping modules with 1 or 2 pumps available with standard or high head with a maximum of 4 pumps: 2 on plant side and 2 on source side.

The electronic controller can manage the various condensation control systems of the numerous applications required, enabling the control of 2-way or 3-way modulating valves (also offered as accessories) or the control of pumps under INVERTER. The units can therefore be combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or use for water cooling city or well water. All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connection.

Options

Pumping Modules

Available on various configurations:

- 1 or 2 pumps plant side
- 1 or 2 pumps source side
- pumps standard, high and extra high pressure head

Expansion valve

- thermostatic
- electronic (standard for IP, BP)

Suitable for outdoor installation

Accessories

Rubber vibration dampers

Remote controller

Serial Interface Modbus-RS 485

Programmer clock

Phase sequence and voltage controller

Low temperature kit

High and low pressure gauges

High temperature thermostat

Compressors shut-off valves

(for IR, BR, IW, BW only)

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

Victaulic bends

Victaulic water shut-off valves

Victaulic water filter

2-way valve for cond./evap control

3-way valve for cond./evap control

Compressors start-up with soft starter

Compressors power factor correction

Electrical load protection with thermal magnetic circuit breakers

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IR		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
W30W7	Cooling capacity	69,5	78,5	91,4	104,3	117,2	132,1	146,9	168,8	190,5	214,3	238,1	kW
	Power input	16,4	18,1	21,9	25,2	28,6	32,3	36,3	41,3	46,4	53,0	59,7	kW
	EER	4,23	4,34	4,17	4,14	4,10	4,09	4,05	4,09	4,11	4,04	3,99	W/W
	ESEER	5,22	5,26	5,07	5,04	5,02	5,03	5,05	5,03	5,07	5,03	5,04	W/W
	Water flow rate plant side	3,3	3,8	4,4	5,0	5,6	6,4	7,1	8,1	9,2	10,3	11,5	l/s
	Pressure drops plant side	47	38	40	41	44	42	45	46	48	48	49	kPa
	Water flow rate source side	4,0	4,5	5,3	6,1	6,8	7,7	8,6	9,8	11,1	12,5	13,9	l/s
	Pressure drops source side	68	55	59	60	65	62	66	67	70	71	72	kPa
IW		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
W30W7	Cooling capacity	69,5	78,5	91,4	104,3	117,2	132,1	146,9	168,8	190,5	214,3	238,1	kW
	Power input	16,4	18,1	21,9	25,2	28,6	32,3	36,3	41,3	46,4	53,0	59,7	kW
	EER	4,23	4,34	4,17	4,14	4,10	4,09	4,05	4,09	4,11	4,04	3,99	-
	ESEER	5,22	5,26	5,07	5,04	5,02	5,03	5,05	5,03	5,07	5,03	5,04	-
	Water flow rate plant side	3,34	3,77	4,40	5,02	5,64	6,35	7,07	8,12	9,17	10,32	11,47	l/s
	Pressure drops plant side	47	38	40	41	44	42	45	46	48	48	49	kPa
	Water flow rate source side	4,03	4,54	5,32	6,07	6,83	7,71	8,58	9,84	11,09	12,52	13,94	l/s
	Pressure drops source side	68	55	59	60	65	62	66	67	70	71	72	kPa
W10W45	Heating capacity	78,7	87,6	103,8	117,9	132,1	149,2	166,5	190,7	215,0	242,3	270,6	kW
	Power input	20,6	22,5	27,1	30,9	34,8	39,2	44,1	50,2	56,5	63,8	71,4	kW
	COP	3,81	3,90	3,84	3,82	3,80	3,81	3,78	3,80	3,81	3,80	3,79	-
	Water flow rate plant side	3,73	4,16	4,92	5,59	6,26	7,07	7,88	9,03	10,18	11,47	12,80	l/s
	Pressure drops plant side	58	46	50	51	54	52	56	57	59	59	61	kPa
	Water flow rate source side	4,03	4,54	5,32	6,07	6,83	7,71	8,58	9,84	11,09	12,52	13,94	l/s
IP	Pressure drops source side	68	55	59	60	65	62	66	67	70	71	72	kPa
		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
	Cooling capacity	68,1	77,0	89,6	102,3	114,9	129,5	144,0	165,4	186,8	210,1	233,4	kW
	Power input	16,2	17,9	21,6	24,9	28,2	31,8	35,8	40,7	45,7	52,3	58,9	kW
	EER	4,20	4,31	4,14	4,11	4,07	4,07	4,03	4,07	4,09	4,02	3,96	-
	ESEER	5,16	5,20	5,02	5,01	5,00	5,01	5,02	5,00	5,02	5,00	5,01	-
	Water flow rate plant side	3,3	3,7	4,3	4,9	5,5	6,2	6,9	8,0	9,0	10,1	11,2	l/s
	Pressure drops plant side	45	36	38	39	42	40	43	44	46	46	47	kPa
W10W45	Water flow rate source side	3,95	4,45	5,22	5,96	6,71	7,57	8,43	9,66	10,89	12,29	13,69	l/s
	Pressure drops source side	66	53	56	58	62	60	64	65	68	68	70	kPa
	Heating capacity	77,7	86,6	102,8	116,8	130,8	147,7	165,4	188,8	212,8	239,8	267,9	kW
	Power input	20,7	22,5	27,1	31,0	34,9	39,3	44,2	50,3	56,4	64,0	71,6	kW
	COP	3,76	3,85	3,80	3,77	3,75	3,76	3,74	3,76	3,77	3,75	3,74	-
	Water flow rate plant side	3,7	4,1	4,9	5,5	6,2	7,0	7,8	8,9	10,1	11,4	12,7	l/s
	Pressure drops plant side	57	45	49	50	53	51	55	56	58	58	60	kPa
	Water flow rate source side	3,95	4,45	5,22	5,96	6,71	7,57	8,43	9,66	10,89	12,29	13,69	l/s
	Pressure drops source side	66	53	56	58	62	60	64	65	68	68	70	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

W30W7 = source : water in 30°C out 35°C / plant : water in 12°C out 7°C

W10W45 = source : water in 10°C / plant : water in 40°C out 45°C

NET NOMINAL performances - Radiant plants

IR		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
W30W7	Cooling capacity	94,0	105,2	121,2	140,0	158,7	178,4	197,6	227,0	257,2	288,8	321,4	kW
	Power input	18,8	20,3	24,5	28,4	32,6	36,6	41,3	47,1	53,2	60,7	68,6	kW
	EER	5,01	5,19	4,95	4,94	4,86	4,88	4,79	4,82	4,83	4,76	4,69	-
	Water flow rate plant side	4,55	5,08	5,86	6,77	7,68	8,63	9,56	10,99	12,46	13,99	15,58	l/s
	Pressure drops plant side	87	69	71	75	82	78	82	84	89	88	90	kPa
	Water flow rate source side	5,25	5,87	6,80	7,86	8,92	10,03	11,13	12,77	14,45	16,27	18,14	l/s
	Pressure drops source side	116	92	96	101	110	105	111	114	119	119	123	kPa
IW		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
W30W7	Cooling capacity	94,0	105,2	121,2	140,0	158,7	178,4	197,6	227,0	257,2	288,8	321,4	kW
	Power input	18,8	20,3	24,5	28,4	32,6	36,6	41,3	47,1	53,2	60,7	68,6	kW
	EER	5,01	5,19	4,95	4,94	4,86	4,88	4,79	4,82	4,83	4,76	4,69	-
	Water flow rate plant side	4,55	5,08	5,86	6,77	7,68	8,63	9,56	10,99	12,46	13,99	15,58	l/s
	Pressure drops plant side	87	69	71	75	82	78	82	84	89	88	90	kPa
	Water flow rate source side	5,25	5,87	6,80	7,86	8,92	10,03	11,13	12,77	14,45	16,27	18,14	l/s
	Pressure drops source side	116	92	96	101	110	105	111	114	119	119	123	kPa
W10W45	Heating capacity	85,2	95,8	112,3	128,3	144,5	162,9	181,5	208,1	234,8	264,9	295,2	kW
	Power input	17,9	19,4	23,5	27,2	31,0	34,9	39,3	44,9	50,6	57,8	65,3	kW
	COP	4,75	4,93	4,78	4,73	4,65	4,67	4,61	4,64	4,64	4,58	4,52	-
	Water flow rate plant side	4,03	4,54	5,32	6,07	6,83	7,71	8,58	9,84	11,09	12,52	13,94	l/s
	Pressure drops plant side	68	55	59	60	65	62	66	67	70	71	72	kPa
	Water flow rate source side	5,25	5,87	6,80	7,86	8,92	10,03	11,13	12,77	14,45	16,27	18,14	l/s
	Pressure drops source side	116	92	96	101	110	105	111	114	119	119	123	kPa
IP		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
W30W7	Cooling capacity	90,8	101,0	117,0	135,0	153,0	172,0	190,6	218,6	247,5	278,4	309,5	kW
	Power input	19,0	20,1	24,1	28,1	32,3	36,1	41,0	46,7	52,5	59,5	66,6	kW
	EER	4,79	5,01	4,85	4,80	4,74	4,77	4,65	4,69	4,72	4,68	4,65	-
	Water flow rate plant side	4,40	4,87	5,65	6,52	7,40	8,31	9,22	10,58	11,98	13,48	14,99	l/s
	Pressure drops plant side	81	63	66	69	76	72	77	78	82	82	84	kPa
	Water flow rate source side	5,12	5,67	6,60	7,62	8,64	9,72	10,81	12,37	13,98	15,75	17,52	l/s
	Pressure drops source side	110	86	90	95	103	98	105	107	111	112	114	kPa
W10W45	Heating capacity	83,7	94,0	110,3	126,1	142,1	159,5	178,2	204,6	230,3	260,3	289,5	kW
	Power input	17,6	19,0	23,1	26,7	30,4	34,2	38,6	43,9	49,5	56,6	63,9	kW
	COP	4,74	4,95	4,78	4,73	4,68	4,67	4,62	4,66	4,65	4,60	4,53	-
	Water flow rate plant side	3,96	4,45	5,22	5,97	6,72	7,55	8,43	9,68	10,88	12,30	13,68	l/s
	Pressure drops plant side	66	53	56	58	63	59	64	65	68	68	70	kPa
	Water flow rate source side	5,12	5,67	6,60	7,62	8,64	9,72	10,81	12,37	13,98	15,75	17,52	l/s
	Pressure drops source side	110	86	90	95	103	98	105	107	111	112	114	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

W30W7 = source : water in 30°C out 35°C / plant : water in 12°C out 7°C

W10W45 = source : water in 10°C / plant : water in 40°C out 45°C

Acoustic performances

Base setting up (AB)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level ^(E)	75	76	77	77	77	78	78	79	79	80	80	dB(A)
Sound pressure level at 1 meter	59	60	61	61	61	62	62	63	63	64	64	dB(A)
Sound pressure level at 5 meters	49	50	51	51	51	52	52	53	53	54	54	dB(A)
Sound pressure level at 10 meters	44	45	46	46	46	47	47	48	48	49	49	dB(A)
Low noise setting up (AS)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level ^(E)	71	72	73	73	73	74	74	75	75	76	76	dB(A)
Sound pressure level at 1 meter	55	56	57	57	57	58	58	59	59	60	60	dB(A)
Sound pressure level at 5 meters	45	46	47	47	47	48	48	49	49	50	50	dB(A)
Sound pressure level at 10 meters	40	41	42	42	42	43	43	44	44	45	45	dB(A)
eXtra low noise setting up (AX)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level ^(E)	67	68	69	69	69	70	70	71	71	72	72	dB(A)
Sound pressure level at 1 meter	51	52	53	53	53	54	54	55	55	56	56	dB(A)
Sound pressure level at 5 meters	41	42	43	43	43	44	44	45	45	46	46	dB(A)
Sound pressure level at 10 meters	36	37	38	38	38	39	39	40	40	41	41	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions W30/W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Compressor type	scroll											-
N° compressors / N° refrigerant circuits	2 / 1											n°
Plant side heat exchanger type	stainless steel brazed plates											-
Source side heat exchanger type	stainless steel brazed plates											-
IN/OUT Plant side hydraulic fittings	2" 1/2 VICTAULIC											"
IN/OUT Source side hydraulic fittings	2" 1/2 VICTAULIC											"

Electrical data

Standard unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	45	51	62	68	74	82	90	105	120	142	164	A
FLI - Full load power input at maximum tolerated conditions	26	29	34	40	45	50	55	63	72	83	93	kW
MIC - Maximum instantaneous current of the unit	141	166	204	256	262	309	317	355	370	454	476	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	93	110	135	166	172	200	208	231	246	296	318	A
Unit with high head modulating pump	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	60	66	77	83	89	103	111	129	144	169	191	A
FLI - Full load power input at maximum tolerated conditions	35	38	42	48	54	62	67	77	86	98	109	kW
MIC - Maximum instantaneous current of the unit	155	180	219	271	277	330	338	379	394	481	503	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	108	124	149	181	187	221	229	255	270	323	345	A

Operating range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Water inlet temperature source side	IR, IW, IP, BR, BP	20 (5*)	50	10	25 (40*)	(°C)
Water outlet temperature plant side	IR, IW, IP	5	20	25	55	(°C)
Water outlet temperature plant side	BR, BP	-10	5	25	55	(°C)

* with condensation / evaporation control devices

CONTROL SYSTEM

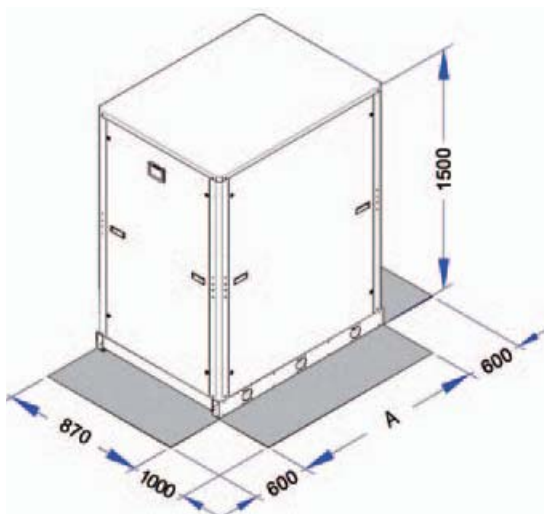
The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Condensation / evaporation control
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT

(reference drawing: unit with closing panel)



		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
STANDARD UNIT	A	880											mm
	Operating maximum weight	404	416	427	548	635	668	696	741	771	812	844	kg
STANDARD UNIT+ PUMPING MODULE MP	A (2+2 extra high head pumps)	2055											mm
	Operating maximum weight (2+2 extra high head pumps)	809	817	828	1059	1146	1225	1253	1321	1351	1415	1447	kg

> RVW

WATER-WATER CHILLERS FOR INDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IW	Heat pump (reversible on the water side)
BR	Chiller Brine
BW	Heat pump Brine (reversible on the water side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Condenser Options

T	cooling tower water
P	well water
S	sea water

Unit description

This range of water-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. All the units are suitable for indoor installation and can be applied to fan coil plants and radiant floor plants.

Suitable for indoor installation, as standard the units are equipped with 1 or 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers able to modulate the capacity from minimum 25 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch, source side exchanger shell and tube type optimised for R134a with high efficiency grooved tubes complete with

Victaulic water connections, fitted inside a shell of thermal insulation material to prevent heat exchange (IW, BW only)

1 or 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters).

When developing the range special attention has been paid to the choice of heat exchangers in order to obtain high efficiencies at full loads and partial loads to maximise the seasonal efficiency rating (ESEER) and therefore reduce consumption and running costs

The units can be selected as Base setting up (AB) or as Low noise setting up (AS) that provides that compressor are positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material.

The range is completed with numerous accessories and options.

The electronic controller can manage the various condensation control systems of the numerous applications required, enabling the control of 2-way or 3-way modulating valves or the control of pumps under INVERTER. The units can therefore be combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or use for water cooling city or well water (condenser option P) or sea water (condenser option S). All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connection.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Evaporator flow switch (mounted)

Evaporator insulation higher thickness

Evaporator electrical heater for winter antifreeze

High and low pressure gauges

Compressor suction shut-off valve

Accessories

Rubber vibration dampers

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	4,47	4,48	4,45	4,49	4,40	4,42	4,41	4,38	4,45	4,30	4,33	4,41	W/W
	ESEER	4,83	4,77	4,78	4,83	4,84	4,79	4,84	4,82	4,90	4,83	4,86	4,87	W/W
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
IW		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	4,47	4,48	4,45	4,49	4,40	4,42	4,41	4,38	4,45	4,30	4,33	4,41	W/W
	ESEER	4,83	4,77	4,78	4,83	4,84	4,79	4,84	4,82	4,90	4,83	4,86	4,87	W/W
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
W10W45	Heating capacity	311	350	395	455	534	592	659	783	908	1055	1184	1304	kW
	Power input	72,8	82,7	93,4	104	128	139	155	186	213	256	279	311	kW
	COP	4,28	4,23	4,24	4,36	4,16	4,26	4,25	4,20	4,27	4,12	4,25	4,19	W/W
	Water flow rate plant side	14,8	16,7	18,8	21,7	25,4	28,2	31,4	37,3	43,2	50,2	56,4	62,1	l/s
	Pressure drops plant side	24	21	22	23	32	22	21	22	23	33	22	21	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)

= Unit in **A CLASS**.

W30W7 = source : water in 30°C out 35°C / plant : water in 12°C out 7°C

W10W45 = source : water in 10°C / plant : water in 40°C out 45°C

Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level ^(E)	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
Sound pressure level at 1 meter	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
Sound pressure level at 5 meters	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
Sound pressure level at 10 meters	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level ^(E)	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
Sound pressure level at 1 meter	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

(E): EUROVENT certified data

The acoustic performances are referred to units operating in cooling mode at nominal conditions W30/W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

TECHNICAL DATA	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	1 / 1						2 / 2						n°
Part load	25 / 100% continuous						12.5 / 100% continuous						-
Plant side heat exchanger type / N°	shell and tube / 1						shell and tube / 2						-
Source side heat exchanger type / N°	shell and tube / 1						shell and tube / 2						-
IN/OUT Plant hydraulic fittings (victaulic)	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	-
IN/OUT Source hydraulic fittings (victaulic)	DN100	DN100	DN100	DN100	DN100	DN125	DN125	DN100	DN100	DN100	DN125	DN125	-

Electrical data

Standard unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
FLA - Full load current at maximum tolerated conditions	162	181	211	232	270	309	340	422	464	540	618	680	A
FLI - Full load power input at maximum tolerated conditions	99	110	129	144	169	190	209	257	287	339	380	418	kW
MIC - Maximum instantaneous current of the unit	520	612	665	436	465	586	650	876	668	735	895	990	A

Operative range

Temperature	Tipo Unità	Cooling		Heating		
		min	max	min	max	
Water inlet temperature source side	IR, IW, BR	20 (5*)	50	10	25 (40*)	(°C)
Water outlet temperature plant side	IR, IW	5	15	25	55	(°C)
Water outlet temperature plant side	BR	-8	5	25	55	(°C)
Water outlet temperature Desuperheater (VD)	IR, BR	35	50	-	-	(°C)
Water outlet temperature total Recovery (VR)	IR, BR	25	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Double Set Point
- Demand Limit
- Dinamic set point
- Integrative heating
- Condensation / evaporation control
- Remote stand by
- Remote cooling-heating



VD and VR versions

These units allow to recover the heating power through an additional heat exchanger.

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the base version and, simultaneously, of hot water at temperatures from 35 to 50 °C. This is achieved by inserting, between the compressor and condenser, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 25 to 55 °C. This is achieved using a suitable heat exchanger that has a double water circuit: one for condensation and a second for heat recovery. The management to the two hydraulic circuits is in charge of the user.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	291	328	367	425	493	553	610	725	844	963	1097	1204	kW
	Total power input	61	69	77	89	105	118	130	156	178	210	238	257	kW
	EER	4,76	4,77	4,74	4,78	4,68	4,71	4,70	4,66	4,74	4,58	4,61	4,69	W/W
	HRE	5,65	5,67	5,63	5,68	5,56	5,60	5,59	5,55	5,64	5,45	5,49	5,59	W/W
	Water flow rate plant side	14,0	15,8	17,7	20,5	23,8	26,6	29,4	35,0	40,6	46,5	53,0	58,0	l/s
	Water pressure drop plant side	50	40	50	48	59	47	58	56	49	62	64	49	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Water pressure drop source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
	Heating recovery capacity	54,4	61,7	69,1	79,2	92,2	105	115	138	158	184	210	229	kW
	Water flow rate recovery	2,60	2,95	3,30	3,79	4,40	5,02	5,50	6,60	7,57	8,81	10,0	11,0	l/s
	Water pressure drop recovery	6	8	7	10	9	7	9	7	10	9	7	9	kPa

Total Recovery Version (VR) - NET NOMINAL performances

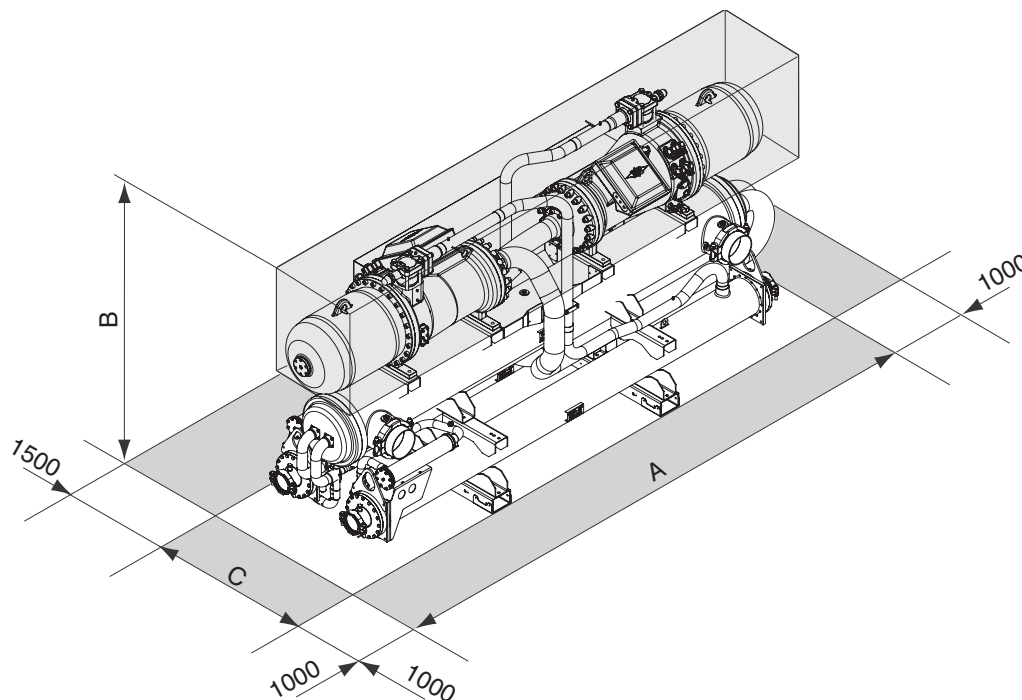
IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	250	281	317	364	426	475	527	625	724	833	943	1039	kW
	Total power input	72	82	92	104	126	138	155	186	210	251	278	308	kW
	EER	3,47	3,45	3,44	3,49	3,39	3,44	3,40	3,37	3,44	3,32	3,39	3,38	W/W
	HRE	7,90	7,86	7,83	7,93	7,74	7,83	7,74	7,68	7,84	7,58	7,73	7,71	W/W
	Water flow rate plant side	12,0	13,5	15,2	17,5	20,5	22,8	25,3	30,0	34,8	40,1	45,4	49,9	l/s
	Water pressure drop plant side	36	29	37	35	44	34	43	42	36	46	47	36	kPa
	Heating recovery capacity	318	359	404	464	546	607	674	801	925	1072	1208	1332	kW
	Water flow rate recovery	15,2	17,2	19,3	22,2	26,1	29,0	32,2	38,3	44,2	51,2	57,7	63,6	l/s
	Water pressure drop recovery	25	22	23	24	34	24	22	23	24	34	24	22	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

W30W7 - W45 = source : water in 30°C d.b. out 35°C / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT

Modello	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
A	4084	4084	4084	4084	4084	4114	4114	4320	4463	4463	4463	4463	mm
B	1878	1878	1878	1904	1904	2002	2089	1932	1993	1993	2090	2090	mm
C	1043	1043	1043	1118	1118	1118	1118	1218	1218	1218	1256	1256	mm
Operating maximum weight	1929	1947	1984	2585	2618	2785	3134	3747	5042	5059	5512	5682	kg

> CMA - CMA HE

CONDENSING UNITS
FOR OUTDOOR INSTALLATION



ADAPTIVE
FUNCTION



Available range

Unit type

- SR Condensing unit
- SP Reversible condensing unit
(reversible on the refrigerant side)

Versions

- VB Base Version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is

equipped with scroll compressor mounted on damper supports, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Remote plate heat exchanger

Liquid line

NET NOMINAL performances - CMA

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,6	24,0	28,0	33,5	38,7	43,6	kW
	Power input	6,79	7,45	8,72	10,7	12,2	13,8	kW
	EER	3,18	3,21	3,20	3,13	3,17	3,16	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,7	23,0	26,9	32,2	37,2	41,9	kW
	Power input	7,33	8,05	9,40	11,5	13,2	14,9	kW
	EER	2,83	2,86	2,86	2,80	2,82	2,81	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,2	23,5	27,4	32,8	37,9	42,8	kW
	Power input	6,72	7,38	8,63	10,6	12,1	13,7	kW
	EER	3,15	3,19	3,18	3,11	3,14	3,12	W/W
A7C50	Heating capacity	20,1	22,3	25,9	31,0	35,9	40,4	kW
	Power input	6,72	7,37	8,62	10,6	12,1	13,8	kW
	COP	2,99	3,03	3,00	2,92	2,97	2,93	W/W
A7C45	Heating capacity	22,2	24,6	28,6	34,2	39,6	44,6	kW
	Power input	5,92	6,49	7,59	9,34	10,6	12,1	kW
	COP	3,75	3,79	3,77	3,66	3,74	3,69	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,3	22,6	26,4	31,5	36,4	41,0	kW
	Power input	7,26	7,97	9,31	11,4	13,1	14,8	kW
	EER	2,80	2,83	2,83	2,76	2,78	2,78	W/W
A7C50	Heating capacity	19,0	21,2	24,7	29,6	34,2	38,5	kW
	Power input	6,45	7,08	8,27	10,2	11,7	13,2	kW
	COP	2,94	3,00	2,98	2,90	2,93	2,91	W/W
A7C45	Heating capacity	21,0	23,4	27,2	32,6	37,7	42,5	kW
	Power input	5,68	6,23	7,29	8,98	10,3	11,7	kW
	COP	3,69	3,76	3,74	3,63	3,68	3,64	W/W

NET NOMINAL performances - CMA HE

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,8	24,2	28,3	34,2	39,7	44,9	kW
	Power input	6,48	7,10	8,25	10,2	11,8	13,3	kW
	EER	3,36	3,41	3,43	3,36	3,38	3,38	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,0	23,2	27,2	32,9	38,2	43,2	kW
	Power input	7,01	7,67	8,91	11,00	12,70	14,30	kW
	EER	2,99	3,03	3,05	3,00	3,01	3,02	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	23,8	27,8	33,6	39,0	44,1	kW
	Power input	6,42	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,33	3,39	3,40	3,34	3,33	3,33	W/W
A7C50	Heating capacity	20,3	22,5	26,2	31,8	36,9	41,8	kW
	Power input	6,43	7,02	8,16	10,1	11,7	13,2	kW
	COP	3,16	3,21	3,21	3,15	3,15	3,17	W/W
A7C45	Heating capacity	22,4	24,8	28,9	35,1	40,7	46,1	kW
	Power input	5,66	6,19	7,19	8,86	10,3	11,7	kW
	COP	3,96	4,01	4,02	3,96	3,95	3,94	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,5	22,8	26,7	32,3	37,5	42,3	kW
	Power input	6,94	7,59	8,82	10,9	12,6	14,2	kW
	EER	2,96	3,00	3,02	2,97	2,98	2,98	W/W
A7C50	Heating capacity	19,2	21,3	25,0	30,2	35,0	39,7	kW
	Power input	6,16	6,75	7,83	9,66	11,2	12,7	kW
	COP	3,12	3,15	3,19	3,13	3,12	3,13	W/W
A7C45	Heating capacity	21,2	23,5	27,6	33,4	38,7	43,9	kW
	Power input	5,43	5,95	6,90	8,51	9,90	11,2	kW
	COP	3,91	3,95	4,00	3,92	3,91	3,92	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	5/8"						-
Hydraulic fittings	1" 1/8						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,8	20,8	22,9	25,9	29,9	34,0	A
FLI - Full load power input at maximum tolerated conditions	10,8	12,1	13,4	15,8	18,4	21,0	kW
MIC - Maximum instantaneous current of the unit	98	114	121	129	144	178	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	55	64	68	73	82	102	A

Operating range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	5	48	-15	42	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

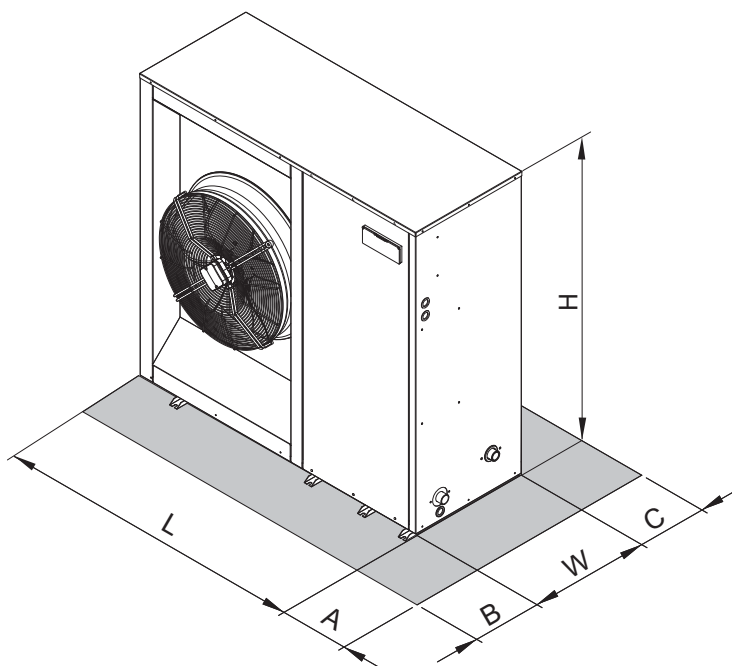
The main functions available are :

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump or fan management on the plant side
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump or fan operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L	1494	1494	1494	1704	1704	1704	mm
W	576	576	576	576	576	576	mm
H	1453	1453	1453	1453	1453	1453	mm
A	400	400	400	400	400	400	mm
B	600	600	600	600	600	600	mm
C	200	200	200	200	200	200	mm
CMA unit - maximum weight operation	221	224	239	257	277	279	kg
CMA HE unit - maximum weight operation	236	239	259	279	302	304	kg

> CMP - CMP HE

CONDENSING UNITS
FOR INDOOR INSTALLATION



ADAPTIVE
FUNCTION



Available range

Unit type

- SR Condensing unit
- SP Reversible condensing unit
(reversible on the refrigerant side)

Versions

- VB Base Version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of small and medium size.

All the units are suitable for indoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

It is possible for example to connect direct expansion coils placed inside air handling units or remote plate heat exchangers placed inside technical rooms. In both cases the lack of outdoor hydraulic pipes eliminates the freezing problems and avoids brine solutions to be used.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is

equipped with scroll compressor mounted on damper supports, centrifugal fans (plug fan), finned coil made of copper pipes and aluminium louvered fins and shut off valves on the liquid line and on the gas line. The reversible units are moreover supplied with reverse cycle valve, thermostatic expansion valve (working in heating mode) and liquid receiver.

The circuit is protected by high and low pressure switches.

All the units are equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Electrical loads protection

- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers

Coil protection grille

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Remote plate heat exchanger

Liquid line

NET NOMINAL performances - CMP

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,6	24,0	28,0	33,5	38,7	43,6	kW
	Power input	6,79	7,45	8,72	10,7	12,2	13,8	kW
	EER	3,18	3,21	3,20	3,13	3,17	3,16	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,7	23,0	26,9	32,2	37,2	41,9	kW
	Power input	7,33	8,05	9,40	11,5	13,2	14,9	kW
	EER	2,83	2,86	2,86	2,80	2,82	2,81	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,2	23,5	27,4	32,8	37,9	42,8	kW
	Power input	6,72	7,38	8,63	10,6	12,1	13,7	kW
	EER	3,15	3,19	3,18	3,11	3,14	3,12	W/W
A7C50	Heating capacity	20,1	22,3	25,9	31,0	35,9	40,4	kW
	Power input	6,72	7,37	8,62	10,6	12,1	13,8	kW
	COP	2,99	3,03	3,00	2,92	2,97	2,93	W/W
A7C45	Heating capacity	22,2	24,6	28,6	34,2	39,6	44,6	kW
	Power input	5,92	6,49	7,59	9,34	10,6	12,1	kW
	COP	3,75	3,79	3,77	3,66	3,74	3,69	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,3	22,6	26,4	31,5	36,4	41,0	kW
	Power input	7,26	7,97	9,31	11,4	13,1	14,8	kW
	EER	2,80	2,83	2,83	2,76	2,78	2,78	W/W
A7C50	Heating capacity	19,0	21,2	24,7	29,6	34,2	38,5	kW
	Power input	6,45	7,08	8,27	10,2	11,7	13,2	kW
	COP	2,94	3,00	2,98	2,90	2,93	2,91	W/W
A7C45	Heating capacity	21,0	23,4	27,2	32,6	37,7	42,5	kW
	Power input	5,68	6,23	7,29	8,98	10,3	11,7	kW
	COP	3,69	3,76	3,74	3,63	3,68	3,64	W/W

NET NOMINAL performances - CMP HE

SR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,8	24,2	28,3	34,2	39,7	44,9	kW
	Power input	6,48	7,10	8,25	10,2	11,8	13,3	kW
	EER	3,36	3,41	3,43	3,36	3,38	3,38	W/W
SR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,0	23,2	27,2	32,9	38,2	43,2	kW
	Power input	7,01	7,67	8,91	11,00	12,70	14,30	kW
	EER	2,99	3,03	3,05	3,00	3,01	3,02	W/W
SP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	21,4	23,8	27,8	33,6	39,0	44,1	kW
	Power input	6,42	7,03	8,16	10,1	11,7	13,2	kW
	EER	3,33	3,39	3,40	3,34	3,33	3,33	W/W
A7C50	Heating capacity	20,3	22,5	26,2	31,8	36,9	41,8	kW
	Power input	6,43	7,02	8,16	10,1	11,7	13,2	kW
	COP	3,16	3,21	3,21	3,15	3,15	3,17	W/W
A7C45	Heating capacity	22,4	24,8	28,9	35,1	40,7	46,1	kW
	Power input	5,66	6,19	7,19	8,86	10,3	11,7	kW
	COP	3,96	4,01	4,02	3,96	3,95	3,94	W/W
SP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35E5	Cooling capacity	20,5	22,8	26,7	32,3	37,5	42,3	kW
	Power input	6,94	7,59	8,82	10,9	12,6	14,2	kW
	EER	2,96	3,00	3,02	2,97	2,98	2,98	W/W
A7C50	Heating capacity	19,2	21,3	25,0	30,2	35,0	39,7	kW
	Power input	6,16	6,75	7,83	9,66	11,2	12,7	kW
	COP	3,12	3,15	3,19	3,13	3,12	3,13	W/W
A7C45	Heating capacity	21,2	23,5	27,6	33,4	38,7	43,9	kW
	Power input	5,43	5,95	6,90	8,51	9,90	11,2	kW
	COP	3,91	3,95	4,00	3,92	3,91	3,92	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3N - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Source side heat exchanger type	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	5/8"						-
Hydraulic fittings	1" 1/8						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	28,9	30,9	33,0	28,0	32,0	36,1	A
FLI - Full load power input at maximum tolerated conditions	13,0	14,3	15,6	16,8	19,4	22,0	kW
MIC - Maximum instantaneous current of the unit	108	124	131	131	146	180	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	65	74	78	75	84	104	A

Operating range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	5	48	-15	42	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C

CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

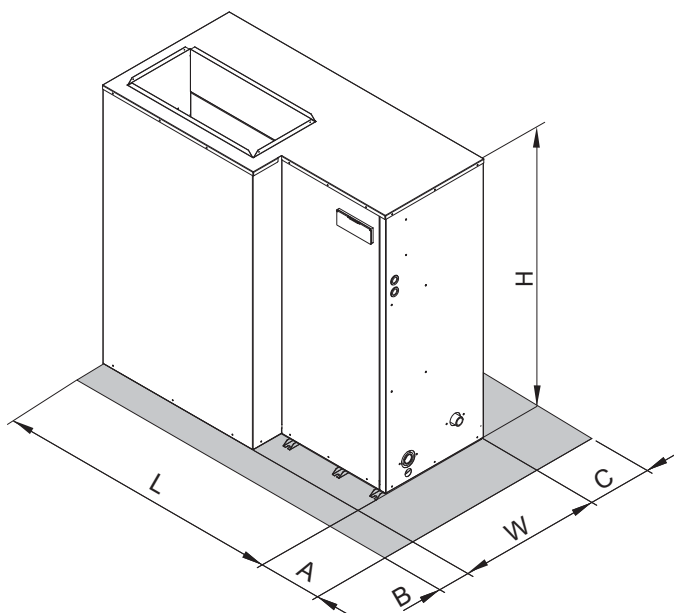
The main functions available are :

- water or air temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic

- fans management by means of continuous rotational speed control
- pump or fan management on the plant side
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump or fan operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output



DIMENSIONS AND MINIMUM OPERATING AREA





Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit (reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion valve (only for SP), reverse

cycle valve, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,4	56,1	61,3	72,0	82,4	95,3	106	118	132	150	165	189	210	kW
	Power input	16,1	19,2	21,3	24,6	28,8	33,4	36,9	41,0	46,3	52,8	58,6	66,2	73,4	kW
	EER	2,94	2,92	2,88	2,93	2,86	2,85	2,87	2,88	2,85	2,84	2,82	2,85	2,86	W/W
SR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	46,3	54,8	59,9	70,4	80,5	93,1	104	114	129	146	162	184	204	kW
	Power input	16,2	19,6	21,9	25,1	29,6	32,5	38,0	42,2	47,7	53,8	59,8	68,1	75,5	kW
	EER	2,86	2,80	2,74	2,80	2,72	2,86	2,74	2,70	2,70	2,71	2,71	2,70	2,70	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	45,4	54,9	59,6	69,7	76,8	92,4	103	114	126	143	160	185	205	kW
	Power input	15,9	19,8	21,6	25,2	28,3	33,8	37,4	41,6	46,6	52,7	59,0	66,4	74,5	kW
	EER	2,86	2,77	2,76	2,77	2,71	2,73	2,75	2,74	2,70	2,71	2,71	2,79	2,75	W/W
A7C50	Heating capacity	46,6	56,0	61,1	71,9	80,2	96,2	106	121	132	149	167	190	209	kW
	Power input	14,6	17,7	19,4	22,6	25,7	31,1	33,4	38,2	41,7	48,2	52,9	60,5	66,7	kW
	COP	3,19	3,16	3,15	3,18	3,12	3,09	3,17	3,17	3,17	3,09	3,16	3,14	3,13	W/W
A7C45	Heating capacity	51,3	61,6	67,2	79,1	88,2	106	117	133	145	164	184	209	230	kW
	Power input	12,8	15,6	17,1	19,9	22,6	27,4	29,4	33,6	36,7	42,4	46,6	53,2	58,7	kW
	COP	4,01	3,95	3,93	3,97	3,90	3,87	3,98	3,96	3,95	3,87	3,95	3,93	3,92	W/W
SP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	44,5	53,7	58,4	68,3	75,3	90,5	101	111	124	140	157	180	201	kW
	Power input	17,0	20,9	22,8	26,6	29,9	35,7	39,5	44,0	49,2	55,6	62,3	70,3	78,7	kW
	EER	2,62	2,57	2,56	2,57	2,52	2,54	2,56	2,52	2,52	2,52	2,52	2,56	2,55	W/W
A7C50	Heating capacity	44,9	54,0	58,9	69,4	77,4	92,8	103	117	127	144	161	183	201	kW
	Power input	13,9	16,8	18,5	21,6	24,5	29,7	31,9	36,4	39,8	46,0	50,4	57,7	63,5	kW
	COP	3,23	3,21	3,18	3,21	3,16	3,12	3,23	3,21	3,19	3,13	3,19	3,17	3,17	W/W
A7C45	Heating capacity	49,4	59,4	64,8	76,3	85,1	102	113	129	140	158	177	201	221	kW
	Power input	12,2	14,8	16,3	19,0	21,6	26,1	28,1	32,0	35,0	40,5	44,4	50,8	55,9	kW
	COP	4,05	4,01	3,98	4,02	3,94	3,91	4,02	4,03	4,00	3,90	3,99	3,96	3,95	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	82	82	83	84	84	85	85	85	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	66	67	67	67	68	69	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	57	58	58	58	59	60	60	61	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	79	79	80	81	81	82	82	82	83	84	84	85	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	63	64	64	64	65	66	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	54	55	55	55	56	57	57	58	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	49	50	50	50	51	52	52	53	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	77	77	78	79	79	80	80	80	81	82	82	83	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	61	62	62	62	63	64	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	47	48	48	48	49	50	50	51	51	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2		
Power supply	400 - 3+N - 50					400 - 3 - 50								V-ph-Hz	
Compressor type	scroll														-
N° compressors / N° refrigerant circuits	2 / 1														n°
Source side heat exchanger type	finned coil														-
Fans type	axial														-
N° fans	2	3			2			3		4			n°		
Liquid line connection	7/8"					1 1/8"						1 3/8"		-	
Gas line connection	1 5/8"					2 1/8"								-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	170	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	103	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	391	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	272	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-10	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desuperheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	15,1	17,9	19,8	23,0	26,8	31,1	34,4	38,2	43,1	49,3	54,7	61,8	68,4	kW
	EER	3,37	3,36	3,32	3,36	3,30	3,28	3,34	3,30	3,29	3,27	3,24	3,27	3,29	W/W
	Heating recovery capacity	14,8	17,4	19,1	22,4	25,6	29,6	33,2	36,5	41,0	46,6	51,5	58,6	65,1	kW
	Water flow rate recovery	0,70	0,83	0,91	1,07	1,22	1,42	1,59	1,74	1,96	2,23	2,46	2,80	3,11	l/s
	Water pressure drop recovery	7	11	13	17	22	18	22	12	16	20	24	20	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	49,2	59,4	64,6	75,5	83,2	100	111	124	137	155	173	200	222	kW
	Total power input	14,9	18,1	19,8	23,1	25,9	30,9	34,2	38,1	42,6	48,2	54,0	60,8	68,1	kW
	EER	3,30	3,28	3,26	3,27	3,21	3,24	3,25	3,25	3,22	3,22	3,20	3,29	3,26	W/W
	Heating recovery capacity	14,3	17,2	18,7	21,9	24,1	29,1	32,2	35,8	39,7	45,0	50,2	58,0	64,5	kW
	Water flow rate recovery	0,68	0,82	0,89	1,05	1,15	1,39	1,54	1,71	1,90	2,15	2,40	2,77	3,08	l/s
	Water pressure drop recovery	7	11	12	17	20	17	20	12	15	19	23	20	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	14,9	17,7	19,6	22,7	26,5	30,8	34,1	37,8	42,7	48,8	54,1	61,2	67,7	kW
	EER	3,42	3,40	3,36	3,41	3,34	3,31	3,37	3,33	3,33	3,30	3,27	3,30	3,32	W/W
	Heating recovery capacity	65,0	76,9	84,5	98,9	114	131	147	162	182	207	229	260	289	kW
	Water flow rate recovery	3,11	3,67	4,04	4,73	5,43	6,28	7,02	7,73	8,70	9,89	10,9	12,4	13,8	l/s
	Water pressure drop recovery	41	57	48	53	59	58	62	56	61	61	62	65	65	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

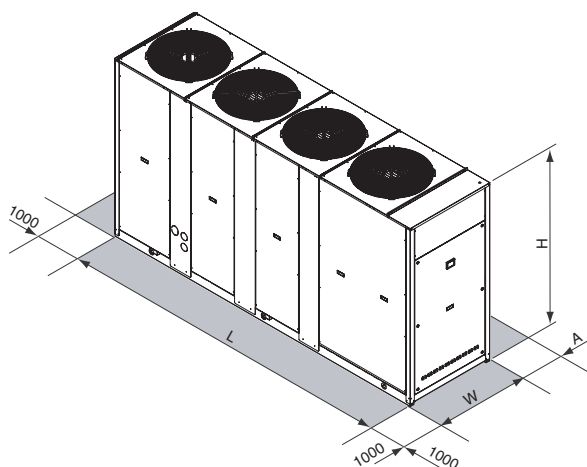
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2501				3343			3343		4097		mm
W			954				1104			1104		1104		mm
H			1930				1793			2193		2193		mm
A				1600							2000			mm
Operating maximum weight	635	639	639	680	705	953	1034	1065	1181	1240	1292	1435	1481	kg

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CONDENSING UNITS FOR OUTDOOR INSTALLATION



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit
(reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion valve (only for SP), reverse cycle valve, axial fans with safety protec-

tion grilles, finned coil made of copper pipes and aluminium louvered fins with sub-cooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	51,2	60,7	68,5	76,7	90,5	103,0	116	131	145	166	188	214	kW
	Power input	14,8	17,0	19,7	21,8	27,0	30,9	34,3	38,3	42,3	49,5	54,8	63,9	kW
	EER	3,46	3,57	3,48	3,52	3,35	3,33	3,38	3,42	3,43	3,35	3,43	3,35	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	48,8	57,9	65,2	73,1	86,3	98,2	110	124	138	159	179	204	kW
	Power input	15,4	17,7	20,5	22,7	27,5	31,8	35,4	39,6	43,9	51,0	56,8	65,7	kW
	EER	3,17	3,27	3,18	3,22	3,14	3,09	3,11	3,13	3,14	3,12	3,15	3,11	W/W
SR	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	48,0	56,8	64,2	71,8	84,8	96,6	108	122	136	156	176	200	kW
	Power input	15,6	18,0	20,7	23,0	27,8	32,2	35,8	40,2	44,7	51,5	57,4	66,4	kW
	EER	3,08	3,16	3,10	3,12	3,05	3,00	3,02	3,03	3,04	3,03	3,07	3,01	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	49,1	58,2	65,9	73,7	88,2	100,2	112	125	139	160	180	207	kW
	Power input	14,5	16,9	19,3	21,5	26,5	30,0	33,6	37,5	41,4	48,1	53,8	62,2	kW
	EER	3,39	3,44	3,41	3,43	3,33	3,34	3,33	3,33	3,36	3,33	3,35	3,33	W/W
A7C50	Heating capacity	49,2	58,0	65,6	73,6	87,9	99,8	112	125	140	160	180	206	kW
	Power input	15,3	17,8	20,4	22,9	27,4	31,0	34,8	39,0	43,5	50,0	55,9	64,2	kW
	COP	3,22	3,26	3,22	3,21	3,21	3,22	3,22	3,21	3,22	3,20	3,22	3,21	W/W
A7C45	Heating capacity	54,1	63,8	72,2	81,0	96,7	110	123	138	154	176	198	227	kW
	Power input	13,5	15,7	18,0	20,2	24,1	27,3	30,6	34,3	38,3	44,0	49,2	56,5	kW
	COP	4,01	4,06	4,01	4,01	4,01	4,03	4,02	4,02	4,02	4,00	4,02	4,02	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	46,8	55,4	62,7	70,2	84,0	95,5	107	119	133	152	172	198	kW
	Power input	15,1	17,6	20,0	22,4	27,0	30,8	34,6	38,8	43,0	49,5	55,7	63,9	kW
	EER	3,10	3,15	3,14	3,13	3,11	3,10	3,09	3,07	3,09	3,07	3,09	3,10	W/W
A7C50	Heating capacity	47,9	56,5	63,9	71,7	85,6	97,2	109	122	136	156	175	201	kW
	Power input	14,7	17,2	19,7	22,2	26,0	29,6	33,4	37,5	42,0	47,9	53,7	61,4	kW
	COP	3,26	3,28	3,24	3,23	3,29	3,28	3,26	3,25	3,24	3,26	3,26	3,27	W/W
A7C45	Heating capacity	52,7	62,2	70,3	78,9	94,2	107	120	134	150	172	193	221	kW
	Power input	12,9	15,1	17,3	19,5	22,9	26,0	29,4	33,0	37,0	42,2	47,3	54,0	kW
	COP	4,09	4,12	4,06	4,05	4,11	4,12	4,08	4,06	4,05	4,08	4,08	4,09	W/W
SP	eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	46,0	54,5	61,7	69,0	82,6	93,9	105	118	131	150	168	194	kW
	Power input	15,3	17,9	20,3	22,7	27,3	31,2	35,1	39,4	43,7	50,0	56,3	64,6	kW
	EER	3,01	3,04	3,04	3,04	3,03	3,01	2,99	2,99	3,00	3,00	2,98	3,00	W/W
A7C50	Heating capacity	47,4	55,8	63,1	70,8	84,6	96,0	108	120	135	154	173	198	kW
	Power input	14,5	16,9	19,3	21,7	25,5	29,0	32,7	36,8	41,2	46,8	52,6	60,1	kW
	COP	3,27	3,30	3,27	3,26	3,32	3,31	3,30	3,26	3,28	3,29	3,29	3,29	W/W
A7C45	Heating capacity	52,1	61,4	69,4	77,9	93,1	106	119	132	149	169	190	218	kW
	Power input	12,8	14,9	17,0	19,1	22,4	25,5	28,8	32,4	36,3	41,2	46,3	52,9	kW
	COP	4,07	4,12	4,08	4,08	4,16	4,16	4,13	4,07	4,10	4,10	4,10	4,12	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	82	82	83	84	85	85	85	85	86	87	87	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	67	67	67	67	68	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	58	58	58	58	59	60	60	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	79	79	80	81	82	82	82	82	83	84	84	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	64	64	64	64	65	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	55	55	55	55	56	57	57	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	50	50	50	50	51	52	52	53	dB(A)
eXtra low noise setting up (AX)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	77	77	78	79	80	80	80	80	81	82	82	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	62	62	62	62	63	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	48	48	48	48	49	50	50	51	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2		
Power supply	400 - 3+N - 50				400 - 3 - 50								V-ph-Hz	
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Source side heat exchanger type	finned coil													-
Fans type	axial													-
N° fans	2		3		2					3		4	n°	
Liquid line connection	7/8"				1 1/8"						1 3/8"		-	
Gas line connection	1 5/8"				2 1/8"								-	

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-15	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,4	16,5	19,1	21,1	26,2	30,0	33,2	37,2	41,1	48,0	53,2	62,0	kW
	EER	3,69	3,82	3,73	3,78	3,59	3,57	3,61	3,66	3,67	3,60	3,67	3,58	W/W
	Heating recovery capacity	15,4	18,3	20,7	23,1	27,3	31,1	34,9	39,4	43,6	50,2	56,7	64,5	kW
	Water flow rate recovery	0,74	0,87	0,99	1,10	1,30	1,48	1,67	1,88	2,09	2,40	2,71	3,08	l/s
	Water pressure drop recovery	8	12	15	18	25	20	24	14	18	24	29	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	51,1	60,5	68,5	76,6	91,8	104	117	130	145	166	188	216	kW
	Total power input	14,1	16,4	18,7	20,8	25,7	29,1	32,6	36,4	40,2	46,6	52,2	60,3	kW
	EER	3,62	3,69	3,66	3,68	3,57	3,57	3,59	3,57	3,61	3,56	3,60	3,58	W/W
	Heating recovery capacity	14,8	17,6	19,9	22,2	26,6	30,2	33,9	37,8	42,0	48,2	54,4	62,5	kW
	Water flow rate recovery	0,71	0,84	0,95	1,06	1,27	1,44	1,62	1,81	2,01	2,30	2,60	2,99	l/s
	Water pressure drop recovery	7	11	14	17	24	19	22	13	17	22	27	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,2	16,4	18,9	20,9	25,9	29,7	32,9	36,8	40,6	47,5	52,6	61,4	kW
	EER	3,75	3,85	3,77	3,81	3,63	3,60	3,65	3,70	3,72	3,64	3,71	3,62	W/W
	Heating recovery capacity	66,8	78,7	89,1	99,6	119	135	151	171	189	218	245	281	kW
	Water flow rate recovery	3,19	3,76	4,26	4,76	5,68	6,47	7,23	8,16	9,03	10,42	11,7	13,4	l/s
	Water pressure drop recovery	43	60	54	53	64	61	65	63	66	67	71	76	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

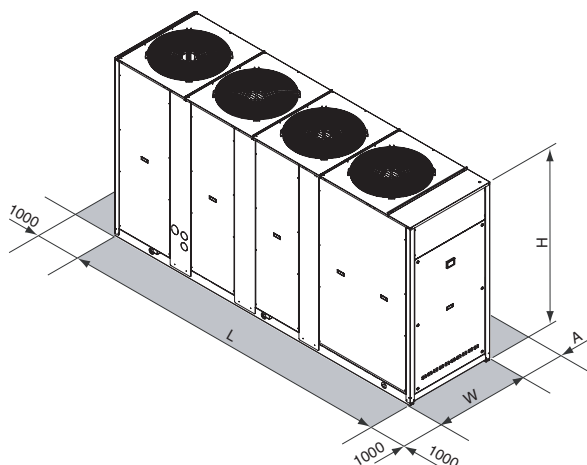
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
L		2501				3343		3343			4097		mm
W		954				1104		1104			1104		mm
H		1930				1793		2193			2193		mm
A			1600					2000					mm
Operating maximum weight	635	639	639	680	705	953	1034	1065	1181	1240	1292	1435	kg



CONDENSING UNITS FOR INDOOR INSTALLATION



Available range

Unit type

- SR Condensing unit
- SP Heat pump condensing unit (reversible on the refrigerant side)

Version

- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Source temperature level

- M Medium temperature level
- A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion

valve (only for SP), reverse cycle valve, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control INVERTER (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for SP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	48,9	57,8	63,3	74,3	85,0	98,3	110	121	136	154	171	194	216	kW
	Power input	15,5	18,4	20,5	23,7	27,6	32,1	35,5	39,4	44,5	50,8	56,3	63,7	70,6	kW
	EER	3,15	3,14	3,09	3,14	3,08	3,06	3,10	3,07	3,06	3,03	3,04	3,05	3,06	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5	Cooling capacity	47,3	57,1	62,1	72,6	80,0	96,3	107	119	132	149	166	192	214	kW
	Power input	15,3	18,6	20,4	23,8	26,7	31,9	35,3	39,3	43,9	49,7	55,6	62,7	70,3	kW
	EER	3,09	3,07	3,04	3,05	3,00	3,02	3,03	3,03	3,01	3,00	2,99	3,06	3,04	W/W
A7C50	Heating capacity	47,8	57,5	62,6	73,8	82,3	98,7	109	124	135	153	171	195	214	kW
	Power input	15,3	18,5	20,3	23,7	26,9	32,6	35,0	40,0	43,7	50,5	55,4	63,4	69,8	kW
	COP	3,12	3,11	3,08	3,11	3,06	3,03	3,11	3,10	3,09	3,03	3,09	3,08	3,07	W/W
A7C45	Heating capacity	52,6	63,3	68,9	81,2	90,5	109	120	136	149	168	188	215	235	kW
	Power input	13,5	16,3	17,9	20,9	23,7	28,7	30,8	35,2	38,5	44,4	48,8	55,8	61,4	kW
	COP	3,90	3,88	3,85	3,89	3,82	3,80	3,90	3,86	3,87	3,78	3,85	3,85	3,83	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	57	59	59	59	64	65	65	66	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	54	56	56	56	61	62	62	63	63	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2			
Power supply	400 - 3 - 50													V-ph-Hz		
Compressor type	scroll													-		
N° compressors / N° refrigerant circuits	2 / 1													n°		
Source side heat exchanger type	finned coil													-		
Fans type	centrifugal													-		
N° fans	1					2			3			4		n°		
Liquid line connection	7/8"					1 1/8"								1 3/8"		-
Gas line connection	1 5/8"					2 1/8"										-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	73,0	80,5	95,0	103	117	145	158	188	199	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	40,8	47,3	58,3	63,8	72,8	88,7	96,3	113	120	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	216	269	264	272	278	370	383	384	420	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	147	179	180	188	194	222	268	277	301	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-10	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desupeheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	15,1	17,9	19,8	23,0	26,8	31,1	34,4	38,2	43,1	49,3	54,7	61,8	68,4	kW
	EER	3,37	3,36	3,32	3,36	3,30	3,28	3,34	3,30	3,29	3,27	3,24	3,27	3,29	W/W
	Heating recovery capacity	14,8	17,4	19,1	22,4	25,6	29,6	33,2	36,5	41,0	46,6	51,5	58,6	65,1	kW
	Water flow rate recovery	0,70	0,83	0,91	1,07	1,22	1,42	1,59	1,74	1,96	2,23	2,46	2,80	3,11	l/s
	Water pressure drop recovery	7	11	13	17	22	18	22	12	16	20	24	20	24	kPa
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	49,2	59,4	64,6	75,5	83,2	100	111	124	137	155	173	200	222	kW
	Total power input	14,9	18,1	19,8	23,1	25,9	30,9	34,2	38,1	42,6	48,2	54,0	60,8	68,1	kW
	EER	3,30	3,28	3,26	3,27	3,21	3,24	3,25	3,25	3,22	3,22	3,20	3,29	3,26	W/W
	Heating recovery capacity	14,3	17,2	18,7	21,9	24,1	29,1	32,2	35,8	39,7	45,0	50,2	58,0	64,5	kW
	Water flow rate recovery	0,68	0,82	0,89	1,05	1,15	1,39	1,54	1,71	1,90	2,15	2,40	2,77	3,08	l/s
	Water pressure drop recovery	7	11	12	17	20	17	20	12	15	19	23	20	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35E5 - W45	Cooling capacity	50,9	60,1	65,8	77,3	88,4	102	115	126	142	161	177	202	225	kW
	Total power input	14,9	17,7	19,6	22,7	26,5	30,8	34,1	37,8	42,7	48,8	54,1	61,2	67,7	kW
	EER	3,42	3,40	3,36	3,41	3,34	3,31	3,37	3,33	3,33	3,30	3,27	3,30	3,32	W/W
	Heating recovery capacity	65,0	76,9	84,5	98,9	114	131	147	162	182	207	229	260	289	kW
	Water flow rate recovery	3,11	3,67	4,04	4,73	5,43	6,28	7,02	7,73	8,70	9,89	10,9	12,4	13,8	l/s
	Water pressure drop recovery	41	57	48	53	59	58	62	56	61	61	62	65	65	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

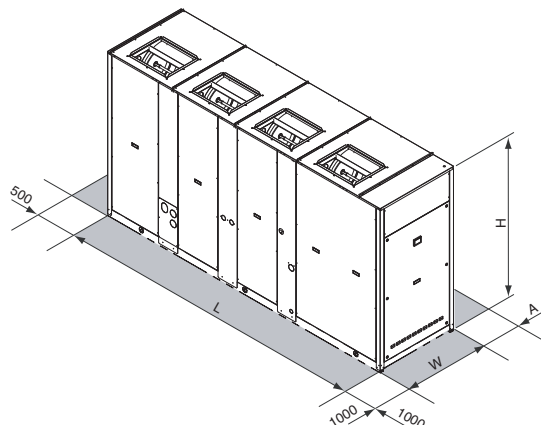
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2501				3343			3343		4097		mm
W			954				1104			1104		1104		mm
H			1930				1793			2193		2193		mm
A				1600							2000			mm
Operating maximum weight	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg

> CGC HE

CONDENSING UNITS FOR INDOOR INSTALLATION



ADAPTIVE
FUNCTION



Available range

Unit type

- SR Condensing unit
SP Heat pump condensing unit
(reversible on the refrigerant side)

Version

- VB Base version
VD Desuperheater version
VR Total recovery version

Acoustic setting up

- AB Base setting up
AS Low noise setting up

Source temperature level

- M Medium temperature level
A High temperature level

Unit description

This series of condensing units satisfies the cooling and heating requirements of residential plants of medium size.

All the units are suitable for outdoor installation and can be connected to a remote heat exchanger properly designed in order to transfer to the plant all the cooling (and heating for reversible units) power generated.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, thermostatic expansion

valve (only for SP), reverse cycle valve, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. The circuit is protected by a safety gas valve, high and low pressure switches.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

All the units are accurately built and individually tested in the factory.

All the units are supplied with refrigerant charge inside.

Only electric and refrigerant connections (between condensing unit and remote heat exchanger) are required for installation.

Options

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control INVERTER (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

(standard for SP)

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Low temperature kit (standard for SP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Remote plate heat exchanger

Liquid line

NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	51,2	60,7	68,5	76,7	90,5	103,0	116	131	145	166	188	214	kW
	Power input	14,8	17,0	19,7	21,8	27,0	30,9	34,3	38,3	42,3	49,5	54,8	63,9	kW
	EER	3,46	3,57	3,48	3,52	3,35	3,33	3,38	3,42	3,43	3,35	3,43	3,35	W/W
SR	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	51,2	60,7	68,5	76,7	90,5	103,0	116	131	145	166	188	214	kW
	Power input	14,8	17,0	19,7	21,8	27,0	30,9	34,3	38,3	42,3	49,5	54,8	63,9	kW
	EER	3,46	3,57	3,48	3,52	3,35	3,33	3,38	3,42	3,43	3,35	3,43	3,35	W/W
SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	49,1	58,2	65,9	73,7	88,2	100,2	112	125	139	160	180	207	kW
	Power input	14,5	16,9	19,3	21,5	26,5	30,0	33,6	37,5	41,4	48,1	53,8	62,2	kW
	EER	3,39	3,44	3,41	3,43	3,33	3,34	3,33	3,33	3,36	3,33	3,35	3,33	W/W
A7C50	Heating capacity	49,2	58,0	65,6	73,6	87,9	99,8	112	125	140	160	180	206	kW
	Power input	15,3	17,8	20,4	22,9	27,4	31,0	34,8	39,0	43,5	50,0	55,9	64,2	kW
	COP	3,22	3,26	3,22	3,21	3,21	3,22	3,22	3,21	3,22	3,20	3,22	3,21	W/W
A7C45	Heating capacity	54,1	63,8	72,2	81,0	96,7	110	123	138	154	176	198	227	kW
	Power input	13,5	15,7	18,0	20,2	24,1	27,3	30,6	34,3	38,3	44,0	49,2	56,5	kW
	COP	4,01	4,06	4,01	4,01	4,01	4,03	4,02	4,02	4,02	4,00	4,02	4,02	W/W
SP	Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5	Cooling capacity	49,1	58,2	65,9	73,7	88,2	100,2	112	125	139	160	180	207	kW
	Power input	14,5	16,9	19,3	21,5	26,5	30,0	33,6	37,5	41,4	48,1	53,8	62,2	kW
	EER	3,39	3,44	3,41	3,43	3,33	3,34	3,33	3,33	3,36	3,33	3,35	3,33	W/W
A7C50	Heating capacity	49,2	58,0	65,6	73,6	87,9	99,8	112	125	140	160	180	206	kW
	Power input	15,3	17,8	20,4	22,9	27,4	31,0	34,8	39,0	43,5	50,0	55,9	64,2	kW
	COP	3,22	3,26	3,22	3,21	3,21	3,22	3,22	3,21	3,22	3,20	3,22	3,21	W/W
A7C45	Heating capacity	54,1	63,8	72,2	81,0	96,7	110	123	138	154	176	198	227	kW
	Power input	13,5	15,7	18,0	20,2	24,1	27,3	30,6	34,3	38,3	44,0	49,2	56,5	kW
	COP	4,01	4,06	4,01	4,01	4,01	4,03	4,02	4,02	4,02	4,00	4,02	4,02	W/W

The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

A35E5 = source : air in 35°C d.b. / plant : evaporation temperature (dew point) 5°C - superheating 5°C

A7C50 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 50°C - subcooling 5°C

A7C45 = source : air in 7°C d.b. 6°C w.b. / plant : condensation temperature (dew point) 45°C - subcooling 5°C

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	88	88	89	89	91	91	91	96	96	97	97	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	73	73	73	78	78	79	79	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	65	65	65	69	69	70	70	71	dB(A)
Sound pressure level at 10 meters	56	56	57	57	59	59	59	64	64	65	65	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Sound power level	85	85	86	86	88	88	88	93	93	94	94	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	70	70	70	75	75	76	76	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	62	62	62	66	66	67	67	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	56	56	56	61	61	62	62	63	dB(A)

The values are referred to units without options and accessories.

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35E5.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	scroll												-
N° compressors / N° refrigerant circuits	2 / 1												n°
Source side heat exchanger type	finned coil												-
Fans type	centrifugal												-
N° fans	1 2 3 4												n°
Liquid line connection	7/8" 1 1/8" 1 3/8"												-
Gas line connection	1 5/8" 2 1/8"												-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	74,9	80,5	95,0	109	117	145	169	188	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	41,9	47,3	58,3	67,3	72,8	88,7	103	113	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	218	269	264	278	278	370	394	384	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	148	179	180	194	194	222	279	277	A

Operative range

Temperature	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	SR, SP	-10*	48	-15	40*	°C
Evaporating temperature (dew point)	SR, SP	1	20	-	-	°C
Condensing temperature (dew point)	SP	-	-	35	60	°C
Water outlet temperature (VD)	SR, SP	30	70	30	70	(°C)
Water outlet temperature (VR)	SR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	Pa

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desuperheater Version (VD) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,4	16,5	19,1	21,1	26,2	30,0	33,2	37,2	41,1	48,0	53,2	62,0	kW
	EER	3,69	3,82	3,73	3,78	3,59	3,57	3,61	3,66	3,67	3,60	3,67	3,58	W/W
	Heating recovery capacity	15,4	18,3	20,7	23,1	27,3	31,1	34,9	39,4	43,6	50,2	56,7	64,5	kW
	Water flow rate recovery	0,74	0,87	0,99	1,10	1,30	1,48	1,67	1,88	2,09	2,40	2,71	3,08	l/s
	Water pressure drop recovery	8	12	15	18	25	20	24	14	18	24	29	24	kPa

SP	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	51,1	60,5	68,5	76,6	91,8	104	117	130	145	166	188	216	kW
	Total power input	14,1	16,4	18,7	20,8	25,7	29,1	32,6	36,4	40,2	46,6	52,2	60,3	kW
	EER	3,62	3,69	3,66	3,68	3,57	3,57	3,59	3,57	3,61	3,56	3,60	3,58	W/W
	Heating recovery capacity	14,8	17,6	19,9	22,2	26,6	30,2	33,9	37,8	42,0	48,2	54,4	62,5	kW
	Water flow rate recovery	0,71	0,84	0,95	1,06	1,27	1,44	1,62	1,81	2,01	2,30	2,60	2,99	l/s
	Water pressure drop recovery	7	11	14	17	24	19	22	13	17	22	27	23	kPa

Total Recovery Version (VR) - NOMINAL performances

SR	Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
A35E5 - W45	Cooling capacity	53,2	63,1	71,2	79,7	94,1	107	120	136	151	173	195	222	kW
	Total power input	14,2	16,4	18,9	20,9	25,9	29,7	32,9	36,8	40,6	47,5	52,6	61,4	kW
	EER	3,75	3,85	3,77	3,81	3,63	3,60	3,65	3,70	3,72	3,64	3,71	3,62	W/W
	Heating recovery capacity	66,8	78,7	89,1	99,6	119	135	151	171	189	218	245	281	kW
	Water flow rate recovery	3,19	3,76	4,26	4,76	5,68	6,47	7,23	8,16	9,03	10,42	11,7	13,4	l/s
	Water pressure drop recovery	43	60	54	53	64	61	65	63	66	67	71	76	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

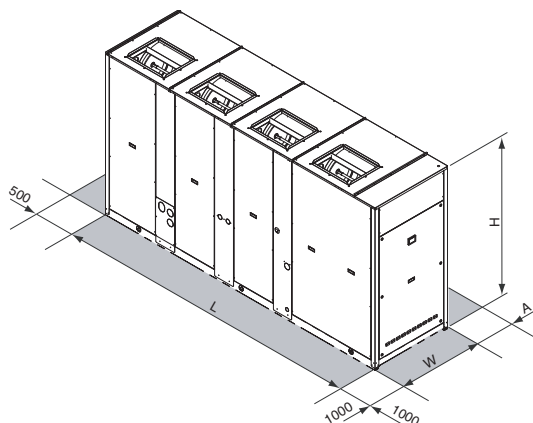
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
L		2501				3343			3343		4097		mm
W		954				1104			1104		1104		mm
H		1930				1793			2193		2193		mm
A			1600						2000				mm
Operating maximum weight	1121	1125	1146	1189	1670	1751	1836	2051	2080	2124	2478	2520	kg

> EGW

CONDENSERLESS UNITS FOR INDOOR INSTALLATION



Unit with closing panels

Available range

Unit type

- IR Condenserless unit
- BR Condenserless unit Brine

Version

- VB Base version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up
- AX eXtra low noise setting up

Unit description

This series of condenserless unit satisfies the cooling and heating requirements of commercial and industrial plants of medium size.

All the units are suitable for indoor installation and can be applied to fan coil plants and radiant floor plants.

The refrigerant circuit is equipped with 2 scroll compressors, mounted on rubber vibration-damper supports, plant side heat exchanger brazed plate-type in stainless steel (AISI 316), complete with thermal insulation shell and differential pressure switch, thermostatic expansion valve or electronic expansion valve (as option), dehydrator filter, solenoid valve to shut-

off the liquid line, shut-off ball valves on the discharge and liquid lines, refrigerant circuit protected by refrigerant safety valve, low and high pressure switches, electrical panel for power and control complete with main breaker power supply with door lock function microprocessor controller with keyboard-display, and phase sequence controller (standard). The units can be chosen in Basic setting up (AB) (unit without closing panels), Low noise setting up (AS), featuring closing panels coated with acoustic material, Extra Low noise setting up (AX) featuring closing panels coated with superior acoustic material and soundproofing jackets on the compressors.

The units are suitable to be combined with remote condensers cooled by air (coil and fans) or remote condensers cooled by water (plates or shell and tube heat exchanger). The electronic controller can manage the numerous ways used on the market for the head pressure control for condensation by air and for condensation by water. A wide range of options and accessories completes the commercial offer. All the units are carefully built in compliance with the current regulations and individually tested.

The units are supplied with charge of NITROGEN in order to avoid the entrance of air inside the refrigerant circuit.

Options

Expansion valve

- thermostatic
- electronic

Suitable for outdoor installation

Accessories

- Rubber vibration dampers
- Remote controller
- Serial Interface Modbus-RS 485
- Programmer clock
- Phase sequence and voltage controller
- Low temperature kit
- High and low pressure gauges
- High temperature thermostat
- Compressors shut-off valves
- Outdoor air sensor
- Water flow switch
- Victaulic hydraulic fittings
- Victaulic bends
- Victaulic water shut-off valves
- Victaulic water filter
- 2-way valve for condensing control
- 3-way valve for condensing control
- Compressors start-up with soft starter
- Compressors power factor correction
- Electrical load protection with thermal magnetic circuit breakers
- Remote condenser cooled by air

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- Adaptive function
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Condensation control
- Remote stand by



NET NOMINAL performances - Standard plants

NET NOMINAL performance - standard plants													
IR		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
C45W7	Cooling capacity	64,8	72,1	85,5	97,2	109	123	138	158	178	201	222	kW
	Power input	17,8	19,5	23,5	26,8	30,2	34,2	38,3	43,6	48,9	55,3	61,6	kW
	EER	3,63	3,69	3,64	3,63	3,60	3,59	3,59	3,61	3,63	3,63	3,60	W/W
	Water flow rate source side	3,12	3,46	4,11	4,67	5,24	5,90	6,62	7,58	8,54	9,66	10,7	l/s
	Pressure drops source side	41	32	35	36	38	36	39	40	42	42	42	kPa
C50W7	Cooling capacity	60,7	67,7	80,6	91,5	102,5	115,4	129,3	148,2	167,0	188,9	208,7	kW
	Power input	19,7	21,7	26,2	29,8	33,5	37,8	42,2	48,1	53,9	61,0	68,0	kW
	EER	3,07	3,12	3,08	3,07	3,06	3,05	3,06	3,08	3,10	3,10	3,07	W/W
	Water flow rate source side	2,91	3,25	3,87	4,40	4,92	5,54	6,21	7,12	8,03	9,08	10,0	l/s
	Pressure drops source side	36	28	31	31	34	32	35	35	37	37	38	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

C50W7 = condensing temperature (dew point) = 50 °C - subcooling = 5°C - plant : water in 12°C out 7°C

C45W7 = condensing temperature (dew point) = 45 °C - subcooling = 5°C - plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	75	76	77	77	77	78	78	79	79	80	80	dB(A)
Sound pressure level at 1 meter	59	60	61	61	61	62	62	63	63	64	64	dB(A)
Sound pressure level at 5 meters	49	50	51	51	51	52	52	53	53	54	54	dB(A)
Sound pressure level at 10 meters	44	45	46	46	46	47	47	48	48	49	49	dB(A)
Low noise setting up (AS)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	71	72	73	73	73	74	74	75	75	76	76	dB(A)
Sound pressure level at 1 meter	55	56	57	57	57	58	58	59	59	60	60	dB(A)
Sound pressure level at 5 meters	45	46	47	47	47	48	48	49	49	50	50	dB(A)
Sound pressure level at 10 meters	40	41	42	42	42	43	43	44	44	45	45	dB(A)
eXtra low noise setting up (AX)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	67	68	69	69	69	70	70	71	71	72	72	dB(A)
Sound pressure level at 1 meter	51	52	53	53	53	54	54	55	55	56	56	dB(A)
Sound pressure level at 5 meters	41	42	43	43	43	44	44	45	45	46	46	dB(A)
Sound pressure level at 10 meters	36	37	38	38	38	39	39	40	40	41	41	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions C50W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Max working pressure (HP-PS)	43											bar
Compressor type	scroll											-
N° compressors / N° refrigerant circuits	2 / 1											n°
Plant side heat exchanger type	stainless steel brazed plates											-
IN/OUT Plant side hydraulic fittings	2" 1/2 VICTAULIC											"
Refrigerant liquid line fitting	28 ODS							35 ODS				mm
Refrigerant gas line fitting	42 ODS											mm

Electrical data

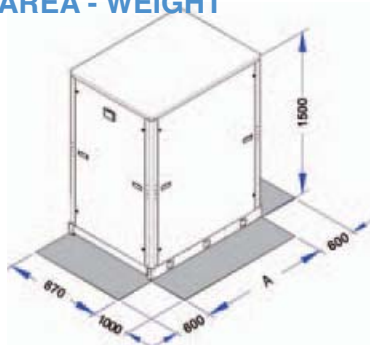
Standard unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
FLA - Full load current at maximum tolerated conditions	45	51	62	68	74	82	90	105	120	142	164	A
FLI - Full load power input at maximum tolerated conditions	26	29	34	40	45	50	55	63	72	83	93	kW
MIC - Maximum instantaneous current of the unit	141	166	204	256	262	309	317	355	370	454	476	A

Operating range

Temperature	Unit type	min	max	
Condensing temp (dew point)	IR, BR	30	60	(°C)
Water outlet temperature plant side	IR	5	20	(°C)
Water outlet temperature plant side	BR	-10	5	(°C)

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT

(reference drawing: unit with closing panel)



Models	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
A	880							1175				mm
Operating maximum weight	368	378	385	501	581	607	632	669	694	724	747	kg

Remote condenser

This series of remote axial condensers uses copper pipes with special internal riffling and a high efficiency fin.

The fin has been specially designed to guarantee a high thermal exchange coefficient with low air pressure drops. By combining both special tubes and fins the following features can be achieved:

- Maximum capacity related to the heat exchanger's dimensions.
- Minimum refrigerant charge.
- The most strict environment standards for sound pollution can be met.

This new series of axial condensers is equipped with fans with scythe-shaped blades to reduce the sound emission. From the noise level point of view, all models can be supplied as basic version (AB), low noise version (AS) or extra low noise version (AX). To guarantee solidity, strength and the maximum resistance to atmospheric agents the bearing and the casing are manufactured with galvanized steel and oven painted with a polyurethane resin (the standard colour is RAL 7035).

Options

- Special fins (Copper, Painted Aluminium, ecc.).
- Special motors
- Vertical / Horizontal air flow
- EC fans



Accessories

All models can be equipped with several accessories as:

- Rubber Vibrations Dampers
 - Modulating control of the fans with cut of phase regulator
 - Modulating control of the fans with inverter regulator
 - Electrical Wiring Box, allows a fast and safe electrical installation of the unit since all wires and thermal protections of the fans are connected inside a waterproof box (IP54) to a terminal block where the installer connect the electrical supply and the fans thermal switches signal.
 - Electrical Panel CE this accessory (like the electrical wiring box) allows a fast and safe electrical installation and moreover simplify the standard and non standard maintenance of the unit.
- The accessory is in fact composed by main electrical switch, fuses and contactors of the fans, transformer to supply an alarm auxiliary relè, terminal block for remote ON-OFF (i.e. sent by the condenserless unit).

Technical data

Unit	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Power supply	400 - 3 - 50											V-ph-Hz
Fan type	axial											-
Max working pressure (PS)	45											bar
Coil exchanger type	Aluminum fins and copper tubes											-

Acoustic performances

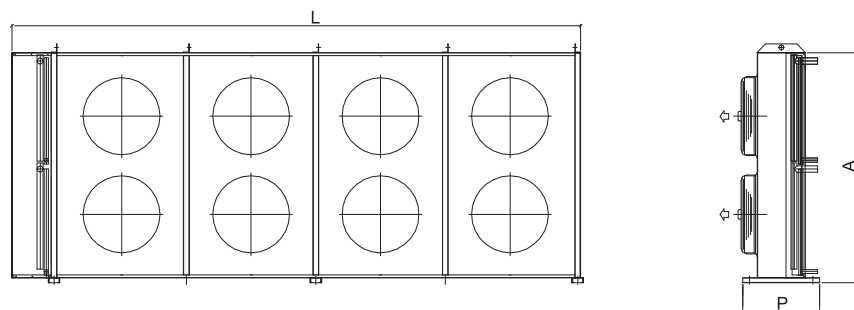
Base setting up (AB)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	80	80	82	83	83	83	83	85	85	85	85	dB(A)
Sound pressure level at 1 meter	63	63	65	66	66	66	66	68	68	68	68	dB(A)
Sound pressure level at 5 meters	53	53	55	56	56	56	56	58	58	58	58	dB(A)
Sound pressure level at 10 meters	48	48	50	51	51	51	51	53	53	53	53	dB(A)
Low noise setting up (AS)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	75	75	76	76	76	76	76	76	77	77	77	dB(A)
Sound pressure level at 1 meter	58	58	57	57	57	59	59	59	60	60	60	dB(A)
Sound pressure level at 5 meters	48	48	47	47	47	49	49	49	50	50	50	dB(A)
Sound pressure level at 10 meters	43	43	42	42	42	44	44	44	45	45	45	dB(A)
eXtra low noise setting up (AX)	70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Sound power level	68	68	68	68	70	70	70	71	71	73	73	dB(A)
Sound pressure level at 1 meter	51	51	51	51	53	53	53	54	54	56	56	dB(A)
Sound pressure level at 5 meters	41	41	41	41	43	43	43	44	44	46	46	dB(A)
Sound pressure level at 10 meters	36	36	36	36	38	38	38	39	39	41	41	dB(A)

Base setting up (AB)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x42	1x42	1x42	1x54	1x54	1x54	n° x Ø
	Liquid	1x35	1x35	1x35	1x28	1x35	1x35	1x35	1x35	1x42	1x42	1x42	n° x Ø
Fan specification	Fan	2	2	3	2	2	2	2	3	3	3	3	n°
	Diameter	630	630	630	800	800	800	800	800	800	800	800	mm
	Air flow rate	5556	5556	8917	11778	10889	10889	10222	17667	16333	15333	15333	l/s
	Power input	1,46	1,46	2,19	4,00	4,00	4,00	4,00	6,00	6,00	6,00	6,00	kW
Standard configuration	Length [L]	2630	2630	3770	3230	3230	3230	3230	4580	4580	4580	4580	mm
	Height [A]	1230	1230	1230	1370	1370	1370	1370	1370	1370	1370	1370	mm
	Depth [P]	600	600	600	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	2630	2630	3770	3230	3230	3230	3230	4580	4580	4580	4580	mm
	Height [A]	990	990	990	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1230	1230	1230	1370	1370	1370	1370	1370	1370	1370	1370	mm
Weight		166	166	221	279	302	302	324	413	447	481	481	kg

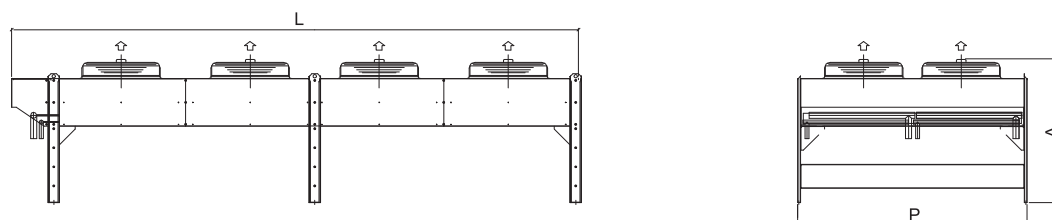
Low noise setting up (AS)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	n° x Ø
	Liquid	1x35	1x35	1x28	1x35	1x35	1x35	1x42	1x42	2x35	2x35	2x35	n° x Ø
Fan specification	Fan	3	3	2	2	2	3	3	3	4	4	4	n°
	Diameter	630	630	800	800	800	800	800	800	800	800	800	mm
	Air flow rate	6250	6250	9389	7944	7444	14083	11917	11167	15222	14111	14111	l/s
	Power input	0,99	0,99	1,96	1,96	1,96	2,94	2,94	2,94	3,92	3,92	3,92	kW
Standard configuration	Length [L]	3770	3770	3230	3230	3230	4580	4580	4580	3230	3230	3230	mm
	Height [A]	1230	1230	1370	1370	1370	1370	1370	1370	2390	2390	2390	mm
	Depth [P]	600	600	800	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	3770	3770	3230	3230	3230	4580	4580	4580	3230	3230	3230	mm
	Height [A]	990	990	1565	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1230	1230	1370	1370	1370	1370	1370	1370	2390	2390	2390	mm
Weight		221	221	279	302	324	413	447	481	502	543	543	kg

eXtra low noise setting up (AX)		70.2	80.2	90.2	105.2	120.2	135.2	150.2	170.2	190.2	215.2	240.2	
Refrigerant connections	Gas	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	2x42	n° x Ø
	Liquid	1x28	1x28	1x35	1x35	1x35	1x42	1x42	2x35	2x35	2x35	2x35	n° x Ø
Fan specification	Fan	2	2	2	2	3	3	3	4	4	4	4	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	800	mm
	Air flow rate	6778	6778	6111	5611	10167	9167	8417	11556	10667	19333	19333	l/s
	Power input	1,18	1,18	1,18	1,18	1,77	1,77	1,77	2,36	2,36	2,36	2,36	kW
Standard configuration	Length [L]	3230	3230	3230	3230	4580	4580	4580	3230	3230	4580	4580	mm
	Height [A]	1370	1370	1370	1370	1370	1370	1370	2390	2390	2390	2390	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	800	mm
Configuration with support brackets	Length [L]	3230	3230	3230	3230	4580	4580	4580	3230	3230	4580	4580	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	mm
	Depth [P]	1370	1370	1370	1370	1370	1370	1370	2390	2390	2390	2390	mm
Weight		279	279	302	324	413	447	481	502	543	680	680	kg

Standard configuration (horizontal air flow)



Configuration with Support Brackets (vertical air flow)



> EVW

CONDENSERLESS UNITS FOR INDOOR INSTALLATION



Available range

Unit type

- IR Condenserless unit
- BR Condenserless unit Brine

Version

- VB Base version
- VD Desuperheaters version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up

Unit description

This range of condenserless units are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. All the units are suitable for indoor installation and can be applied to fan coil plants.

Suitable for indoor installation, as standard the units are equipped with 1 or 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers able to modulate the capacity from minimum 25 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure

switch, 1 or 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters).

The units can be selected as Base setting up (AB) or as Low noise setting up (AS) that provides that compressors are positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material.

The units are suitable to be combined with remote condensers cooled by air (coil and fans) or remote condensers cooled by water (plate or shell and tube heat exchanger). The electronic controller can manage the numerous ways used on the market for the head pressure control for condensation by air and for condensation by water. A wide range of options and accessories completes the commercial offer. All the units are carefully built in compliance with the current regulations and individually tested.

The units are supplied with charge of NITROGEN in order to avoid the entrance of air inside the refrigerant circuit.

Options

Compressor starting

- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection

- standard (fuses)
- thermal magnetic circuit breakers

Evaporator flow switch (mounted)

Evaporator insulation higher thickness

Evaporator electrical heater for winter antifreeze

High and low pressure gauges

Compressor suction shut-off valve

Accessories

Rubber vibration dampers

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Remote condenser cooled by air

CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency.

Available functions :



NET NOMINAL performances - Standard plants

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
C45W7	Cooling capacity	263	291	330	382	444	502	551	661	764	888	1001	1103	kW
	Power input	67,1	73,7	84,2	97	113	128	142	170	195	227	259	280	kW
	EER	3,92	3,95	3,92	3,95	3,93	3,92	3,89	3,88	3,93	3,92	3,87	3,93	W/W
	Water flow rate source side	12,7	14,0	15,9	18,3	21,4	24,1	26,5	31,8	36,7	42,8	48,3	53,0	l/s
	Pressure drops source side	41	32	40	38	48	38	47	47	40	52	53	41	kPa
C50W7	Cooling capacity	248	275	312	359	420	472	520	623	719	840	943	1042	kW
	Power input	73,4	80,2	91,8	105	124	139	154	185	211	249	281	307	kW
	EER	3,37	3,42	3,40	3,42	3,38	3,39	3,38	3,36	3,41	3,37	3,36	3,40	W/W
	Water flow rate source side	11,9	13,2	15,0	17,2	20,2	22,7	25,0	30,0	34,5	40,4	45,4	50,1	l/s
	Pressure drops source side	36	28	36	34	43	34	42	41	35	47	47	36	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

C50W7 = condensing temperature (dew point) = 50 °C - subcooling = 5 °C - plant : water in 12 °C out 7 °C

C45W7 = condensing temperature (dew point) = 45 °C - subcooling = 5 °C - plant : water in 12 °C out 7 °C

Desupeheater Version (VD) - NET NOMINAL performances

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
C45W7 - W45	Cooling capacity	274	303	343	397	461	522	573	687	794	923	1041	1147	kW
	Total power input	65	72	82	94	110	125	138	166	189	221	252	273	kW
	EER	4,19	4,22	4,19	4,22	4,19	4,19	4,15	4,14	4,19	4,17	4,12	4,20	W/W
	HRE	5,11	5,15	5,11	5,14	5,10	5,11	5,07	5,06	5,11	5,09	5,04	5,12	W/W
	Water flow rate	13,2	14,5	16,5	19,1	22,2	25,1	27,6	33,1	38,2	44,5	50,2	55,2	l/s
	Water pressure	44	34	43	41	52	41	51	50	43	57	57	44	kPa
	Heating recovery capacity	60,2	66,5	75,7	86,9	101,1	115	127	152	175	202	231	252	kW
	Water flow rate recovery	2,88	3,18	3,61	4,15	4,83	5,50	6,05	7,27	8,35	9,66	11,0	12,0	l/s
	Water pressure drop recovery	8	9	9	12	11	9	11	9	12	11	9	10	kPa
	Water pressure drop recovery	9	11	11	14	13	10	13	11	14	13	10	13	kPa
C50W7 - W45	Cooling capacity	257	286	325	373	437	491	541	647	747	873	980	1083	kW
	Total power input	71	78	89	102	121	136	150	180	205	243	274	299	kW
	EER	3,60	3,66	3,63	3,65	3,61	3,62	3,60	3,59	3,65	3,59	3,58	3,63	W/W
	HRE	4,53	4,59	4,56	4,58	4,53	4,55	4,53	4,52	4,58	4,51	4,50	4,56	W/W
	Water flow rate	12,4	13,7	15,6	17,9	21,0	23,6	26,0	31,2	35,9	42,0	47,2	52,1	l/s
	Water pressure	39	30	39	37	47	37	46	45	38	50	51	39	kPa
	Heating recovery capacity	66,3	72,8	82,9	95,1	111,9	126	139	167	190	224	252	277	kW
	Water flow rate recovery	3,17	3,48	3,96	4,54	5,35	6,02	6,63	7,97	9,09	10,71	12,1	13,2	l/s
	Water pressure drop recovery	9	11	11	14	13	10	13	11	14	13	10	13	kPa
	Water pressure drop recovery	9	11	11	14	13	10	13	11	14	13	10	13	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit

HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effective power input

C50W7-W45 = condensing temperature (dew point) = 50 °C - subcooling = 5 °C - plant : water in 12 °C out 7 °C / Recovery : water in 40 °C out 45 °C

C45W7-W45 = condensing temperature (dew point) = 45 °C - subcooling = 5 °C - plant : water in 12 °C out 7 °C / Recovery : water in 40 °C out 45 °C

Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
Sound pressure level at 1 meter	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
Sound pressure level at 5 meters	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
Sound pressure level at 10 meters	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
Sound pressure level at 1 meter	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions C50W7.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 9614 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

Technical data

Unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Max working pressure (HP-PS)	20												bar
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	1 / 1						2 / 2						n°
Part load	25 / 100% continuous							12.5 / 100% continuous					
Plant side heat exchanger typex	shell and tube												-
IN/OUT Plant side hydraulic fittings	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	-
Refrigerant liquid line fitting	1x42	1x42	1x42	1x42	1x42	1x54	1x54	2x42	2x42	2x42	2x54	2x54	n° x Ø
Refrigerant gas line fitting	1x67	1x67	1x67	1x67	1x67	1x76	1x76	2x67	2x67	2x67	2x76	2x76	n° x Ø

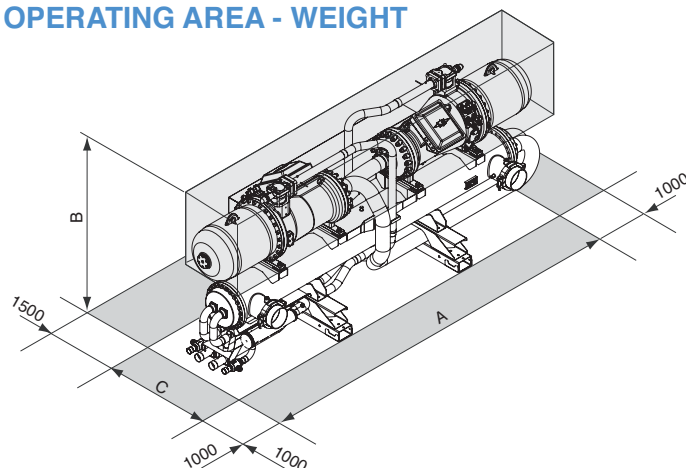
Electrical data

Standard unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
FLA - Full load current at maximum tolerated conditions	162	181	211	232	270	309	340	422	464	540	618	680	A
FLI - Full load power input at maximum tolerated conditions	99	110	129	144	169	190	209	257	287	339	380	418	kW
MIC - Maximum instantaneous current of the unit	520	612	665	436	465	586	650	876	668	735	895	990	A

Operating range

Temperature	Unit type	min	max	
Condensing temp (dew point)	IR, BR	30	60	(°C)
Water outlet temperature plant side	IR	5	15	(°C)
Water outlet temperature plant side	BR	-8	5	(°C)

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



Model	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
A	3900	3900	3900	3900	3900	3900	3900	4320	4400	4400	4400	4400	mm
B	1845	1845	1845	1880	1880	2045	2045	1845	1880	1880	2045	2045	mm
C	1100	1100	1100	1100	1100	1100	1100	1190	1190	1190	1230	1230	mm
Operating maximum weight	1651	1669	1682	2249	2263	2329	2633	3105	4334	4367	4569	4635	kg

Remote condenser

This series of Remote Axial Condensers uses copper pipes with special internal rifling and a high efficiency fin.

The fin has been specially designed to guarantee a high thermal exchange coefficient with low air pressure drops. By combining both special tubes and fins the following features can be achieved:

- Maximum capacity related to the heat exchanger's dimensions.
- Minimum refrigerant charge.
- The most strict environment standards for sound pollution can be met.

This new series of axial condensers is equipped with fans with scythe-shaped blades to reduce the sound emission. From the noise level point of view, all models can be supplied as basic version (AB), low noise version (AS) or extra low noise version (AX).

To guarantee solidity, strength and the maximum resistance to atmospheric agents the bearing and the casing are manu-



red with galvanized steel and oven painted with a polyurethane resin (the standard colour is RAL 7035).

Options

- Special fins (Copper, Painted Aluminium, ecc.).
- Special motors
- Vertical / Horizontal air flow
- EC fans

Accessories

All models can be equipped with several accessories as:

- Rubber Vibrations Dampers
- Modulating control of the fans with cut of phase regulator
- Modulating control of the fans with inverter regulator
- Electrical Wiring Box, allows a fast and safe electrical installation of the unit since all wires and thermal protections of the fans are connected inside a waterproof box (IP54) to a terminal block where the installer connect the electrical supply and the fans thermal switches signal.
- Electrical Panel CE this accessory (like the electrical wiring box) allows a fast and safe electrical installation and moreover simplify the standard and non standard maintenance of the unit.

The accessory is in fact composed by main electrical switch, fuses and contactors of the fans, transformer to supply an alarm auxiliary relè, terminal block for remote ON-OFF (i.e. sent by the condenserless unit).

Technical data

Unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Fan type	axial												-
Max working pressure (PS)	30												bar
Exchanger type	Aluminum fins and copper tubes												-

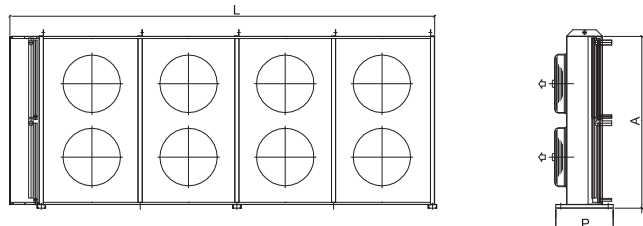
Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	86	88	88	88	89	89	90	90	91	91	93	99	dB(A)
Sound pressure level at 1 meter	70	72	72	72	73	73	74	74	74	74	76	82	dB(A)
Sound pressure level at 5 meters	59	61	61	61	62	62	63	63	63	63	65	71	dB(A)
Sound pressure level at 10 meters	54	56	56	56	57	57	58	58	58	58	60	66	dB(A)
Low noise setting up (AS)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	81	81	81	82	82	83	83	84	84	86	90	90	dB(A)
Sound pressure level at 1 meter	65	65	65	66	66	67	67	67	67	69	73	73	dB(A)
Sound pressure level at 5 meters	54	54	54	55	55	56	56	56	56	58	62	62	dB(A)
Sound pressure level at 10 meters	49	49	49	50	50	51	51	51	51	53	57	57	dB(A)
eXtra low noise setting up (AX)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level	74	74	74	75	75	76	76	77	76	76	83	83	dB(A)
Sound pressure level at 1 meter	58	58	58	59	59	59	59	60	59	59	66	66	dB(A)
Sound pressure level at 5 meters	47	47	47	48	48	48	48	49	48	48	55	55	dB(A)
Sound pressure level at 10 meters	42	42	42	43	43	43	43	44	43	43	50	50	dB(A)

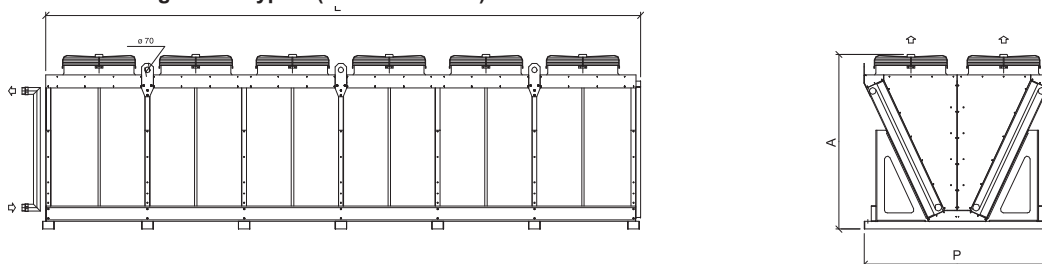
Remote condensers technical data

Base setting up (AB)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x42	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x35	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	n° x Ø
Fan specification	Fan	4	6	6	6	8	8	10	10	12	14	16	12	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	800	900	mm
	Air flow rate	19667	31667	31667	29500	42222	39333	52778	49167	59000	68833	78667	100667	l/s
	Power input	8	12	12	12	16	16	20	20	24	28	32	43.2	kW
Standard configuration	Type	1											2	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	7990	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	800	2400	mm
	Weight	543	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	kg
Configuration with support brackets	Type	3											-	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	mm
	Weight	569	768	768	830	1021	1104	1261	1364	1637	1897	2158	-	kg
Low noise setting up (AS)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x54	2x54	2x54	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x42	2x42	2x42	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x54	2x54	n° x Ø
Fan specification	Fan	6	6	6	8	8	10	10	12	14	16	12	12	n°
	Diameter	800	800	800	800	800	800	800	800	800	800	900	900	mm
	Air flow rate	24667	24667	22500	32889	30000	41111	37500	45000	52500	60000	87000	82333	l/s
	Power input	12	12	7.62	10.16	10.16	12.7	12.7	15.24	17.78	20.32	29.4	29.4	kW
Standard configuration	Type	1											2	-
	Length [L]	4580	4580	4580	5930	5930	7280	7280	8630	9980	11330	7990	7990	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2390	2390	2262	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	800	2400	2400	mm
	Weight	742	742	804	982	1065	1222	1325	1585	1845	2106	2879	3056	kg
Configuration with support brackets	Type	3											-	-
	Length [L]	3230	4580	4580	4580	5930	5930	7280	7280	8630	9980	-	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
	Weight	768	768	830	1021	1104	1261	1364	1637	1897	2158	-	-	kg
eXtra low noise setting up (AX)		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Refrigerant connections	Gas	2x42	2x54	2x54	2x64	2x64	2x76	2x76	2x76	2x76	2x76	2x76	2x76	n° x Ø
	Liquid	2x35	2x35	2x42	2x42	2x42	2x42	2x54	2x54	2x64	2x64	2x64	2x64	n° x Ø
Fan specification	Fan	8	8	8	10	10	12	14	16	14	14	14	14	n°
	Diameter	800	800	800	800	800	800	800	800	800	900	900	900	mm
	Air flow rate	25778	23111	21333	28889	26667	32000	40444	46222	56389	52500	70000	70000	l/s
	Power input	4.7	4.7	4.7	5.9	5.9	7.1	8.3	9.4	9.5	9.5	15.5	15.5	kW
Standard configuration	Type	1											2	-
	Length [L]	5930	5930	5930	7280	7280	8630	9980	11380	9240	9240	9240	9240	mm
	Height [A]	2390	2390	2390	2390	2390	2390	2390	2390	2262	2262	2262	2262	mm
	Depth [P]	800	800	800	800	800	800	800	800	800	2400	2400	2400	mm
	Weight	900	982	1065	1222	1325	1585	1702	1942	3309	3515	3515	3515	kg
Configuration with support brackets	Type	3											-	-
	Length [L]	5930	5930	5930	7280	7280	8630	9980	11380	9240	9240	-	-	mm
	Height [A]	1565	1565	1565	1565	1565	1565	1565	1565	1565	1565	-	-	mm
	Depth [P]	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	-	-	mm
	Weight	939	1021	1104	1261	1364	1637	1754	1994	-	-	-	-	kg

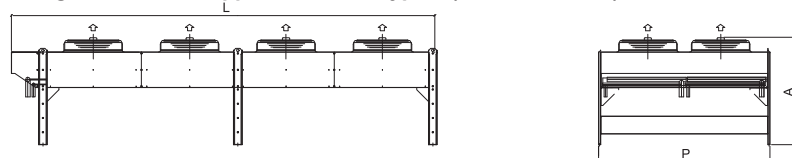
Standard configuration type 1 (horizontal air flow)



Standard configuration type 2 (vertical air flow)



Configuration with Support Brackets Type 3 (vertical air flow)



> Main characteristics terminal units

4XUT TERMINAL UNIT MANAGEMENT

The Ferroli team has developed a relay card enabling the management of up to 4 terminal units with a single control.

This is a relay card complete with single multiple contacts to feed the three speeds of the load with the option of controlling the valves for systems with 2 or 4 pipes through another two relays.



Technical characteristics

- **ENCLOSURE BOX** : made in plastic suitable for indoor installation.
- **ELECTRONIC BOARD** : positioned on a base, the relay card consists of 2 +3 relays, 6 terminal blocks and cable glands.
- **RELAYS** :
 - 2 single-contact relays for controlling valves (systems with 2 pipes and systems with 4 pipes),
 - 3 multiple-contact type relays for controlling the three fan speeds.
- **TERMINAL BLOCKS** : made in plastic and are complete with a spring device for clamping the electrical wires.
To prevent installation errors, the names of the single contacts are given on the board (fig. b).
- **FIXING BRACKET** : The box comes complete with a bracket suitable for fixing to the structure of the Fan Coil TOP FAN (fig. a).
Not suitable for other loads or uses.

4XUT System Operation

A 4XUT System card can control

- 2, 3, 4 exposed fan coil units VM-B, VM-F with 2 or 4 pipes,
- 2, 3, 4 recessed-mounted units VN-3V, VN or VHF3 with 2 or 4 pipes,
- 2, 3, 4 cassette-type fan coil units FCS with 2 or 4 pipes
- 2, 3, 4 Ducted-type fan coils MERCURY SP, or TCX type.

Each output terminal block must be used for a single load.

The control voltage signal from the control, is repeated for a max. of 4 and sent to the loads connected.

The electrical connections between control-card and card-terminal units (indicated with dashes in the diagram opposite) are the installer's responsibility.

Fig.a

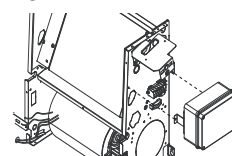
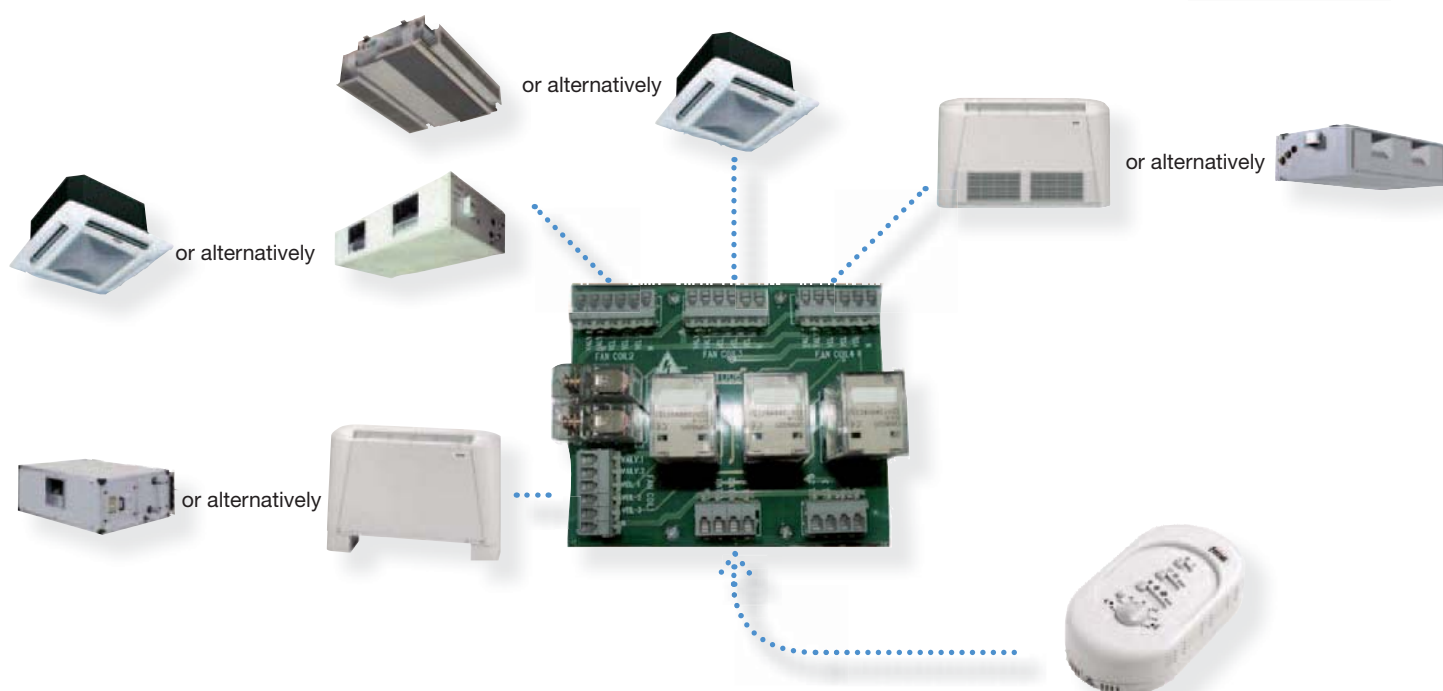


Fig.b



NB: To connect more than 4 units, several 4XUT SYSTEM cards must be used. In this case the cards will be connected in parallel, and not the units. For more than 2 cards, the valve control must be taken from the relay of the first card.

> Main characteristics terminal units

8SF MASTER - SLAVE UNIT MANAGEMENT



The electronic thermostat 8SF is widely used in residential and commercial type applications due to the clear adjustment logic and the quick connection between various modules (only 2 wires in dedicated channel).

The 8SF system consists of a room MASTER terminal, a power module to be installed in each unit, an expansion for systems with 4 pipes or with electrical resistance and a further expansion for including a group of 8 units in a central system through KNX language.

Technical characteristics of components

ROOM MASTER

The thermostat 8SF is the UNIT CONTROL and performs the function of MASTER (fig. a).

Wall-mounting is provided for and it is suitable for combining with wall electrical boxes normally available on the market.

Its careful design features a display, showing the manually programmable functions. Using the side buttons the following operations are possible:

- Room set point adjustment,
- Operation mode (heat-cool-Auto) management,
- Fan speed selection (max-med-min-Auto),
- Display of date and time and weekly timer setting.

The connection to the MAIN board is via two screened wires.

Attention must be paid to the installation of these wires and the polarity of the connection terminals.

MAIN POWER MODULE

This is the main control of the system and must be installed on every unit (fig. b).

The setting of the parameters done from the wall control is analysed by each power board for a maximum of 8 units.

Using Dip-switches the fan coil units can be configured for:

- System with 2 pipes (and thermostating on valve),
- System with 2 pipes (and thermostating on fan),
- System with 2 pipes + electrical resistance,
- System with 4 pipes.

The functions managed by the power module are:

- Control of 3-speed fan,
- Control of electrothermal-type valves in on/off mode,
- Control of electrical resistance in PWM to optimise energy consumption,
- Monitoring water temperature to define summer/winter change over,
- On/st-by switching via the door/window digital input.

Automatic adjustment Set points

- systems with 2 pipes and seasonal S/W change- over; set point 20°C in heating and 25°C in cooling,
- systems with 4 or 2 pipes + resistance and seasonal S/W change over; set point 21°C in heating and 23°C in cooling,
- antifreeze protection (set point 8°C).

An expansion (Fig. c) can be included in the MAIN power module, for configuration in systems with 4 or 2 pipes+Electrical resistance. The system can be integrated with a further expansion (fig. d), enabling the exchange of information with a centralised plant management system through KNX or MODBUS protocol language. The electrical connections between modules are made with quick connectors, whereas screw-type connections are minimised.

LOCAL UNIT

This thermostat, for installation on the unit or wall mounting (to be connected at a max. distance of 3 m) is the SLAVE terminal (fig. e). It enables modification of the parameters set from the MASTER only on the unit to which it is connected, making it partly independent for the choice of Set Point or fan speed with respect to the others. The functions managed are:

- Fan On/off/ speed selection Auto-Low-Medium-High; Auto speed is equivalent to the speed selected by the MASTER,
- Set Point variation cursor (+ or -6°C with respect to the value set in the Master),
- Standby/ON indicator LED
- Availability LEDs for heating (red) and cooling (blue).

Fig.a



Fig.d



Fig.c



Fig.b



Fig.e



Technical characteristics of components

AIR PROBE and WATER PROBE

The PROBES (NTC type) read the air or water temperature, depending on where they are placed.

They are connected to the MAIN power module by a quick connector.

In detail:

Air PROBE:

- Enables the room temperature of the fan coil on which it is placed to be controlled locally, whereas the others refer to the value read by the MASTER. It is supplied with the SLAVE control.

Water PROBE:

- It performs the automatic change-over and HOT START function. It is supplied with the MASTER control (one probe is sufficient for the entire group).

Operation

SINGLE UNIT

In OPTION A indicated below, the system is complete with:

- no.1 MASTER control that defines the Set Point values and fan speeds,
- no.1 MAIN power module, installed on the fan coil, which manages the information coming from the control by means of a PI type adjustment algorithm.
- no.1 Water probe, supplied with the MASTER control for the Hot Start function.

SETTING MAIN BOARD ON EACH SINGLE UNIT

In OPTION B indicated below, the system is complete with

- no.1 - MASTER control that defines the Set Point values and fan speeds,
- no.8 - MAIN power module, installed on the fan coil, which manages the information coming from the control by means of a PI type adjustment algorithm.

Using the Dip-Switches on the MAIN power board it is possible to configure each fan coil in a univocal way:

- FCF 01 configured for system with 2 pipes and thermostating on fan;
- FCF 02 configured for system with 2 pipes and thermostating on valve;
- FCF 03 configured for system with 2 pipes and electrical resistance;
- FCF 04 configured for system with 4 pipes and thermostating on valve;
- FCF 05 configured for system with 2 pipes and thermostating on valve;
- FCF 06 configured for system with 2 pipes and thermostating on valve;
- FCF 07 configured for working independently thanks to the connection with the SLAVE control (air probe supplied standard);
- FCF 08 configured for working independently thanks to the connection with the SLAVE control (supplied standard with air probe).

NB: The electrical connection between modules (indicated in dashes and the installer's responsibility) is made with a two-core cable. Pay attention to the installation of this line and the polarity of the connection terminals.

Option A



Option B





System management

8SF can be integrated with a further expansion. A group of 8 fan coils can be managed as a single node in a system under a **SYSTEM MASTER** for receiving signals up to a max. of 63 nodes.

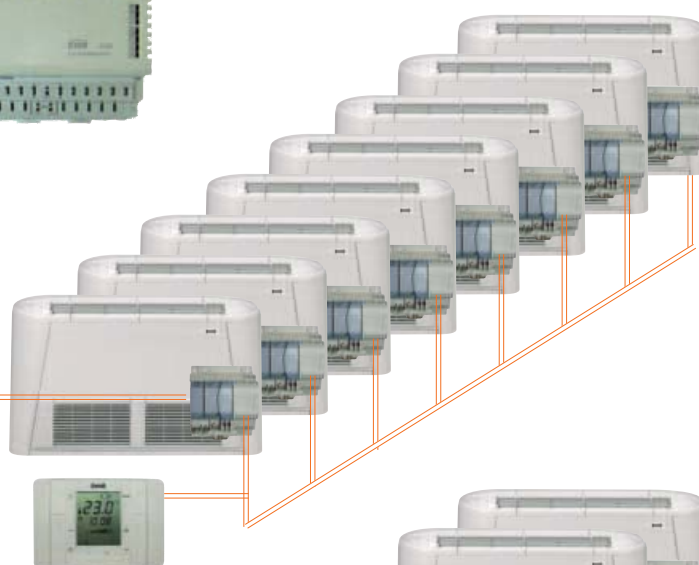


Through a **SYSTEM MASTER TERMINAL** the 63 nodes can be managed and a heating and air conditioning source can be activated.

The **SYSTEM MASTER** receiver and the **SYSTEM MASTER TERMINAL** are the installer's responsibility.

The communication language between the group of 8 fan coils and the components must be the KNX or MODBUS protocol.

Group 1



Group 2

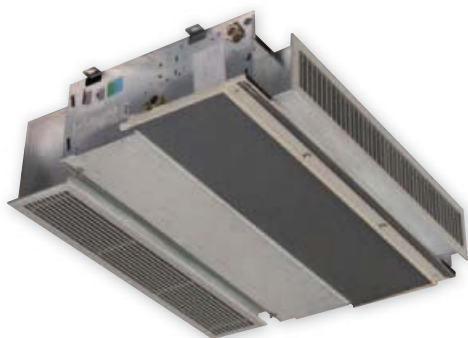


Group 63



> TOP FAN PLUS

FAN COIL



Units Series

Available versions

- VM-B** bottom air intake
- VM-F** frontal air intake
- VN** ceiling concealed 6-speed
- VN-3V** ceiling concealed 3-speed

Exchangers

- 3R** with 3 rows
- 4R** with 4 rows

VB unit specifications

Fan coil unit complying with Machine Directive 89/392 EEC and amendments 91/368 EEC, 93/44 EEC, 93/68 EEC, Low-Voltage Directives 72/23 EEC and Electromagnetic Compatibility Directives EMC 89/36 EEC. The fan coil unit is a terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water). These units are suitable for indoor installation, very compact and amply configurable to meet the requirements of highly qualified designers. The customer or the designer can find version with cabinet and with air intake from bottom (VM-B version) or with frontal air intake and version without cabinet ceiling concealed type with 6 speed fan for a short duct (VN version) or with 3 speed fan. The careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in the residential, commercial or industrial context. Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics

- **SUPPORT STRUCTURE:** in galvanised sheet metal of suitable thickness. There are slots at the back for fixing the unit.
- **HEAT EXCHANGE COIL:** copper pipe type arranged in staggered rows to increase heat exchange and aluminium finning in 3 or 4 rows, locked by mechanical expansion of the pipes. The manifolds have air vents, water drain holes and housing for the supply water temperature probe. The connections are located on the left side panel (facing the unit). The possibility of turning the coil is provided for.
- **CONDENSATE TRAY:** in thermoplastic material to prevent corrosion, it enables either vertical and horizontal unit installation. The drain hole is present on both sides.
- **3-speed FAN-MOTOR** (versions VM-B VM-F and VN-3V): the electric motor, protected against overloads, has three speeds with running condenser always on, directly coupled to the fans and cushioned by elastic supports. The dual-intake centrifugal fans have long blades in order to obtain high air flow-rates with reduced revolutions.
- **6-speed FAN-MOTOR** (versions VN): the electric motor has 6 speeds one or three of which selectable during installation to adjust flow-rate and head to the system's characteristics and enable a short ducting in line with the product's characteristics.

- **AIR FILTER:** regenerable simply by washing with water.

For the VM-B version it is provided with a continuous guide in plastic material to facilitate extraction operations.

For the VM-F version it is positioned in the front bottom air inlet grill.

For the VN and VN-3V version it is complete with frame and wire screen.

- **CABINET** (only VM-B and VM-F): partly in epoxy powder coated steel sheet to ensure high protection against corrosion, and partly in anti-UV thermoplastic material. In the upper part there are air vents and the door for accessing the control panel, both in anti-UV thermoplastic material. The VM-F version also has a front grill in anti-UV thermoplastic material for the air inlet.

Main accessories/Options

ADJUSTMENT CONTROLS

INSTALLATION ON UNIT

Cabinet **switch**

Cabinet **standard thermostat**

Cabinet **advanced thermostat**

REMOTE INSTALLATION

Remote **switch**

Remote **standard thermostat**

Remote **advanced thermostat**

COMMON ACCESSORIES

Hot-start consent thermostat

4XUT system

8SF Zone Master control

8SF main power module

8SF Local unit

Expansion for systems with 4 pipes

Expansion electrical heater management

KNX expansion

Supplementary tray vertical installation

Supplementary tray horizontal installation

3-way valve main coil 3-4 R

2-way valve main coil 3-4 R

Supplementary coil heating only

3-way valve supplementary coil

2-way valve supplementary coil

Single-phase electrical heater

Condensate drain pump

VM-B and VM-F ACCESSORIES

Support feet (VM-B only)

Adjustable fins

Outside air inlet damper with front grill (VM-B only)

Damper motor with single-phase power supply (VM-B only)

Rear closing panel

VN and VN-3V ACCESSORIES

Inlet grill

Straight inlet flange

Perpendicular inlet flange

Straight outlet flange

Perpendicular outlet flange

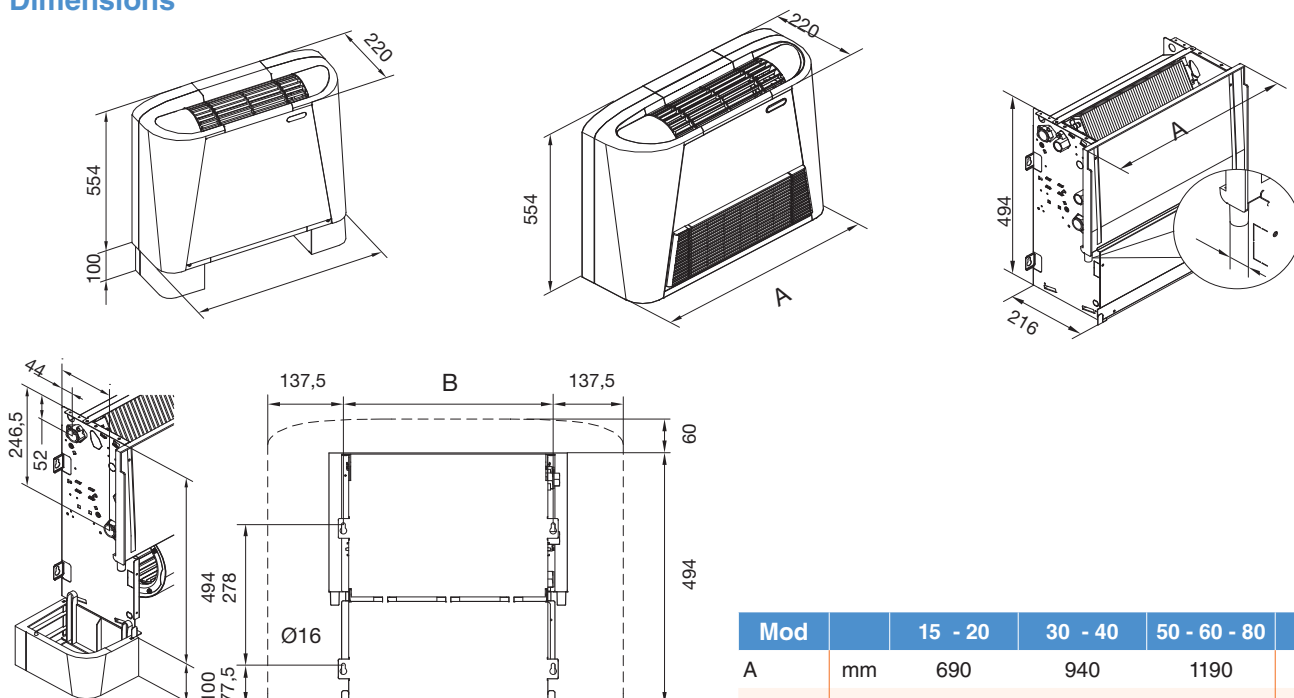
Inlet plenum

Outlet plenum

Outlet grill

Common Data		15	20	30	40	50	60	80	100	120	
N° fan		1	1	1	1	2	2	2	2	2	N°
Air flow rate	max.	215	280	410	515	615	750	1050	1200	1350	m³/h
	med.	170	210	310	400	510	600	850	970	1070	m³/h
	min	110	140	220	290	350	410	570	670	720	m³/h
VN-3V external static pressure		0	0	0	0	0	0	0	0	0	Pa
VN external static pressure		20	20	40	40	40	50	50	30	30	Pa
Heating capacity electrical heater		800	800	1500	1500	2200	2200	2200	2600	2600	W
VM-B unit weight	3 rows	15	15	21	21	28	28	28	36	36	kg
VM-F unit weight	3 rows	14	14	20	20	27	27	27	34	34	kg
VN e VN-3V unit weight	3 rows	11	11	15	15	22	22	22	29	29	kg
VM-B unit weight	4 rows	15,8	15,8	22,5	22,5	30	30	30	39	39	kg
VM-F unit weight	4 rows	14,8	14,8	21,5	21,5	29	29	29	37	37	kg
VN unit weight	4 rows	11,8	11,8	16,5	16,5	24	24	25	32	32	kg
Condensation draining connections		16	16	16	16	16	16	16	16	16	Ø

Dimensions



Mod		15 - 20	30 - 40	50 - 60 - 80	100 - 120
A	mm	690	940	1190	1440
B	mm	415	665	915	1165

3 rows coil data

		15	20	30	40	50	60	80	100	120	
Total Cooling Capacity *	max. (E)	1100	1400	2100	2800	3400	4000	4900	6100	6850	W
	med.	980	1200	1850	2450	3010	3550	4350	5500	6100	W
	min	770	950	1450	1900	2390	2800	3600	4400	5000	W
Sensible Cooling Capacity *	max. (E)	850	1060	1620	2060	2420	2900	3800	4630	5300	W
	med.	735	910	1400	1780	2245	2550	3350	4045	4630	W
	min	560	705	1090	1390	1710	1985	2735	3155	3720	W
Dehumidifying max speed		350	490	670	1050	1150	1550	1600	2100	2200	g/h
Water flow rate * (E)		189	241	361	482	585	688	843	1049	1178	l/h
Water pressure drop (E)		4,4	6,9	14,6	23	14	18	19,1	9,9	12,5	Kpa
Heating Capacity **	max. (E)	2800	3650	5500	6500	7800	9400	12500	14900	15800	W
	med.	2400	3150	4550	5450	6600	7900	10800	12500	13270	W
	min	1800	2250	3400	4000	4930	5800	8300	9600	10000	W
Water flow rate **		241	314	473	559	671	808	1075	1281	1359	l/h
Water pressure drop **		5,1	8,6	17,6	24,2	14	18,1	17,7	10,8	12,1	Kpa
Heating Capacity *** (E)		1700	2050	3200	3850	4300	5100	7200	8080	9300	W
Water pressure drop *** (E)		3,6	5,3	9,6	15,2	13	14,6	15	8	10,1	Kpa
Heating capacity of supplementary coil	max. (E)	1250	1650	2550	3150	3690	4100	5050	6200	6950	W
	med.	1070	1420	2110	2640	3150	3440	4360	5200	6190	W
	min	860	1130	1750	2150	2320	2820	3480	4250	4800	W
Water flow rate		108	142	219	271	317	353	434	533	598	l/h
Water pressure drop		1,8	3	8,7	13,2	4	4,1	6,88	12,8	16,1	Kpa
N° fan		1	1	1	1	2	2	2	2	2	N°
Max power input motor (E)		30	38	33	60	40	70	120	120	160	W
Sound power level (E)	max.	43	47	50	54	51	55	62	61	64	dB(A)
	med.	39	42	43	48	44	49	57	57	59	dB(A)
	min	32	35	36	41	36	38	48	49	51	dB(A)
Sound pressure level	max.	34	38	41	45	42	46	53	52	55	dB(A)
	med.	30	33	34	39	35	40	48	48	50	dB(A)
	min	23	26	27	32	27	29	39	40	42	dB(A)
Water connection 3R	F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	Ø
Water connection 1R	F	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	Ø
Water content 3R coil		0,82	0,82	1,26	1,26	1,88	1,88	1,88	2,42	2,42	l
Water content 1R coil		0,22	0,22	0,36	0,36	0,5	0,5	0,5	0,64	0,64	l

NOTES:

* Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

*** Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

SWL : Sound power levels, referred to 1x10-12 W in dB(A), measured in accordance with Standard ISO 9614 and certified according to the Eurovent certification programme.

Eurovent certification (E) only refers to the Total Sound Power in dB(A) which is therefore the only binding acoustic data.

SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.

(E) Declared data according to the certification programme LCP EUROVENT

4 rows coil data

		15-4	20-4	30-4	40-4	50-4	60-4	80-4	100-4	120-4	
Total Cooling Capacity *	max.	1400	1760	2790	3580	4050	4890	6450	7450	8200	W
	med.	1220	1460	2290	2940	3510	4020	5680	6620	7160	W
	min	900	1090	1700	2200	2500	2980	4000	5020	5250	W
Sensible Cooling Capacity *	max.	1050	1305	2060	2580	2950	3540	4950	5580	6210	W
	med.	890	1050	1640	2070	2510	2900	4200	4850	5330	W
	min	620	770	1200	1560	1770	2130	2910	3600	3820	W
Dehumidifying max speed		500	650	1050	1450	1580	1930	2330	2650	2850	g/h
Water flow rate *		240,8	302,72	479,88	615,76	696,6	841,08	1109,4	1281,4	1410,4	l/h
Water pressure drop		6	9	9	14	14	21	36	19	23	Kpa
Heating Capacity **	max.	3050	3950	5880	6950	8350	10100	13200	15800	16900	W
	med.	2580	3300	4730	5750	7260	8270	11300	13400	14310	W
	min	1900	2400	3600	4430	5460	6080	8450	10250	10500	W
Water flow rate **		262,3	339,7	505,68	597,7	718,1	868,6	1135,2	1358,8	1453,4	l/h
Water pressure drop **		5	8	7	10	11	16	27	15	18	Kpa
Heating Capacity ***		1850	2380	3460	4250	5000	5800	8100	9300	10500	W
Water pressure drop ***		5	8	8	13	12	18	32	16	20	Kpa
N° fans		1	1	1	2	2	2	2	2	2	N°
Max power input motor		35	38	55	76	75	85	144	163	200	W
Sound power level	max.	45	48	52	54	53	55	61	63	65	dB(A)
	med.	39	42	45	47	46	50	58	59	60	dB(A)
	min	32	35	39	41	37	39	48	51	52	dB(A)
Sound pressure level	max.	36	39	43	45	44	46	52	54	56	dB(A)
	med.	30	33	36	38	37	41	49	50	51	dB(A)
	min	23	26	30	32	28	30	39	42	43	dB(A)
Water connection 4R	F	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Water content 4R coil		1,09	1,09	1,68	1,68	2,51	2,51	2,51	3,23	3,23	l

NOTES:

* Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

*** Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

SWL : Sound power levels, referred to 1x10-12 W in dB(A), measured in accordance with Standard ISO 9614 and certified according to the Eurovent certification programme.

Eurovent certification (E) only refers to the Total Sound Power in dB(A) which is therefore the only binding acoustic data.

SPL : sound pressure in a 100 m3 place with reverberation time of 0.5 seconds.



Units Series

Unit type

- 2T 2 pipes systems
- 4T 4 pipes systems

Unit version

- Standard control wire
- Rem infrared control

Unit specifications

Fan coil cassette type unit complying with Machine Directive 89/392 EEC and amendments 91/368 EEC, 93/44 EEC, 93/68 EEC, Low-Voltage Directives 72/23 EEC and Electromagnetic Compatibility Directives EMC 89/36 EEC.

The cassette type fan coil unit is a terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water). These units are suitable for indoor installation, very compact and amply configurable to meet the requirements of highly qualified designers.

The centrifugal-axial fan allows the intake and outlet side of the 4 outputs contained to reduce the noise levels.

The careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in the residential, commercial or industrial context.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

- **SUPPORT STRUCTURE:** in galvanised steel sheet, insulated externally and internally to prevent heat loss and condensation.
- **HEAT EXCHANGE COIL:** made with copper pipes arranged in staggered rows and with corrugated aluminium finning, locked by mechanical expansion of the pipes.
- **FRONT GRILL:** in thermoplastic material, consisting of an attractively designed inlet grill complete with filter and four air-flow diverting fins. Intake occurs in the middle part of the grill, whereas delivery occurs through the manually-adjustable perimeter slots.
- **AIR FILTER:** situated inside the inlet grill and easily removed, it is made from regenerable materials, cleanable simply by washing.
- **CONDENSATE TRAY:** in plastic material, of considerable capacity complete with condensate drain pipe sized for elimination of the water even in critical conditions. A device that raises the condensate from the collection tray to the drain level is fitted standard.
- **FAN MOTOR:** no.1 directly coupled type, the unit is equipped with a three-speed motor with internal thermal protection and a mixed flow fan (axial-centrifugal) in plastic material. Single-phase power supply T=230V.
- **ELECTRIC BOARD:** fitted inside the unit for easy access during installation, complete with connectors for quick electrical connections.

Installation options

The units have pre-cut side openings allowing the unit to be connected by means of a intake duct to a grill for external air change, or conveying treated air to an adjoining room.

Main accessories/Options

- Remote [switch](#)
- Remote [standard thermostat](#)
- Remote [advanced thermostat](#)
- [Hot-start consent thermostat](#)
- [4XUT system](#)
- [Main coil 3-way valve](#)
- [Supplementary coil 3-way valve](#)

MODELLO		04	08	10	12	16	20	04-4T	10-4T	20-4T	
Versione		2 Tubi						4 Tubi			
Potenza frigorifera (1)	max	2400	4000	4700	6300	7600	10000	1900	4000	9800	W
	med	1800	2850	3500	4500	5100	7100	1430	3050	7300	W
	min	1550	1900	2850	3400	3170	3900	1230	2500	4100	W
Portata acqua (2)		0,11	0,19	0,22	0,30	0,36	0,48	0,09	0,19	0,47	l/s
Perdite di carico lato acqua (1)(2)		9	12	20	22	14	24	10,8	19,7	30	kPa
Potenza Termica (3)	max	3800	5000	6600	8700	10800	13900	-	-	-	W
	med	3000	4090	4800	6300	7300	10000	-	-	-	W
	min	2600	2410	4050	4700	4300	5400	-	-	-	W
Portata acqua (3)		0,11	0,19	0,22	0,30	0,36	0,48	-	-	-	l/s
Potenza Termica (4)	max	7110	9770	11760	14600	18000	24500	1900	4610	9000	W
	med	5600	8000	8500	10800	13200	17500	1440	3500	7900	W
	min	4850	4700	7200	8200	8400	9850	1240	2730	5100	W
Portata acqua (4)		0,17	0,23	0,28	0,35	0,43	0,6	0,05	0,11	0,22	l/s
Alimentazione		230-1-50						V-F-Hz			
Portata d'aria ventilatore interno	max	660	700	850	1100	1300	1750	660	850	1750	m ³ /h
	med	450	490	600	770	910	1220	450	600	1220	m ³ /h
	min	360	300	470	550	550	700	360	470	700	m ³ /h
Potenza sonora	max	49	54	57	49	56	63	49	58	63	dB(A)
	med	38	45	48	40	49	55	38	50	55	dB(A)
	min	33	32	42	34	40	42	33	42	42	dB(A)
Pressione sonora (5)	max	41	46	49	41	48	55	41	50	55	dB(A)
	med	30	37	40	32	41	47	30	42	47	dB(A)
	min	25	24	34	26	32	34	25	34	34	dB(A)
Potenza assorbita	max	70	85	95	85	120	200	70	110	200	W
	med	45	55	75	51	75	140	45	75	140	W
	min	35	35	55	33	40	70	35	55	70	W
N° ventilatori		1						n°			
Peso unità completa di kit griglia		21,5	22,5	22,5	46	48	51	21,5	22,5	51	kg
Attacchi idraulici		3/4	3/4	3/4	1	1	1	3/4	3/4	1	"
Attacchi scarico condensa(6)		25	25	25	25	25	25	25	25	25	mm

NOTES:

* Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

*** Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

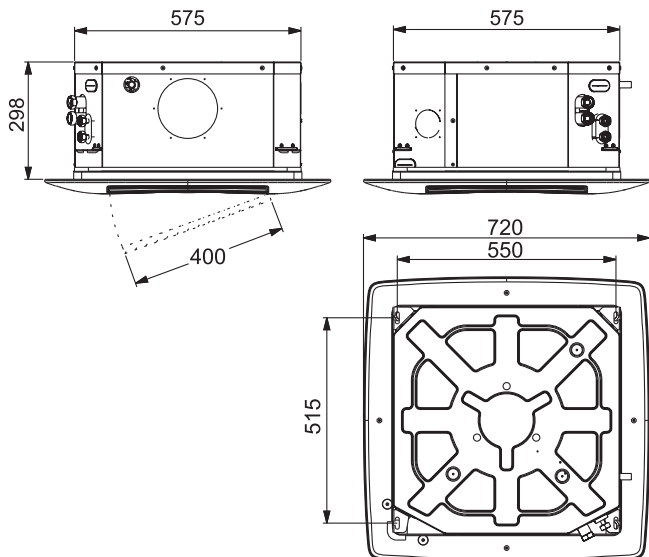
SWL : Sound power levels, referred to 1x10-12 W in dB(A), measured in accordance with Standard ISO 9614 and certified according to the Eurovent certification programme. Eurovent certification (E) only refers to the Total Sound Power in dB(A) which is therefore the only binding acoustic data.

SPL : sound pressure in a 100 m³ place with reverberation time of 0.5 seconds.

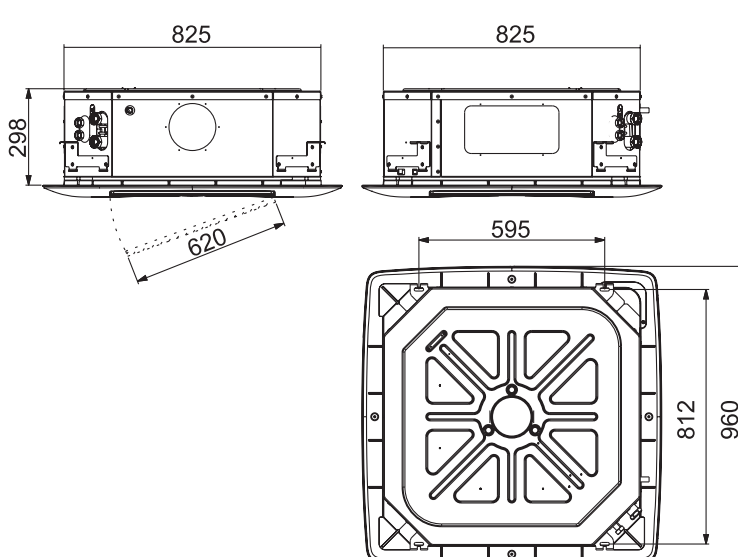
(E) Declared data according to the certification programme LCP EUROVENT

Overall dimensions

Mod. 04-08-10



Mod. 12-16-20



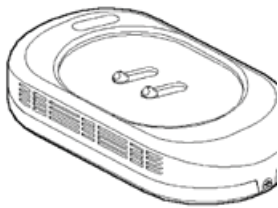
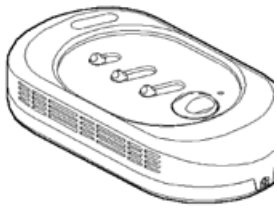
STANDARD VERSION

The accessories available for this category are:

• Command and Control panels

A number of panels are available for remote wall-mounting, comprising three different types of control, switch, basic thermostat and evolved thermostat.

The table gives the various control panels available, with their main functions.

	CMR-F - Remote switch	TAR-F - Remote standard thermostat	TER-F - Remote advanced thermostat
Panel type			
Main Functions	- Unit On/Off - Speed manual selection	- Unit On/Off - Fan speed manual selection (3 speeds) - Heating/cooling mode manual/automatic selection - Set point	- Unit On/Off - Fan speed manual selection (3 speeds) - Heating/cooling mode manual/automatic selection - Set point

• VTV - 3-way valve (compulsory for operation in cooling mode)

The valve is necessary for controlling the room temperature, and for shutting off the flow of chilled water to the coil in case of an anomalous rise in the condensation water level.

The use of this valve is compulsory if the unit is used in summer Cooling mode, to avoid excessive cooling of the unit when the fan is stopped and therefore prevent condensate forming on the casing of the machine.

The kit is complete with copper fittings and 3-way valves with ON/OFF electrothermal actuator, arranged for 230V power supply and thermal insulator.

The valve is controlled by the above-mentioned series of thermostats.

Two 3-way valves are necessary for the version with 4 Tubes.

• TC-F - Consent thermostat

This accessory must be combined with the "switch" control panel and allows fan activation to be disabled whenever the coil temperature has not reached acceptable working values during operation in heating mode.

ACCESSORIES COMBINATION

Version		2 PIPE SYSTEM						4 PIPE SYSTEM		
ACCESSORY		04	08	10	12	16	20	04-4T	10-4T	20-4T
CONTROLS	CMR-F	•	•	•	•	•	•			
	TAR-F	•	•	•	•	•	•			
	TER-F							•	•	•
3-WAY VALVE	VTV 1 B	•	•	•				•	•	
	VTV 2 B				•	•	•			•
	VTV 3 B(1)							•	•	
	VTV 2 B									•
HOT-START CONSENT THERMOSTAT	TC-F (NB)	•	•	•	•	•	•			

(1): 3-way valve for Secondary Coil of versions with 4 pipes.

(NB): Combinable only with Remote Switch (CMR-F).

REM B VERSION

The remote control (Fig. 1) has a series of keys and a display which visualizes all the activated functions and the various parameters the user and installer need in order to correctly use the unit itself

1) Display. Display the setting condition

Keys functions Fig 1 descriptions

- A.** key to select the operating mode
- B.** key to turn the air conditioner on and off
- C.** keys to adjust ambient temperature and the timer: (▲) to increase
- D.** keys to adjust ambient temperature and the timer: (▼) to decrease
- E.** key to set the fan speed by the choosing Automatic - low - mid - high.
- F.** Personalised control button
- G.** Personalised settings button
- H.** Louvre control button
- I.** ON timer button
- J.** daily timer button (Everyday)
- K.** Cancel timer button
- L.** OFF timer button
- M.** overnight button to set/cancel the Sleep mode regardless of the operating mode of the conditioner
- N.** Current time adjusting button
- O.** Reset Key

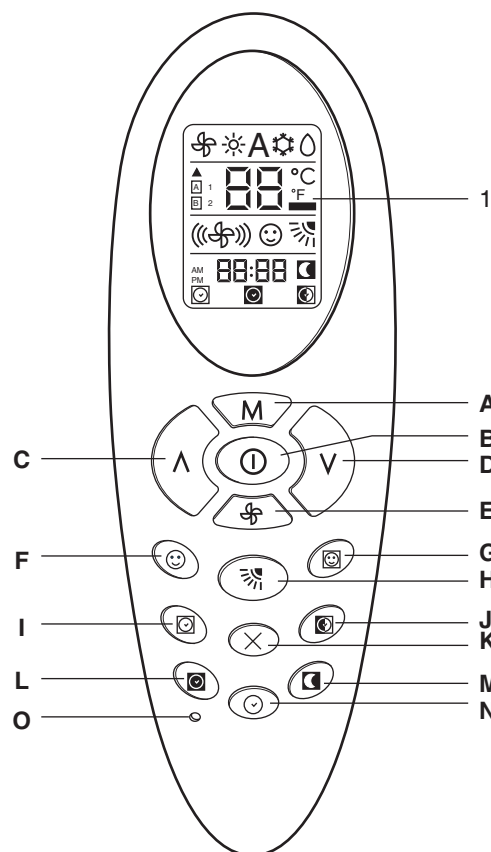


Fig. 1

Display of selected functions Fig 2

1. Operating mode (from left to right):

- Ventilation (fan only)
- Heating (According to the unit configuration)
- Automatic (According to the unit configuration)
- Cooling and dehumidification
- Dehumidification only

2. Signal transmission symbol

3. Temperature selected

4. Address selector

5. Temperature unit of measurement (°C or °F)

6. Unit configuration

7. Batteries exhausted indicator

8. Louvre positioning (Flap)

9. Fan speed

10. Personalisation active

11. ON timer selected

12. Night timer active

13. Daily timer active (Everyday)

14. ON timer, OFF timer and current time

15. OFF timer selected

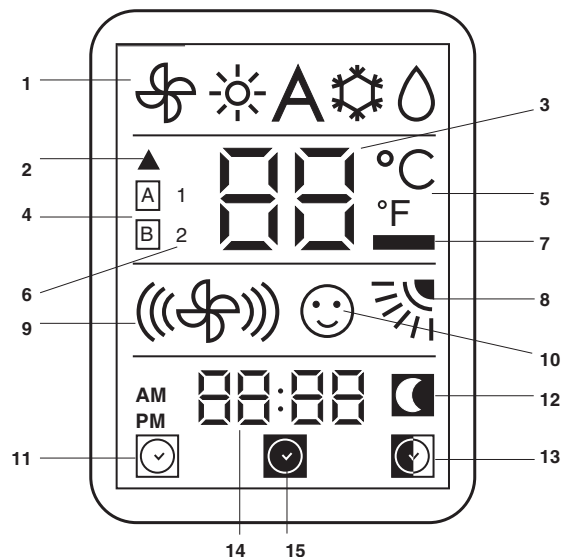


Fig. 2

ACCESSORIES COMBINATION

Version		2 PIPE SYSTEM						4 PIPE SYSTEM		
ACCESSORY		04	08	10	12	16	20	04-4T	10-4T	20-4T
3-WAY VALVE	VTV 1 B	•	•	•				•	•	
	VTV 2 B				•	•	•			•
	VTV 3 B (1)							•	•	
	VTV 2 B									•

(1): 3-way valve for Secondary Coil of versions with 4 pipes.



TOP FAN remote control specifications

Remote control with LCD display complete with support bracket for wall fixing. enabling the following functions:

Unit ON/OFF

Operation mode selection

- Auto, Heat, Cool, Fan (only if the valve accessory is present)

Ventilation speed

- Max, Med, Min, Auto

Set Point

Timer

The remote control display shows:

Operation mode

Selected fan speed

Set point value

Timer activation

Time setting



Also available for VHF3

Exposed TOP FAN fan coil receiver

Positioned on the front panel of the unit, it is complete with Timer LED (yellow), On LED (green) and emergency ON/OFF button and reception zone.

The system is completed with the board inside the unit. The system is supplied already factory-tested and installed.



Ceiling concealed TOP FAN wall receiver

The receiver is supplied in case of ceiling concealed units and is positioned exposed on the false ceiling. It is complete with Timer LED (yellow), On LED (green) and emergency ON/OFF button and reception zone.

It comes with a multicore cable (max. length 0.8 m) for quick connection and electronic board for installing on the unit. The system is factory-tested, whereas positioning the receiver is up to the installer.



FCS remote control specifications

Remote control with LCD display complete with support bracket for wall fixing. enabling the following functions:

Unit ON/OFF

Operation mode selection

- Auto, Heat, Cool, Fan (only if valve accessory is present)

Ventilation speed

- Max, Med, Min, Auto

Set-Point

Air Sweep for air flow adjustment

Timer

The remote control display shows:

Operation mode

Selected fan speed

Set point value

Timer activation

Time setting

Signal sent symbol

Fin position





> VHF3

CEILING CONCEALED FAN COIL



Units Series

Type unit

VHF3 2T

2 pipes systems

VHF3 4T

4 pipes systems

Unit specifications

Ceiling concealed fan coil, complying with Machine Directive 89/392 EEC and amendments 91/368 EEC, 93/44 EEC, 93/68 EEC, Low-Voltage Directives 72/23 EEC and Electromagnetic Compatibility Directives EMC 89/36 EEC.

The ceiling concealed fan coil unit terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water).

These units are suitable for indoor installation, very compact and are built to adapt to the various types of system design and meet the requirements of highly qualified designers.

The careful design of the main components, refined styling and the flexibility of the product make it suitable for any type of installation in residential, commercial or industrial applications.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics of versions

■ **SUPPORT STRUCTURE:** in aluzink sheet, lined with a suitable thickness of polyethylene and polyester to prevent heat loss, condensation and for soundproofing.

■ **AIR FILTER:** easily removed from bottom or side, it can be cleaned simply by washing with water.

■ **HEAT EXCHANGE COIL:** made with copper pipes arranged in staggered rows to increase heat exchange efficiency along with aluminium fins, locked by the expansion of the pipes during production. Complete with water inlet/outlet manifolds.

■ **CONDENSATE TRAY:** made in galvanised sheet steel, complete with section for connection to the discharge line.

■ **FAN MOTOR:** direct drive type, the unit is equipped with a three-speed fan motor assembly with internal thermal protection and a startup capacitor always on, with a blade that is statically and dynamically balanced to minimise noise and vibration.

■ **ELECTRICAL CONNECTIONS:** The unit comes complete with a protected electrical terminal block for making the connection to the various available adjustment controls.

Main accessories/Options

Remote [switch](#)

Remote [standard thermostat](#)

Remote [advanced thermostat](#)

[Hot-start](#) consent thermostat

[4XUT system](#)

[Relay Kit](#)

[8SF Zone Master control](#)

[8SF main power module](#)

[8SF local unit](#)

[Expansion](#) for systems with 4 pipes

[Expansion](#) for electrical resistance management

[KNX expansion](#)

[Supplementary tray](#)

[Main coil 3-way valve](#)

[Outlet plenum](#)

[Inlet grill](#)

[Inlet plenum](#)

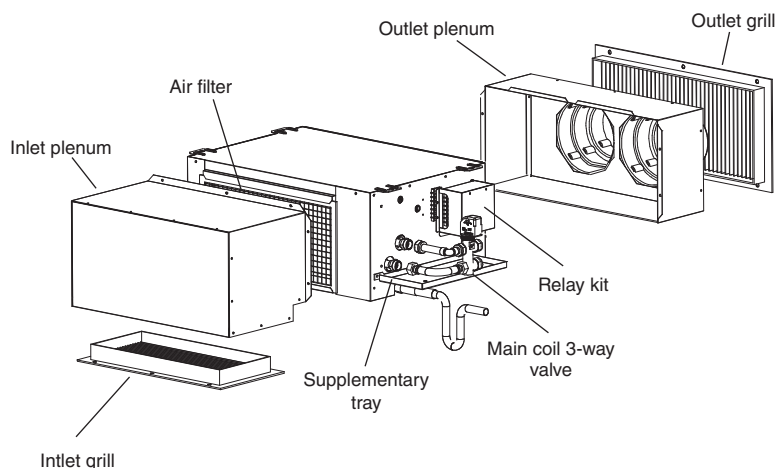
[Outlet grill](#)

[Standard air filter](#)

[Air filter Class G2](#)

[REM](#)

NB: In case of electrical connection of the unit to Ferroli thermostats, the unit must be fitted with the relay kit accessory (KR).



Common data		05	08	10	12	14	19	21	28	
		2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	2T - 4T	
Air flow rate	Max	800	1.100	1.300	1.750	1.800	2.700	3.400	4.000	m³/h
	Med	630	850	950	1.100	1.150	2.250	2.700	3.400	m³/h
	Min	430	630	730	750	800	1.700	2.100	2.900	m³/h
External static pressure****		50	50	50	50	50	50	50	50	Pa
Supply		230-150								
N° fans		1	2	2	2	2	2	2	2	N°
N° motor		1	1	1	1	1	1	1	1	N°
n° speed		3	3	3	3	3	3	3	3	N°
Power input motor		100	109	115	220	225	345	450	730	W
2 - PIPES		05-2T	08-2T	10-2T	12-2T	14-2T	19-2T	23-2T	28-2T	
Heating Capacity *	Max	5.800	9.900	10.900	14.300	16.100	22.300	27.200	32.600	W
	Med	4.850	7.850	8.550	9.650	10.500	19.200	23.400	29.900	W
	Min	3.600	6.050	6.700	6.900	7.200	15.700	20.200	26.200	W
Water flow rate*		826	1.393	1.703	2.116	2.356	3.285	3.922	4.799	l/h
Water pressure drop *		29	32	40	46	34	42	37	38	kPa
Cooling Capacity ***	Total	Max	4.800	8.100	9.900	12.300	13.700	19.100	22.800	W
	Sensible	Max	3.460	5.600	6.800	8.590	9.540	13.400	16.400	W
	Total	Med	4.200	7.150	7.800	9.100	9.800	16.800	20.100	W
	Sensible	Med	2.950	4.830	5.240	6.100	6.650	11.550	14.100	W
	Total	Min	3.250	5.700	6.150	6.500	6.950	14.200	17.800	W
	Sensible	Min	2.200	3.780	4.050	4.280	4.550	9.560	12.250	W
Water flow rate		826	1.393	1.703	2.116	2.356	3.285	3.922	4.799	l/h
Water pressure drop		35	39	49	56	42	52	45	47	kPa
N° Rows coil		3	4	4	4	4	4	4	4	N°
Water content		1,11	2,63	3,11	3,34	4,45	4,67	6	7,51	l
Water connection		F 3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Weight unit		20	32	35	48	52	61	68	81	kg
4 - PIPES		05-4T	08-4T	10-4T	12-4T	14-4T	19-4T	23-4T	28-4T	
Heating Capacity **	Max	4.050	6.100	7.450	9.450	11.550	14.000	17.900	21.300	W
	Med	3.400	4.950	5.800	6.700	8.200	12.300	15.400	18.800	W
	Min	2.600	3.900	4.600	4.800	5.900	10.100	12.600	16.800	W
Water flow rate **		348	525	641	813	993	1.204	1.539	1.832	l/h
Water pressure drop **		34	11	20	10	24	11	30	24	kPa
Cooling Capacity ***	Total	Max	3.450	6.700	7.950	9.850	11.700	14.800	22.100	W
	Sensible	Max	2.850	5.180	6.050	7.700	9.050	11.750	17.250	W
	Total	Med	3.100	5.700	6.500	7.500	9.000	13.300	20.300	W
	Sensible	Med	2.450	4.300	4.840	5.540	6.700	10.350	15.520	W
	Total	Min	2.500	4.720	5.400	5.500	6.900	11.250	18.600	W
	Sensible	Min	1.940	3.450	3.940	4.100	4.980	8.450	10.450	W
Water flow rate***		593	1.152	1.367	1.694	2.012	2.546	3.165	3.801	l/h
Water pressure drop **		36	38	28	48	34	34	36	34	kPa
N° Rows heating coil		1	1	1	1	1	1	1	1	N°
Water content heating coil		0,37	0,66	0,78	0,84	1,11	1,17	1,5	1,88	l
Water connection heating coil		F 3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
N° Rows cooling coil		2	3	3	3	3	3	3	3	N°
Water content cooling coil		0,74	1,97	2,33	2,51	3,34	3,5	4,5	5,63	l
Water connection cooling coil		F 3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	"
Weight unit		21	33	36	49	53	63	70	83	kg

NOTES:

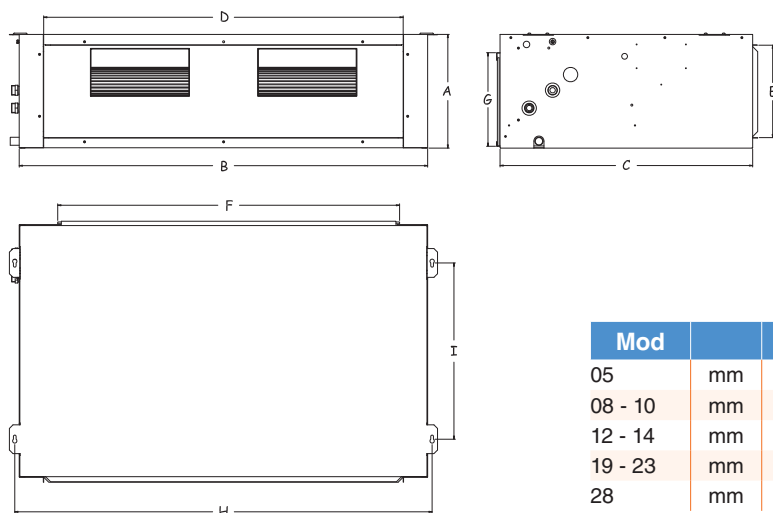
*** Room Air T=27°C D.B. / 19°C W.B. , IN/OUT water 7°/12°C, nominal air flow-rate; For medium and minimum fan speed, water delivery as in maximum speed.

** Room Air T=20°C D.B. , IN/OUT water 70°/60°C, nominal air flow-rate; for medium and minimum fan speed, water delivery as in maximum speed.

* Room Air T=20°C D.B. , inlet water 50°C, water delivery as in cooling; Values referred to nominal air flow-rate.

**** Units at various speeds without filter

Dimensions



Mod		A	B	C	D	E	F	G	H	I
05	mm	290	640	475	550	235	475	260	665	320
08 - 10	mm	290	1005	650	915	235	950	260	1030	430
12 - 14	mm	319	1135	700	1000	260	950	260	1160	480
19 - 23	mm	360	1330	765	1200	300	1300	320	1355	540
28	mm	360	1635	765	1200	300	1300	320	1660	540

> MERCURY SP

DUCTED FAN COIL



Units Series

Type unit

MERCURY SP horizontal unit

Unit specifications

Ducted fan coil complying with Machine Directive 89/392 EEC and amendments 91/368 EEC, 93/44 EEC, 93/68 EEC, Low-Voltage Directives 72/23 EEC and Electromagnetic Compatibility Directives EMC 89/36 EEC.

The ducted fan coil unit is a terminal for the treatment of room air in the summer season (coil supplied with cold water) and in winter (coil supplied with hot water).

These units are suitable for indoor installation, very compact and amply configurable to meet the requirements of highly qualified designers.

The careful design of the main components, refined styling and the versatility of the product make it suitable for any type of installation in the residential, commercial or industrial context.

Installation therefore only requires the electrical and hydraulic connections.

Construction characteristics

- **SUPPORT STRUCTURE:** in aluzink sheet, lined with a suitable thickness of polyethylene and polyester to prevent heat loss, condensation and for soundproofing.
- **AIR FILTER:** easily removed from bottom or side, it can be cleaned simply by washing with water.
- **HEAT EXCHANGE COIL:** made with copper pipes arranged in staggered rows to increase heat exchange efficiency along with aluminium fins, locked by the expansion of the pipes during production. Complete with water inlet/outlet manifolds.
- **CONDENSATE TRAY:** made in galvanised sheet steel, complete with section for connection to the discharge line.
- **FAN MOTOR:** direct drive type, the unit is equipped with a three-speed fan motor assembly with internal thermal protection and a startup capacitor always on, with a blade that is statically and dynamically balanced to minimise noise and vibration.
- **ELECTRICAL CONNECTIONS:** The unit comes complete with protected electrical terminal block for making the connection to the various available adjustment controls.

Main accessories/Options

Remote switch

Remote [standard thermostat](#)

Remote [advanced thermostat](#)

[Hot-start](#) consent thermostat

[4XUT system](#)

[Relay Kit](#)

[8SF Zone Master control](#)

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[Post heating section](#)

[Post-heating 3-way valve](#)

[Outlet plenum](#)

[Inlet grill](#)

[Inlet plenum](#)

[Outlet grill](#)

[Standard air filter](#)

[Air filter Class G2](#)

NB: In case of electrical connection of the unit to Ferroli thermostats, the unit must be fitted with the relay kit accessory (KR).

