

> CGA HE

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.

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

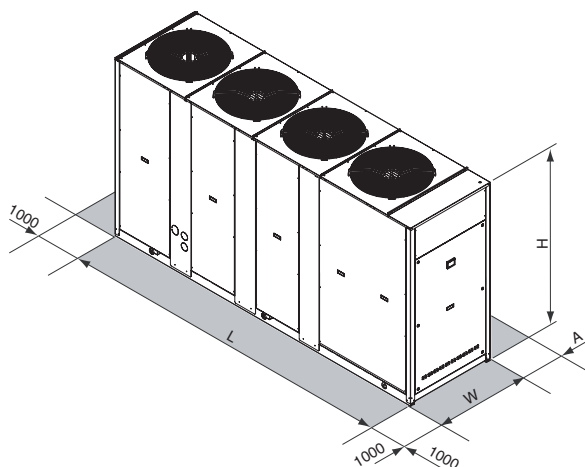
CONTROL SYSTEM

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	635	639	639	680	705	953	1034	1065	1181	1240	1292	1435	kg