



ALPENTA

EAC

Efficient cooling units

- Air cooled units
- Free cooling option
- Air cooled heat pumps
- Air cooled condensing units

R410A



ACS
control

Fan
inside

ETO
ready

Capacity range
from 35 to 270 kW

EAC

Efficient cooling units



High industrial quality chillers with free-cooling option, reversible heat pumps or condensing units to meet wide variety of applications. High variability of configurations, wide range of standard features and broad selection of additional options.

State of the art design of the unit external casing.

Fan inside – best in the class fan performance. Fully built-in fans were developed using CFD (advanced flow simulations) and provide an optimal air flow on suction and discharge side of the impeller together with noise reduction.

ACS inside: Alpentia Control System – advanced control of the cooling unit via main programable microprocessor controller. Dynamic high pressure setpoint and few limitation functions maximize working efficiency on partial loads and when outside conditions are close to the working limits.

ETO ready: Engineer-to Order ready – unit engineering and manufacturing process managed to meet individual requirements of energy efficiency or other project specific technical characteristics. Individual configurations are designed in Alpentia Selection Software (ASS).

STANDARD FEATURES

Selected features of standard execution of the unit includes:

- **Compressors** – hermetic high efficiency scroll with axial and radial compliance, crankcase heaters, internal overheat protection and discharge temperature control.
- **Fans** – highest efficiency with optimized full bell mouth with guide vane and diffusor (meets requirements of the current ErP Directive).
- **Evaporator** – efficient braze welded stainless steel plate exchanger.
- **Condenser** – reliable aluminium fins and copper pipes exchanger.
- **Cooling circuit** – condensation controlled by high pressure transducer.
- **Hydronic circuit** – differential pressure switch and water IN/OUT pressure gauge.
- **Casing** – galvanized steel sheet metal painted RAL7035 provide long lasting resistance against corrosion.
- **Electric panel** – made in accordance with standards of EN 60204-1, phase failure protection relay.
- **Communication** – RS485 Insulated interface for ModBUS® Master/Slave, BacNET® MS/TP.
- Automatic writing of parameters to microSD card.

ACCESSORIES ON REQUEST

Accessories available on request includes:

- Softstarters
- Remote control panel (HMI)
- Control panel electric heating
- Epoxy coated condensing coils
- Refrigerant gauges
- Electronic expansion valve
- Desuperheater or full recovery
- Fan speed control – EC fans or cut phase speed control
- **Low noise execution** – compressor jackets
- **Low temperature execution** – electrical box heaters, fan speed control and refrigerant circuit adaptation
- **Hydronic circuit accessories** – water pump, reserve water pump, expansion vessel, accumulation vessel, relief valve, shut-off valves, check valves
- Rubber or spring anti vibration mounts

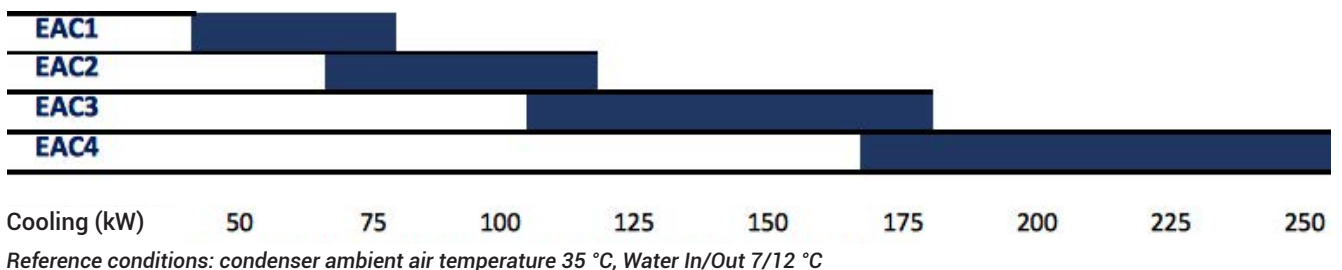
CONFIGURATION

EAC3 - 19C - 2PP4E

① ② ③ ④ ⑤

- ① **EAC** - Model range
- ② **3** - Model size
- ③ **19** - Nominal size: Nominal compressor capacity [kW]
- ④ **C** - Device version: C – cooling; HC – heat pump with cooling mode; R – heat recovery; F – free cooling
- ⑤ **2PP4E - Unit configuration:**
 1P – specification of compressor unit (1 – number of compressors/steps); P – evaporator type (P – brazed plate); 4E – condenser specification (A – fixed fan speed, E – variable fan speed)

EAC units – range covers cooling capacity :



UNIT DESCRIPTION

Operating limits

Standard execution **cooling** works at full load down to 0°C, with fan speed control (EC fans) and Low temperature option works down to -20°C. In summer season the unit works up to 45°C. Protection during extreme temperatures is supervised by ACS limitations functions. Cold water setpoint depend on fluid type used, for water the minimal setpoint is 4°C (for more details refer to the technical documentation ACS). Heating mode is effective up to -15°C and the water

temperature is controlled by override function during very low temperatures. Maximal hot water production setpoint is 55°C

Condensing unit control

CU unit version is externally controlled via digital or analog signals to the unit main controller. There are one or two steps of digital control, depending on compressor quantity or 0–10V analog control with pre-defined switching levels (more details see ACS technical documentation).

Control panel

Control panel, components and wiring made in accordance with standards EN 60204-1 electrical directive. Single point of power connection, IP 54 protection class, power phase sequence protection and optionally heated control box. Main on/off switch mounted on front panel, numbered, and signed electrical wires to facilitate maintenance and service. All power components (compressors, fans, pumps) are thermally protected.

HMI interface panel with protective cover mounted or supplied for remote installation on request

Controller

Main microprocessor controller pre-configured during factory test with default settings helps fast commissioning on site. Intuitive user interface with 3 level of access – user, skilled user and technician.

RS485 serial communication port allows remote management through control protocols ModBUS® or BacNET®. Optionally Ethernet port available.

Compressors

Recognized brand hermetic scroll compressors with axial and radial compliance for superior reliability and efficiency, equipped with crankcase heaters. Low sound and vibration level compressors installed on anti-vibration mountings, optionally equipped with sound jackets.

Electronic control of discharge temperature and motor protection device against high temperature. Discharge check-valve. Compressor operating time and number of starts helps optimize sequencing and service diagnostics.

Water heat exchanger

Stainless steel AISI 316 plate copper brazed heat exchanger externally insulated with thermal foam and located inside of the chiller casing. Threaded type of water hydraulic connection is located outside of the unit casing.

3 step antifreeze protection by water pressure differential switch, leaving water temperature NTC sensor and refrigerant low pressure transducer with limitation function of control system.

Air heat exchanger with fans

Reliable copper tubes / aluminium fins heat exchanger optionally protected with metallic grid protection.

Highest efficiency fans with optimized full bell mouth with guide vane and diffusor (meets requirements of directive ErP 2015). Safety fan guard fitted on air flow discharge. Fans are fully installed inside of the unit casing – flat top, reducing noise distribution and increasing condenser effectiveness. With flat top installation the suction point of the fan is closer to

the condenser's central point.

Fan motor protection class F and internal temperature sensor guarantees reliability during high ambient temperatures. Fix speed and optionally variable speed via EC fans or cut phase controller.

External control

Every unit could be controlled by external On/Off signal to the main controller and also sends alarm signal to the external controls

Alpenta Control System (ACS)

Sophisticated control system ensures data collection and subsequent control in real time to ensure maximum operating efficiency with respect to energy savings and service life of technological components of the unit. Main functions of the application take care of:

- Cooling / heating power control based on measured parameters while simultaneously dynamically adapting the unit's power to maximize energy efficiency.
- Limitation of cooling / heating capacity in situations leading to operation at the limit of technological possibilities of the unit equipment.
- 3-level alarm system protection against damage caused by operation beyond the technological capabilities of the unit equipment.

Heat recovery

Partial (desuperheater) or full heat recovery stainless steel brazed plate type exchangers located inside of the unit casing. The unit is equipped with an additional water heat exchanger fitted to the compressor discharge line in series or parallel to the air condenser coil. This solution allows to get energy recovery up to 25% with desuperheater or 100% of condensing heat with full recovery option. The heated water could be used for sanitary or other applications.

Refrigerant circuit

Brazing of refrigerant circuits made under nitrogen by certified personnel. Each unit refrigerant circuit is factory pressure and leak tested and thereafter vacuumed before being charged with R410A refrigerant.

Each chiller unit is subjected to a complete functional run test to guarantee operational quality.

Cooling circuit is standardly equipped with hermetic or replaceable cartridge type of drier filter, solenoid valve, thermostatic or optionally electronic expansion valve, sight glass with moisture indicator, low pressure switch, high pressure switch with manual reset, discharge temperature sensor, high pressure and optionally low pressure transducer, pressure relief valves where required (EN 378-2) and suction line insulation.

Additionally, depending on execution of the unit, there are suction line temperature sensor, 4-way reverse valve, check valves, liquid receiver and accumulator on suction line.

Hydronic circuit

All parts of hydraulic module are located completely inside of the chiller.

Standard parts of hydraulic circuit of a chiller consists of water entering and leaving NTC temperature sensors, water antifreeze protective differential pressure switch, water gauge with shut-off valves enabling of measurement pressure difference on the evaporator.

Optionally the chiller could be equipped with centrifugal pump (available static pressure about 200 kPa), reserve centrifugal pump with operating balancing and automatic changeover,

check valves, shut-off ball valves, membrane expansion vessel with shut-off valve for maintenance, pressure relief valve, automatic air valve, water strainer and drain valve. All piping and vessels are thermally insulated with close-cell foam.

Casing

State of the art design of the external construction of the unit. Flat top fan installation decrease unit height and increase efficiency.

Unit casing made of galvanized steel sheet metal painted RAL 7035 powdered polyester paint. Optional rubber or spring anti vibration mounts reduce transfer of vibrations to the supporting structure.

TECHNICAL SPECIFICATION

Model			EAC1	EAC2	EAC3	EAC4
Fans		n°	1	2	3	4
Accumulation vessel - volume	V	dm ³	200	250	250	400
Accumulation vessel - weight	m	kg	48	68	68	88
Expansion vessel - volume	V	dm ³	18	18	25	25
Expansion vessel - weight	m	kg	9	9	12	12
Length	L	mm	1750	2300	3450	4340
Width	W	mm	1300	1300	1300	1300
Height	H	mm	1700	2450	2450	2450
Electrical feed		V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50

TECHNICAL DATA OF SELECTED CONFIGURATIONS

Unit model	Cool. cap.	El. power	EER	SEER (12/7)	Eta _{s,c} (12/7)	SEER (18/23)	Eta _{s,c} (18/23)	SEPR _{HT}	Max. current	Sound press	Water flow	Press drop	Hydr. conn.	Weight
	kW	kW			%		%		A	dB(A)	m ³ /h	kPa		kg
EAC1														
EAC1-34C-1PP3E	36,4	10,2	3,58	5,05	198,9	6,06	239,5	6,66	32,6	58,7	6,3	25,9	DN40	500
EAC1-34C-1PP2E	34,2	11,0	3,12	4,43	174,0	5,23	206,4	6,20	32,6	58,7	5,9	25,5	DN40	480
EAC1-40C-1PP4E	42,7	11,8	3,62	5,10	201,0	6,13	242,4	6,70	35,6	59,7	7,4	27,0	DN50	520
EAC1-40C-1PP3E	41,5	12,2	3,39	4,79	188,6	5,72	225,7	6,47	35,6	59,7	7,1	26,8	DN50	510
EAC1-40C-1PP2E	40,3	12,7	3,17	4,50	177,0	5,33	210,4	6,25	35,6	59,7	6,9	26,6	DN50	490
EAC1-40C-2PP4E	42,3	11,8	3,58	5,05	199,1	6,07	239,8	6,64	34,0	55,2	7,3	27,0	DN50	540
EAC1-40C-2PP3E	41,3	12,3	3,36	4,76	187,3	5,67	223,9	6,42	34,0	55,2	7,1	26,8	DN50	520
EAC1-40C-2PP2E	40,2	12,8	3,15	4,47	175,8	5,29	208,7	6,21	34,0	55,2	6,9	26,6	DN50	500
EAC1-47C-2PP4E	48,3	12,4	3,90	5,47	215,9	6,64	262,8	6,96	38,0	56,2	8,3	28,0	DN50	560
EAC1-47C-2PP3E	46,9	14,6	3,22	4,57	179,7	5,42	213,9	6,28	38,0	56,2	8,1	27,8	DN50	540
EAC1-47C-2PP2E	45,5	15,2	3,00	4,27	167,9	5,04	198,4	6,06	38,0	56,2	7,8	27,5	DN50	520
EAC1-52C-1PP4E	53,9	15,5	3,47	4,90	193,1	5,87	231,8	6,55	38,3	66,7	9,3	28,9	DN50	550

Unit model	Cool. cap.	El. power	EER	SEER (12/7)	Eta _{s,e} (12/7)	SEER (18/23)	Eta _{s,e} (18/23)	SEPR _{HT}	Max. current	Sound press	Water flow	Press drop	Hydr. conn.	Weight
	kW	kW			%		%		A	dB(A)	m ³ /h	kPa		kg
EAC1														
EAC1-52C-1PP3E	52,3	16,1	3,24	4,59	180,6	5,45	215,1	6,32	38,3	66,7	9,0	28,6	DN50	540
EAC1-52C-1PP2E	49,1	17,5	2,80	-	-	4,69	184,6	5,88	38,3	66,7	8,5	28,1	DN50	520
EAC1-54C-2PP4E	55,9	15,9	3,51	4,96	195,2	5,94	234,6	6,57	44,8	57,2	9,6	29,2	DN50	560
EAC1-54C-2PP3E	54,1	16,6	3,25	4,61	181,3	5,48	216,0	6,31	44,8	57,2	9,3	28,9	DN50	550
EAC1-54C-2PP2E	50,5	18,2	2,78	-	-	4,64	182,7	5,84	44,8	57,2	8,7	28,4	DN50	530
EAC1-60C-2PP4E	60,0	18,6	3,23	4,58	180,2	5,44	214,5	6,29	51,6	58,2	10,3	29,8	DN50	590
EAC1-60C-2PP3E	58,1	19,4	3,00	4,27	167,7	5,03	198,1	6,06	51,6	58,2	10,0	29,5	DN50	580
EAC1-65C-1PP4E	65,6	20,1	3,26	4,61	181,5	5,48	216,3	6,34	50,3	67,7	11,3	30,6	DN50	560
EAC1-68C-2PP4E	66,4	21,8	3,04	4,32	169,9	5,10	200,9	6,10	63,6	59,2	11,4	30,7	DN50	600
EAC2														
EAC2-65C-1PP3E	69,5	18,9	3,68	5,18	204,0	6,24	246,5	6,76	51,9	67,7	12,0	31,2	DN50	820
EAC2-65C-1PP2E	65,6	21,1	3,11	4,42	173,6	5,22	205,8	6,19	51,9	67,7	11,3	30,6	DN50	790
EAC2-68C-2PP4E	72,7	20,3	3,58	5,05	198,9	6,06	239,5	6,64	65,2	59,2	12,5	31,6	DN50	890
EAC2-68C-2PP3E	70,6	21,1	3,35	4,73	186,3	5,64	222,7	6,41	65,2	59,2	12,2	31,3	DN50	860
EAC2-68C-2PP2E	68,5	22,0	3,12	4,43	174,0	5,23	206,4	6,18	65,2	59,2	11,8	31,0	DN50	840
EAC2-80C-2PP4E	85,4	23,6	3,62	5,10	201,0	6,13	242,4	6,68	71,2	60,2	14,7	33,2	DN65	900
EAC2-80C-2PP3E	82,9	24,5	3,39	4,79	188,6	5,72	225,7	6,45	71,2	60,2	14,3	32,9	DN65	870
EAC2-80C-2PP2E	78,1	26,4	2,96	4,22	165,7	4,96	195,5	6,02	71,2	60,2	13,5	32,3	DN50	840
EAC2-92C-2PP4E	95,4	27,8	3,43	4,85	191,1	5,80	229,1	6,49	73,9	67,2	16,4	34,5	DN65	930
EAC2-92C-2PP3E	92,6	28,8	3,21	4,55	179,0	5,40	213,0	6,27	73,9	67,2	15,9	34,1	DN65	910
EAC2-92C-2PP2E	89,7	30,0	2,99	4,26	167,4	5,02	197,7	6,05	73,9	67,2	15,5	33,8	DN65	880
EAC2-104C-2PP4E	107,8	31,1	3,47	4,90	193,1	5,87	231,8	6,53	76,6	67,2	18,6	35,9	DN65	970
EAC2-104C-2PP3E	104,6	32,3	3,24	4,59	180,6	5,45	215,1	6,30	76,6	67,2	18,0	35,5	DN65	940
EAC2-104C-2PP2E	98,1	35,0	2,80	-	-	4,69	184,6	5,86	76,6	67,2	16,9	34,8	DN65	910
EAC2-117C-2PP4E	117,9	36,3	3,25	4,60	181,1	5,47	215,8	6,31	88,6	68,2	20,3	37,0	DN65	970
EAC2-117C-2PP3E	114,3	37,7	3,03	4,31	169,3	5,08	200,2	6,09	88,6	68,2	19,7	36,6	DN65	940
EAC2-130C-2PP4E	127,2	41,9	3,04	4,32	169,8	5,10	200,9	6,10	100,6	68,2	21,9	37,9	DN65	980
EAC2-149C-2PP4E	146,1	47,5	3,08	4,37	171,9	5,17	203,6	6,14	117,3	68,2	25,2	39,8	DN65	1080
EAC2-168C-2PP4E	159,7	55,3	2,89	4,12	161,9	4,84	190,6	5,95	134,0	68,2	27,5	41,1	DN65	1180
EAC3														
EAC3-80C-2PP3E	85,4	24,5	3,48	4,91	193,4	5,88	232,1	6,54	72,8	60,2	14,7	33,2	DN65	1140
EAC3-80C-2PP2E	82,9	25,4	3,26	4,62	181,7	5,49	216,5	6,32	72,8	60,2	14,3	32,9	DN65	110
EAC3-92C-2PP3E	98,2	27,7	3,54	5,00	196,8	5,99	236,8	6,60	75,5	67,2	16,9	34,8	DN65	1180
EAC3-92C-2PP2E	92,6	29,8	3,11	4,41	173,5	5,22	205,7	6,17	75,5	67,2	15,9	34,1	DN65	1140
EAC3-104C-2PP4E	111,1	30,9	3,59	5,06	199,6	6,09	240,5	6,65	78,2	67,2	19,1	36,2	DN65	1250
EAC3-104C-2PP3E	107,8	32,0	3,37	4,76	187,5	5,68	224,3	6,43	78,2	67,2	18,6	35,9	DN65	1210
EAC3-104C-2PP2E	104,6	33,2	3,15	4,47	175,6	5,29	208,5	6,21	78,2	67,2	18,0	35,5	DN65	1170
EAC3-117C-2PP4E	125,1	33,9	3,69	5,19	204,8	6,26	247,5	6,75	90,2	68,2	21,5	37,7	DN65	1250
EAC3-117C-2PP3E	121,5	35,9	3,39	4,79	188,6	5,72	225,7	6,45	90,2	68,2	20,9	37,4	DN65	1210
EAC3-117C-2PP2E	114,3	38,7	2,95	4,21	165,3	4,95	195,0	6,01	90,2	68,2	19,7	36,6	DN65	1170
EAC3-130C-2PP4E	135,1	39,7	3,40	4,81	189,4	5,74	226,8	6,46	102,2	68,2	23,3	38,7	DN65	1260
EAC3-130C-2PP3E	131,2	41,2	3,18	4,51	177,5	5,35	210,9	6,24	102,2	68,2	22,6	38,3	DN65	1220
EAC3-130C-2PP2E	127,2	42,8	2,97	4,23	166,2	4,98	196,1	6,03	102,2	68,2	21,9	37,9	DN65	1180
EAC3-149C-2PP4E	155,1	44,9	3,46	4,89	192,2	5,85	230,9	6,52	118,9	68,2	26,7	40,7	DN65	1360

Unit model	Cool. cap.	El. power	EER	SEER (12/7)	Eta _{s,c} (12/7)	SEER (18/23)	Eta _{s,c} (18/23)	SEPR _{HT}	Max. current	Sound press	Water flow	Press drop	Hydr. conn.	Weight
	kW	kW			%		%		A	dB(A)	m ³ /h	kPa		kg
EAC3														
EAC3-149C-2PP3E	150,6	46,6	3,23	4,58	180,2	5,44	214,5	6,29	118,9	68,2	25,9	40,2	DN65	1320
EAC3-149C-2PP2E	141,5	50,4	2,81	-	-	4,69	184,8	5,87	118,9	68,2	24,4	39,4	DN65	1280
EAC3-168C-2PP4E	170,1	52,0	3,27	4,63	182,3	5,51	217,3	6,33	135,6	68,2	29,3	42,0	DN65	1460
EAC3-168C-2PP3E	164,9	54,0	3,05	4,34	170,6	5,12	201,9	6,11	135,6	68,2	28,4	41,5	DN65	1420
EAC3-191C-2PP4E	187,7	60,9	3,08	4,38	172,1	5,17	203,8	6,14	152,8	72,2	32,3	43,5	DN65	1480
EAC3-191C-2PP3E	181,9	63,3	2,87	4,10	161,1	4,81	189,5	5,93	152,8	72,2	31,3	43,0	DN65	1440
EAC3-214C-2PP4E	210,6	67,9	3,10	4,41	173,3	5,21	205,4	6,16	170,0	72,2	36,3	45,4	DN80	1500
EAC4														
EAC4-130C-2PP3E	139,1	37,8	3,68	5,18	204,0	6,24	246,5	6,74	103,8	68,2	24,0	39,1	DN65	1450
EAC4-130C-2PP2E	135,1	40,7	3,32	4,70	185,1	5,60	221,0	6,38	103,8	68,2	23,3	38,7	DN65	1390
EAC4-149C-2PP3E	155,2	45,8	3,39	4,79	188,6	5,72	225,7	6,45	120,5	68,2	26,7	40,7	DN65	1550
EAC4-149C-2PP2E	150,6	47,6	3,17	4,49	176,7	5,32	209,9	6,23	120,5	68,2	25,9	40,2	DN65	1490
EAC4-168C-2PP4E	175,3	51,0	3,44	4,86	191,3	5,81	229,4	6,50	137,2	68,2	30,2	42,5	DN65	1700
EAC4-168C-2PP3E	170,1	53,0	3,21	4,55	179,1	5,40	213,1	6,27	137,2	68,2	29,3	42,0	DN65	1650
EAC4-168C-2PP2E	164,9	55,0	3,00	4,27	167,8	5,03	198,2	6,06	137,2	68,2	28,4	41,5	DN65	1590
EAC4-191C-2PP4E	199,4	57,5	3,47	4,90	192,9	5,86	231,4	6,53	154,4	72,2	34,3	44,5	DN65	1720
EAC4-191C-2PP3E	193,6	59,7	3,24	4,59	180,8	5,46	215,3	6,30	154,4	72,2	33,3	44,0	DN65	1670
EAC4-191C-2PP2E	181,9	64,2	2,83	-	-	4,74	186,5	5,89	154,4	72,2	31,3	43,0	DN65	1610
EAC4-194C-3PP4E	202,7	59,1	3,43	4,85	190,9	5,79	228,8	6,47	152,5	68,7	34,9	44,7	DN80	1630
EAC4-194C-3PP3E	196,8	61,4	3,21	4,55	178,8	5,39	212,7	6,25	152,5	68,7	33,9	44,3	DN65	1570
EAC4-194C-3PP2E	184,9	66,4	2,78	-	-	4,65	183,2	5,82	152,5	68,7	31,9	43,3	DN65	1520
EAC4-214C-2PP4E	217,0	66,4	3,27	4,63	182,1	5,50	217,1	6,33	171,6	72,2	37,4	45,9	DN80	1740
EAC4-214C-2PP3E	210,6	68,8	3,06	4,35	170,9	5,13	202,3	6,12	171,6	72,2	36,3	45,4	DN80	1690
EAC4-252C-3PP4E	255,1	77,5	3,29	4,66	183,4	5,54	218,7	6,33	202,6	68,7	43,9	48,7	DN80	1930
EAC4-275C-3PP4E	270,2	87,5	3,09	4,39	172,6	5,19	204,4	6,13	219,8	72,7	46,5	49,8	DN80	1950

Cool. cap.	kW	nominal cooling capacity: water 12/7 °C, ambient temperature 35 °C
Heat cap.	kW	nominal heating capacity: water 40/45 °C, ambient temperature 7 °C
El. power	kW	electrical power consumption (without pump)
EER / COP		coefficient of nominal energy efficiency
SEER (12/7)		efficiency performance (calculation based on EN 14825:2018) - comfort low temperature, (12/7 °C), fixed water flow
Etas,c (12/7)	%	fixed outlet temp.
SEER (18/23)		efficiency performance (calculation based on EN 14825:2018) - comfort medium temperature, (18/23 °C), fixed water flow
Etas,c (18/23)	%	fixed outlet temp.
SEPR_{HT}		efficiency performance (calculation based on EN 14825:2018) - process high temperature, fixed water flow
Max. current	A	maximal allowable current for dimensioning of power cable
Sound press.	dB(A)	sound pressure level at 10 m (in accordance ISO3744)
Water flow	m³/h	nominal water flow
Press. drop	kPa	hydraulic pressure drop of the unit
Hydr. conn.		hydraulic connection (threaded)
Weight	kg	weight without water and additional options



ALPENTA s.r.o. has established and applies a quality system for design and manufacture of refrigeration and air conditioning equipment according to ISO 9001:2015.
EAC units design and production have been certified according to Directive 2014/68/EU.

Alpenta reserves the right to change the technical information for improving the product at any time without prior notice.

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