

ED.E Kc

DIRECT EXPANSION CLOSE CONTROL UNITS WITH REMOTE CONDENSING UNIT

COOLING CAPACITY FROM 6,3 TO 135 kW

ED.E 852 D Kc



The range of close control units with remote condensing units, **series ED.E**, is particularly indicated for use in technological centres, data processing rooms, in telecom centres and in such applications where it is important to keep the thermo-hygrometric conditions constant all over the year, so to assure the correct operation of the equipments installed in these sites.

Depending on the cooling capacity, they are available with 1 and 2 cooling circuits.

Thanks to their technologically advanced design, these close control units are able to control the ambient temperature with remarkably high precision and, when the humidity level is required, to adapt their cooling capacity to the room requirements, all automatically managed by the microprocessor on board.

The high technology employed during their design together with the use of the best components available on the markets, make these units extremely reliable and therefore able to work for long periods, without a break. These units are particularly easy to install also in small spaces and easily accessible on the front side for ordinary and extraordinary service operations. They are completely assembled and tested in the factory and supplied under dry air pressure and with oil charge.

The units are available in different configurations, related to the air return and

discharge:

- **U** front air return, upflow air discharge;
- **V** bottom air return, upflow air discharge;
- **B** back air return, upflow air discharge;
- **D** top air return, downflow air discharge.

Operation limits: ambient temperature from 18 to 35°C.

MAIN COMPONENTS

Structure realized with a framework and internal parts made of galvanized steel riveted profiles and supports, making the structure strong and suitable also for extreme transport and handling conditions. The external panels, fixed to frame with quick opening connections, are made of pre-painted steel sheet (RAL 9004), ensuring a long-term durability to the unit. They are internally insulated with self-extinguishing sound-proofing material (class HF1 – UL94) reducing the overall sound level of the unit. On request (option IS1), it is available the sound-proofing insulation with class 1 material in conformity to the main European regulations in force. All the front and side panels can be dismantled so to allow an easy access to the main components. Moreover, the front of the unit is provided with double panels and inspection windows (not

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available for version U), suitably arranged to let the unit work also with open panels during technical interventions, to allow more accurate regulations and more quick timing for ordinary and extraordinary service operations.

Single-inlet and backward curved centrifugal fans made of high-performance composite material, directly coupled to a three-phase electrical motor with IP54 Class F protection and provided with a thermal protection inside the motor winding. The fans are fixed on suitable supports reducing the transmission of vibration to the frame and the impeller is statically and dynamically balanced with long-life bearings. It is possible to regulate the fan speed by means of an autotransformer and to adjust their air flow to the head pressure requested on site. It is clear that a higher fans speed rotation involves an increase in the sound level of the unit.

All the units are equipped with low airflow and clogged filter alarms which, by means of differential pressure switches, stop the unit operation in case of fans problems and give a signal on microprocessor for replacement respectively.

Direct expansion evaporating coil, realized with copper tube and aluminium fins, it is suitably sized with a wide exchange surface and a low air crossing speed so to allow a remarkable heat exchange and reduce the pressure drops on the air side. It is provided with a hydrophilic treatment to reduce the surface tension between water and metal surface, promoting film condensation and avoiding the risk of condensing drops outside the drain tray.

Condensing drain tray, made in corrosion proof peraluman, placed underneath the evaporating coil, it is provided with a flexible pipe for condensing water discharge.

Washable and self-extinguishing air filters Efficiency G4 – of pleated type, they are made of synthetic fibre and are contained in a suitable metal frame. Their pleated arrangement, with a wide surface area, ensures a higher filtering efficiency and low pressure drops.

Cooling circuit made of: electronic thermostatic valve, solenoid valve and sight glass on the liquid line, shut-off valve on compressor's discharge. Thanks to the electronic thermostatic valve, there is a more accurate regulation of the evaporating pressure/temperature in all working conditions, with superheating at a constant value.

Electric board in compliance with CE norms, protected by a panel is separated by the air flow and is provided with main switch, automatic switches, remote control switches, motor protection switches, low-tension auxiliary circuits and terminal board for free contacts and remote general alarm, magnetothermic switches for humidifier and electric heaters (when installed).

Unit management microprocessor installed inside the electrical board, complete with hour counter and electronic card to program the switch-over and rotation between to units, after a pre-set time. On this purpose, in case of order, the information necessary for programming must be clearly defined. It allows 3 languages display reading, a detailed description of parameters, the possibility to manage up to 8 units, to manage non standard communication protocols, a quickest access to the program, the control of the electronic thermostatic valve and of the humidifier, the control of modulating valves.

ACCESSORIES

AA Flooding detector: placed in the downflow units, it is already wired and detects water in the false floor.

AE Electrical power supply different from standard: mainly, 230V three-phase, 460V three-phase. Frequency 50/60 Hz.

AL Smoke alarm: it consists of a sensor detecting smoke inside the unit and activating an alarm signal which stops the fans.

B Adjustable base-frame from 170mm to max 600mm for installation on raised floors. It is provided with adjustable feet.

BC Hot water coil: one-row or 2-row water coil, placed after the cooling coil for the re-heating and/or the heating of treated air. Provided with modulating actuator and with three-way valve, it is controlled by the microprocessor on board. This option is priority when requested with the electric heaters RE option. (Alternative to BG and not available with REM)

BG Hot gas coil: placed after the cooling coil, it makes the re-heating of the treated air and is provided with a 3-way valve (ON/OFF) controlled by the microprocessor on board. It is available only with the dehumidification control. (options DH) (Alternative to BC and not available with HG)

BN Base-frame with conveyor: it is provided with a suitable conveyor facilitating the air flow and remarkably reducing the pressure drop in case of horizontal air flow. It is adjustable in height from min 400mm to max 800mm. (Only for D version)

BS Base-frame with ON/OFF damper: it is equipped with an ON/OFF motorized damper. This device prevents the air return from the unit when it is not working or in the case some units are working near to it. Available only for D version; for other versions, being a special execution, please contact our Sales Dept.

BSN Base-frame with conveyor and ON/OFF damper: a single base-frame with both options BS and BN so to optimize efficiency and overall dimensions.

DH Dehumidification control system: managed by microprocessor, through the electronic thermostatic valves, it operates on two parameters, ensuring that the dehumidification process is carried out with a constant air flow, without partializing the evaporating coil. This will optimize the air distribution throughout the room.

DP Internal double panels: for shutting off the compartments affected by the air flow, they are made from pre-painted and galvanized steel plate, ensuring reduction in the noise transmitted through the panels and a better air tightness even without the external panels so that the access is guaranteed with the doors open during service operation.

EC-LP&HP Single-inlet EC (electronically commutated) centrifugal fans with backward curved blade (LP not available for D version): made of high-performance composite material, directly coupled to a three-phase electrical rotor with IP54 protection grade, they have the possibility of a continuous regulation of the speed by means of 10V signal, sent and integrated to the control. The fans are fixed on suitable supports reducing the transmission of vibration to the frame and the impeller is statically and dynamically balanced with long-life bearings. Thanks to their technology, the EC fans ensures a lower electrical absorption and sound level, if compared to the traditional centrifugal fans. It is possible to adjust their air flow to the head pressure requested on site. **In case of IT electrical supplies, please contact our Sales Dept.**

F5-F6-F7-F9 Higher efficiency air filters: pleated filters, supplied as an alternative to standard G4 filters.

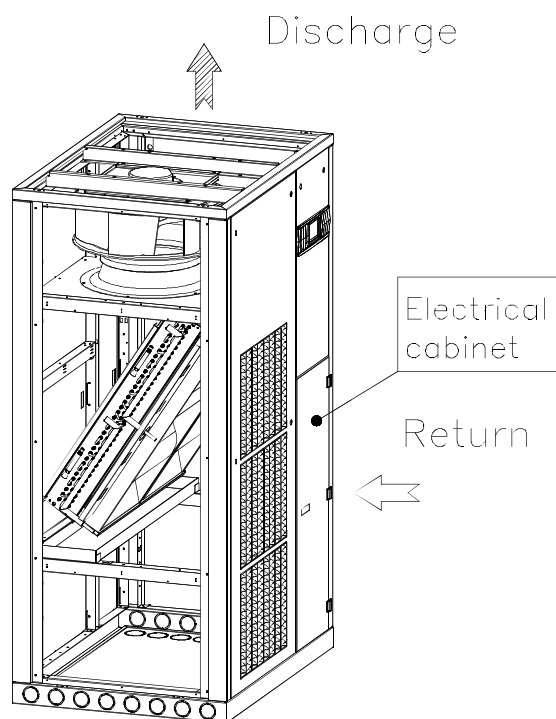
FR Spare filter kit G4 as a replacement to the ones on board of the unit.

H Humidifier of immersed-electrode type for the modulating production of steam. It is made by a steam cylinder, by a steam distributor, by water inlet and outlet valves and by a maximum level probe. The microprocessor on board indicates when the steam cylinder needs to be replaced. It is electrically protected by a magnetothermic switch.

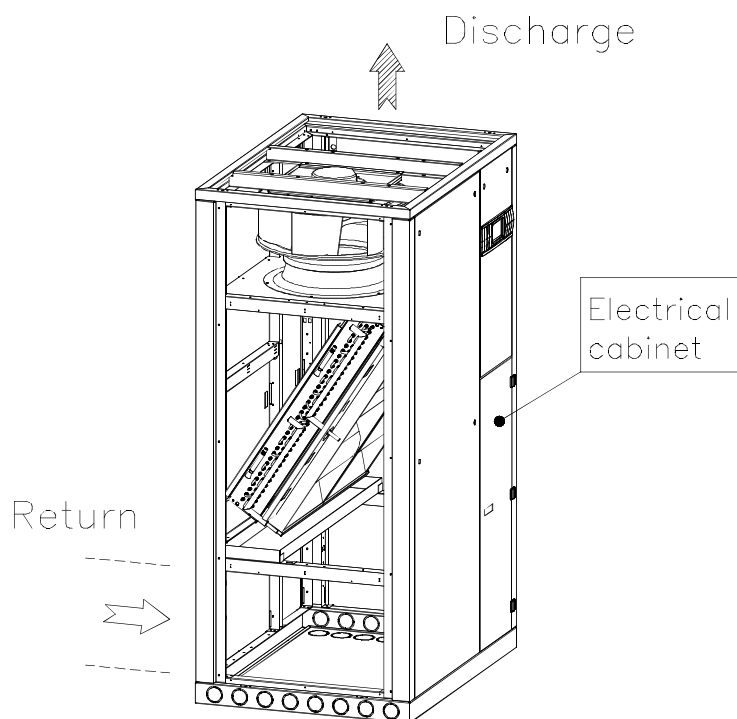
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- IE Fumigated wooden crate packing:** available on request for critical transports, so to assure a suitable protection to the unit.
- IH RS 485 serial interface:** electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.
- IM Seawood packing:** fumigated seawood case and protection bag with hygroscopic salts, suitable for long sea transports.
- IP Magnetothermic switches for auxiliary circuits:** when required, they replace the fuses, as a protection of the auxiliary circuits.
- IS1 Class 1 insulating material** in conformity to the main European regulations in force.
- MF Phase monitor:** electronic device controlling the correct sequence and/or the eventual lack of one of the 3 phases, switching off the unit if necessary.
- MN Lack of neutral wire for 400/3/50 power supply:** unit general power supply without neutral wire.
- MP Oversized microprocessor:** in addition to the standard microprocessor, it allows more languages display reading (maximum 5), it has an increased hardware so to allow the managing of more inputs and outputs for the control of on board installed components. (Already included on two circuit units)
- PB Condensing water pump:** micro pump discharging the condensing water produced by the unit, it is factory installed.
- PBH Condensing water and humidifier discharge pump:** pump discharging the condensing water produced by the unit and the humidifier discharge water, it is factory installed.
- PL Distribution plenum** with front grid and a double row of adjustable fins for a better air distribution (for versions U,V,B and not available with options ST and STM).
- PQ Remote display:** remote terminal, allowing to display the temperature and humidity values detected by probes, the alarm digital inputs, the outputs and the remote ON/OFF of the unit, to change and program of the parameters, the sound signal and the display of the present alarms.
- PR Fresh air inlet:** external fresh air inlet with filter, placed on side (standard on the left side), with circular connection (\varnothing 100 mm).
- RE Electrical heaters:** made in aluminium and installed after the cooling coil, for re-heating and/or heating of the treated air. The heating capacity is split on 3 steps max, so to reduce the energy absorption. They are controlled by the microprocessor on board and electrically protected by a magnetothermic switch.
- REM Oversized Electrical heaters**
- RF Rephasing condensers (available for compressors only):** electrical device for rephasing the compressors charge at power factor $\cos\Phi \geq 0,9$. Are installed on compressors of MCX remote condensing unit.
- RV Personalized frame painting in RAL colour.**
- SL Main switch with external padlock.**
- ST Manual calibration damper,** in galvanized steel plate with opposed-movement fins. Through the manual control, it is possible to accurately regulate the air flow. (Alternative to STM and not available with option PL)
- STM Motorized calibration damper,** in galvanized steel plate with opposed-movement fins. Through the modulating control (0-10V), it is possible to accurately regulate the air flow. (Alternative to ST and not available with option PL)
- SV Gravity overpressure damper** for ducted units, to prevent the air return when the units are not operating, where several units are installed in the same room. Available for U,V,B versions; for D version, being a special execution, please contact our Sales Dept.
- TS Touch screen graphic terminal** designed to simplify user interface with the unit controller. It allows the set-point fixing, the alarm reading, the graphic display of the main controlled parameters in real time (suitable for download on USB interface) and possibility of set-point scheduling. The 4.3", 65.000 colours and 480x422 resolution display, being a dedicated terminal for the end user, does not allow to change the basic configuration of the unit.
- WG WebGate device** for interfacing to BMS with SNMP or TCP/IP protocols. Only available with option IH.

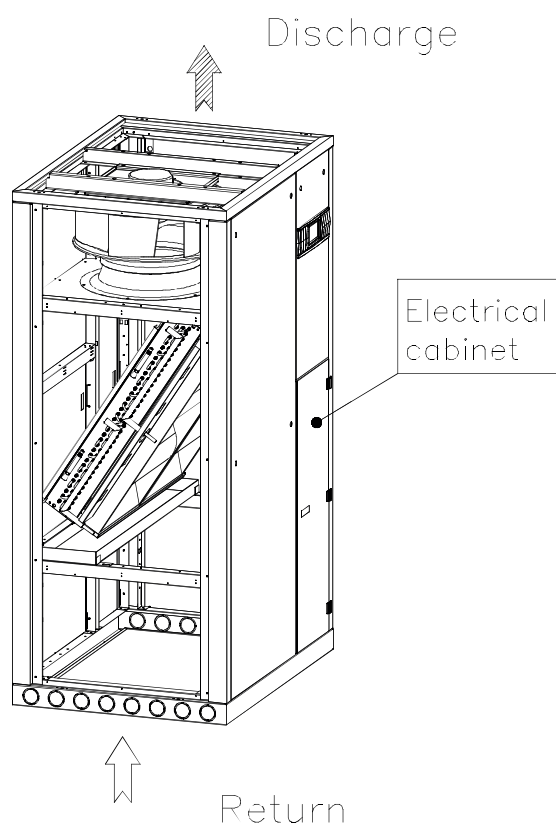
U Front air return
Upflow air discharge



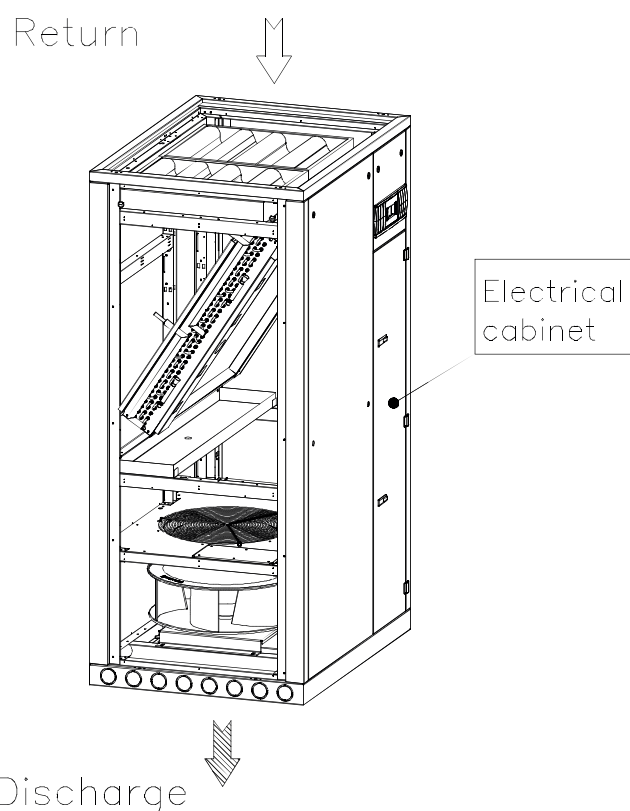
B Back air return
Upflow air discharge



V Bottom air return
Upflow air discharge



D Top air return
Downflow air discharge



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Technical data sheet - 1-circuit units - ED.E U-V-B Versions

ED.E U-V-B		71	81	101	131	161	211	271	331	421	501	591	771	921	991	
Frame																
Frame		1			2		3		4		5		6		7	
Cooling capacity																
Total cooling capacity (27°C - 50% R.H.)	kW	8,8	11,7	14,5	18,9	24,0	29,0	38,5	40,8	54,2	72,1	90,8	113,9	117,3	151,8	
Sensible cooling capacity (27°C - 50% R.H.)	kW	7,0	9,1	11,0	14,5	17,2	22,6	28,1	31,7	38,8	55,8	65,9	81,5	89,3	108,2	
SHR @ 27°C-50% U.R.	%	80%	78%	76%	77%	72%	78%	73%	78%	72%	77%	73%	72%	76%	71%	
Total cooling capacity (24°C - 50% R.H.)	kW	6,3	8,1	10,4	13,2	17,1	20,4	27,5	28,5	38,5	50,4	64,9	81,1	82,6	108,7	
Sensible cooling capacity (24°C - 50% R.H.)	kW	5,9	7,6	9,2	12,1	14,3	18,9	23,6	26,4	32,1	46,6	54,8	67,5	74,4	89,3	
SHR @ 24°C-50% U.R.	%	94%	94%	88%	92%	84%	93%	86%	93%	83%	92%	84%	83%	90%	82%	
Total cooling capacity (22°C - 50% R.H.)	kW	5,3	6,8	8,2	10,9	13,3	16,9	21,4	23,8	30,1	41,9	51,0	63,2	65,5	87,7	
Sensible cooling capacity (22°C - 50% R.H.)	kW	5,3	6,8	8,1	10,9	12,4	16,9	20,5	23,8	27,9	41,9	47,6	58,5	65,5	79,3	
SHR @ 22°C-50% U.R.	%	100%	100%	99%	100%	93%	100%	96%	100%	93%	100%	93%	93%	100%	90%	
AC fans with autotransformer																
Quantity	n.	1	1	1	1	1	1	1	1	1	2	2	2	3	3	
Fan(s) supply voltage	V	270	300	340	300	340	290	320	260	280	230	250	300	260	300	
Air flow	m³/h	2.330	2.330	2.330	3.500	3.500	5.610	5.610	7.880	7.880	13.820	13.820	16.550	21.600	21.600	
Available pressure	Pa	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Rotation speed	rpm	1.192	1.250	1.307	1.266	1.325	1.078	1.127	1.150	1.189	1.075	1.122	1.227	1.145	1.222	
Input power	kW	0,35	0,37	0,4	0,64	0,69	1,02	1,1	1,52	1,63	2,71	2,97	3,44	4,61	5,24	
Input current	A	0,97	0,97	0,97	1,49	1,45	2,63	2,63	4,13	4,13	8,3	8,38	8,16	12,54	12,42	
Max available pressure (max ESP)	Pa	106	75	46	88	46	133	91	242	197	310	263	156	237	170	
Sound press. level @ 2 m - U Version	dB(A)	47	47	48	52	53	56	57	59	59	60	60	63	63	64	
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	49	49	49	54	54	59	59	62	62	64	64	65	66	66	
Sound press. level @ 2 m - B Version	dB(A)	43	44	45	49	50	52	53	55	55	56	56	60	59	60	
Sound press. level @ 2 m - B Version (max ESP)	dB(A)	45	45	45	50	50	56	56	58	58	61	61	62	63	63	
Sound press. level @ 2 m - V Version	dB(A)	43	43	44	48	49	51	52	54	55	55	56	59	59	59	
Sound press. level @ 2 m - V Version (max ESP)	dB(A)	45	45	45	50	50	55	55	58	58	60	60	61	62	62	
EC Fans - LP (low pressure)																
Quantity	n.	-	-	-	-	-	1	1	1	1	2	2	2	3	3	
Air flow	m³/h	-	-	-	-	-	5.610	5.610	7.880	7.880	13.820	13.820	16.550	21.600	21.600	
Max available pressure (max ESP)	Pa	-	-	-	-	-	182	136	156	108	223	177	75	151	92	
Rotation speed	rpm	-	-	-	-	-	1.237	1.282	1.118	1.159	1.047	1.094	1.196	1.119	1.182	
Input power	kW	-	-	-	-	-	0,83	0,93	1,07	1,22	1,8	2,08	2,66	3,33	3,99	
Sound pressure level @ 2 m - U Version	dB(A)	-	-	-	-	-	55	55	56	56	57	57	60	60	60	
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	-	-	-	-	-	56	56	57	57	59	59	61	61	61	
Sound pressure level @ 2 m - B Version	dB(A)	-	-	-	-	-	51	51	52	52	53	53	57	56	57	
Sound press. level @ 2 m - B Version (max ESP)	dB(A)	-	-	-	-	-	52	52	53	53	55	55	57	58	58	
Sound pressure level @ 2 m - V Version	dB(A)	-	-	-	-	-	50	51	52	52	53	53	56	56	56	
Sound press. level @ 2 m - V Version (max ESP)	dB(A)	-	-	-	-	-	52	52	52	52	55	55	56	57	57	
EC Fans - HP (High pressure)																
Quantity	n.	1	1	1	1	1	1	1	1	1	2	2	2	3	3	
Air flow	m³/h	2.330	2.330	2.330	3.500	3.500	5.610	5.610	7.880	7.880	13.820	13.820	16.550	21.600	21.600	
Max available pressure (max ESP)	Pa	671	655	625	486	447	664	618	593	545	654	608	516	585	526	
Rotation speed	rpm	1.210	1.265	1.313	1.284	1.341	1.249	1.292	1.128	1.168	1.054	1.101	1.205	1.127	1.189	
Input power	kW	0,28	0,31	0,35	0,52	0,6	0,87	0,97	1,08	1,22	1,83	2,1	2,65	3,36	3,99	
Sound press. level @ 2 m - U Version	dB(A)	47	47	47	52	53	57	57	57	57	58	58	61	61	61	
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	63	63	63	62	62	64	64	62	62	65	65	65	67	67	
Sound press. level @ 2 m - B Version	dB(A)	43	43	44	49	49	53	53	53	54	54	55	58	57	58	
Sound press. level @ 2 m - B Version (max ESP)	dB(A)	59	59	59	58	58	60	60	58	58	62	62	62	63	63	
Sound press. level @ 2 m - V Version	dB(A)	42	43	43	48	49	52	53	53	53	54	54	57	57	57	
Sound press. level @ 2 m - V Version (max ESP)	dB(A)	59	59	59	58	58	59	59	58	58	61	61	61	63	63	
Humidifier																
Steam production (nominal)	kg/h	1,5	1,5	1,5	3	3	5	5	8	8	8	8	8	8	8	
Steam production (max)	kg/h	3	3	3	3	3	8	8	8	8	8	8	8	8	8	
Maximum input power	kW	1,12	1,12	1,12	2,25	2,25	2,25	3,75	6	6	6	6	6	6	6	
Maximum input current	A	5	5	5	10	10	10	5,5	8,7	8,7	8,7	8,7	8,7	8,7	8,7	
Specific conductivity at 20°C (min/max)	µS/cm	300 / 1'250														
Total hardness (min/max)	mg/l CaCo3	100 / 400														
Electrical heaters																
Steps	n.	1	1	1	3	3	2	2	3	3	3	3	3	3	3	
Power	kW	3	3	3	4,5	4,5	6	6	9	9	15	15	18	18	18	
Input current	A	4,3	4,3	4,3	6,5	6,5	8,7	8,7	13	13	21,7	21,7	26	26	26	

CLOSE CONTROL UNITS WITH REMOTE CONDENSING

Technical data sheet - 1-circuit units - ED.E U-V-B Versions

ED.E U-V-B		71	81	101	131	161	211	271	331	421	501	591	771	921	991
Frame															
Frame			1		2		3		4		5		6		7
Oversized electrical heaters															
Steps	n.	3	3	3	2	2	3	3	3	3	3	3	3	3	3
Power	kW	4,5	4,5	4,5	6	6	9	9	12	12	18	18	24	27	27
Input current	A	6,5	6,5	6,5	8,7	8,7	13	13	17,3	17,3	26	26	34,6	39	39
Hot water coil															
Heating capacity	kW	4,5	4,5	4,5	6,90	6,90	10,2	10,2	19,8	19,8	35,7	35,7	43,70	54,3	54,3
Water flow rate	m³/h	0,8	0,8	0,8	1,20	1,20	1,8	1,8	3,4	3,4	6,2	6,2	7,60	9,5	9,5
Pressure drop (coil+3-way valve)	kPa	37	37	37	35	35	55	55	77	77	79	79	70	79	79
Internal volume of the coil	dm³	1	1	1	1,3	1,3	1,5	1,5	2,8	2,8	5,3	5,3	6,5	10,1	10,1
Hot gas coil															
Heating capacity	kW	5,1	5,1	5,1	7,5	7,5	9,8	9,8	14,5	14,5	30	30	37,6	50,3	50,3
Condensing water pump															
Nominal water flow	l/h	27,5	27,5	27,5	390	390	390	390	390	390	390	390	390	390	390
Max water flow (pressure = 0 m)	l/h	34	34	34	500	500	500	500	500	500	500	500	500	500	500
Max height (water flow = 0 m³/h)	l/h	15,0	15,0	15,0	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40
Condensing water pump + humidifier															
Nominal water flow	l/h	-	-	-	-	-	-	-	600	600	600	600	600	600	600
Max water flow (pressure = 0 m)	l/h	-	-	-	-	-	-	-	900	900	900	900	900	900	900
Max height (water flow = 0 m³/h)	m	-	-	-	-	-	-	-	6,0	6,0	6,0	6,0	6,0	6,0	6,0
Dimensions															
Length	mm	550	550	550	750	750	980	980	1'160	1'160	1'860	1'860	2.210	2.565	2.565
Width	mm	550	550	550	550	550	750	750	850	850	850	850	850	850	850
Height	mm	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980
Weight - U Version	kg	148	150	153	194	199	247	255	315	325	429	448	513	600	631
Weight - V Version	kg	148	150	153	194	199	252	260	310	320	440	458	523	610	641
Weight - B Version	kg	148	150	153	189	194	257	266	315	325	450	468	529	620	652
Remote condensing unit															
Model	MCX	71 Kc	81 Kc	101 Kc	131 Kc	161 Kc	211 Kc	271 Kc	271 Kc	421 Kc	501 Kc	591 Kc	771 Kc	771 Kc	991 Kc
Cooling circuits	n.							1							
Compressors	n.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cooling capacity	kW	6,5	8,4	11,5	14,6	18,7	21,2	28,6	28,6	40,8	50,2	65,8	81,6	81,6	117,2
Total input power	kW	2,0	2,6	3,1	4,3	5,5	6,4	8,3	8,3	12,0	14,0	19,2	23,8	23,8	41,2
Total input current	A	3,9	5,4	5,9	8,2	12,1	14,2	18,5	18,5	24,1	28,5	37,3	39,0	39,0	68,7
Maximum total input current	A	5,3	10,6	14,3	16,3	20,3	20,3	28,6	28,6	40,2	43,8	56,2	58,2	58,2	98,3
Total inrush current	A	28,6	45,6	61,3	71,3	88,3	101,3	113,6	113,6	163,2	202,2	220,2	215,2	215,2	249,3
Power supply															
Power supply	V/ph/Hz							400 / 3 / 50 + T + N							

REMARKS

- Evaporating temperature 8°C; Inlet vapor quality = 0,30.
- Filters calculated for 20% dirt.
- Max pressure is referred to the nominal air flow and the max tension/regulation.
- Hot water coil calculated for: water 40/45°C, ambient temperature 20°C and available pressure of 20 Pa.
- The condensing water pump is calculated for a 2 m vertical difference in height respect to the pump; total length of the discharge pipe of 5 m, internal diameter of the flexible pipe of 12 mm (6 mm for ED.E 71-81-101).
- Remote condensing units suggested for external air temperature of 35°C.

CLOSE CONTROL UNITS WITH REMOTE CONDENSING

Technical data sheet - 2-circuits units - ED.E U-V-B Versions

ED.E U-V-B		332 Kc	422 Kc	502 Kc	642 Kc	852 Kc	922 Kc	1122 Kc	1462 Kc
Frame									
Frame		4		5		6	7	8	
Cooling capacity									
Total cooling capacity (27°C - 50% R.H.)	kW	40,8	54,2	72,1	90,8	113,9	117,3	151,8	189,1
Sensible cooling capacity (27°C - 50% R.H.)	kW	31,7	38,8	55,8	65,9	81,5	89,3	108,2	135,2
SHR @ 27°C-50% U.R.	%	78%	72%	77%	73%	72%	76%	71%	71%
Total cooling capacity (24°C - 50% R.H.)	kW	28,5	38,5	50,4	64,9	81,1	82,6	108,7	135,5
Sensible cooling capacity (24°C - 50% R.H.)	kW	26,4	32,1	46,6	54,8	67,5	74,4	89,3	111,7
SHR @ 24°C-50% U.R.	%	93%	83%	92%	84%	83%	90%	82%	82%
Total cooling capacity (22°C - 50% R.H.)	kW	23,8	30,1	41,9	51,0	63,2	65,5	87,7	107,6
Sensible cooling capacity (22°C - 50% R.H.)	kW	23,8	27,9	41,9	47,6	58,5	65,5	79,3	98,3
SHR @ 22°C-50% U.R.	%	100%	93%	100%	93%	93%	100%	90%	91%
AC fans with autotransformer									
Quantity	n.	1	1	2	2	2	3	3	4
Fan(s) supply voltage	V	260	280	230	250	300	260	300	290
Air flow	m³/h	7'880	7'880	13'820	13'820	16'550	21'600	21'600	27'200
Available pressure	Pa	20	20	20	20	20	20	20	20
Rotation speed	rpm	1.150	1.189	1.075	1.122	1.227	1.145	1.222	1.204
Input power	kW	1,52	1,63	2,71	2,97	3,44	4,61	5,24	6,8
Input current	A	4,13	4,13	8,3	8,38	8,16	12,54	12,42	16,64
Max available pressure (max ESP)	Pa	242	197	310	263	156	237	170	189
Sound pressure level @ 2 m - U Version	dB(A)	59	59	60	60	63	63	64	64
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	62	62	64	64	65	66	66	67
Sound pressure level @ 2 m - B Version	dB(A)	55	55	56	56	60	59	60	61
Sound pressure level @ 2 m - B Version (max ESP)	dB(A)	58	58	61	61	62	63	63	64
Sound pressure level @ 2 m - V Version	dB(A)	54	55	55	56	59	59	59	60
Sound pressure level @ 2 m - V Version (max ESP)	dB(A)	58	58	60	60	61	62	62	63
EC Fans - LP (low pressure)									
Quantity	n.	1	1	2	2	2	3	3	4
Air flow	m³/h	7'880	7'880	13'820	13'820	16'550	21'600	21'600	27'200
Max available pressure (max ESP)	Pa	156	108	223	177	75	151	92	101
Rotation speed	rpm	1.118	1.159	1.047	1.094	1.196	1.119	1.182	1.164
Input power	kW	1,07	1,22	1,8	2,08	2,66	3,33	3,99	5,09
Sound pressure level @ 2 m - U Version	dB(A)	56	56	57	57	60	60	60	61
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	57	62	65	65	65	61	61	62
Sound pressure level @ 2 m - B Version	dB(A)	52	54	54	55	58	56	57	57
Sound press. level @ 2 m - B Version (max ESP)	dB(A)	53	58	62	62	62	58	58	59
Sound pressure level @ 2 m - V Version	dB(A)	52	53	54	54	57	56	56	57
Sound pressure level @ 2 m - V Version (max ESP)	dB(A)	52	58	61	61	61	57	57	58
EC Fans - HP (High pressure)									
Quantity	n.	1	1	2	2	2	3	3	4
Air flow	m³/h	7'880	7'880	13'820	13'820	16'550	21'600	21'600	27'200
Max available pressure (max ESP)	Pa	593	545	654	608	516	585	526	532
Rotation speed	rpm	1.128	1.168	1.054	1.101	1.205	1.127	1.189	1.170
Input power	kW	1,08	1,22	1,83	2,1	2,65	3,36	3,99	5,1
Sound pressure level @ 2 m - U Version	dB(A)	57	57	58	58	61	61	61	62
Sound press. level @ 2 m - U Version (max ESP)	dB(A)	62	62	65	65	65	67	67	68
Sound pressure level @ 2 m - B Version	dB(A)	53	54	54	55	58	57	58	59
Sound press. level @ 2 m - B Version (max ESP)	dB(A)	58	58	62	62	62	63	63	65
Sound pressure level @ 2 m - V Version	dB(A)	53	53	54	54	57	57	57	58
Sound pressure level @ 2 m - V Version (max ESP)	dB(A)	58	58	61	61	61	63	63	64
Humidifier									
Steam production (nominal)	kg/h	8	8	8	8	8	8	8	8
Steam production (max)	kg/h	8	8	8	8	8	8	8	8
Maximum input power	kW	6	6	6	6	6	6	6	6
Maximum input current	A	8,7	8,7	8,7	8,7	8,7	8,7	8,7	8,7
Specific conductivity at 20°C (min/max)	µS/cm	300 / 1'250							
Total hardness (min/max)	mg/l CaCo3	100 / 400							
Electrical heaters									
Steps	n.	3	3	3	3	3	3	3	3
Power	kW	9	9	15	15	18	24	24	27
Input current	A	13	13	21,7	21,7	26	34,6	34,6	39

CLOSE CONTROL UNITS WITH REMOTE CONDENSING

Technical data sheet - 2-circuits units - ED.E U-V-B Versions

ED.E U-V-B		332 Kc	422 Kc	502 Kc	642 Kc	852 Kc	922 Kc	1122 Kc	1462 Kc
Frame									
Frame			4		5	6	7		8
Oversized electrical heaters									
Steps	n.	3	3	3	3	3	3	3	3
Power	kW	12	12	18	18	24	27	27	36
Input current	A	17,3	17,3	26	26	34,6	39	39	52
Hot water coil									
Heating capacity	kW	19,8	19,8	35,7	35,7	43,7	54,3	54,3	73,5
Water flow rate	m ³ /h	3,4	3,4	6,2	6,2	7,6	9,5	9,5	12,8
Pressure drop (coil+3-way valve)	kPa	77	77	79	79	70	79	79	82
Internal volume of the coil	dm ³	2,8	2,8	5,3	5,3	6,6	10,1	10,1	12,4
Hot gas coil									
Heating capacity	kW	15,4	15,4	29	29	37,1	44,2	44,2	58,4
Condensing water pump									
Nominal water flow	l/h	390	390	390	390	390	390	390	390
Max water flow (pressure = 0 m)	l/h	500	500	500	500	500	500	500	500
Max height (water flow = 0 m ³ /h)	l/h	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40
Condensing water pump + humidifier									
Nominal water flow	l/h	600	600	600	600	600	600	600	600
Max water flow (pressure = 0 m)	l/h	900	900	900	900	900	900	900	900
Max height (water flow = 0 m ³ /h)	m	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
Dimensions									
Length	mm	1'160	1'160	1'860	1'860	2'210	2'565	2'565	3'100
Width	mm	850	850	850	850	850	850	850	850
Height	mm	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980
Weight - U Version	kg	320	331	436	454	519	601	633	787
Weight - V Version	kg	315	326	446	464	530	611	643	787
Weight - B Version	kg	320	331	456	475	535	621	653	797
Remote condensing unit									
Model	MCX	332 Kc	422 Kc	502 Kc	642 Kc	852 Kc	852 Kc	1122 Kc	1462 Kc
Cooling circuits	n.				2				
Compressors	n.	2	2	2	2	2	2	2	2
Cooling capacity	kW	29,3	42,6	54,8	70,1	82,6	82,6	104,5	135,6
Total input power	kW	8,8	13,4	17,3	22,6	25,0	25,0	28,4	38,6
Total input current	A	17,5	30,9	35,5	45,2	47,7	47,7	48,7	65,0
Maximum total input current	A	33,6	43,1	55,1	67,8	77,9	77,9	76,3	98,3
Total inrush current	A	80,5	118,1	130,4	173,9	184,9	184,9	183,3	247,6
Power supply									
Power supply	V/ph/Hz				400 / 3 / 50 + T + N				
REMARKS									
- Evaporating temperature 8°C; Inlet vapor quality = 0,30.									
- Filters calculated for 20% dirt.									
- Max pressure is referred to the nominal air flow and the max tension/regulation.									
- Hot water coil calculated for: water 40/45°C, ambient temperature 20°C and available pressure of 20 Pa.									
- The condensing water pump is calculated for a 2 m vertical difference in height respect to the pump; total length of the discharge pipe of 5 m, internal (diameter of the flexible pipe of 12 mm.									
- Remote condensing units suggested for external air temperature of 35°C.									

CLOSE CONTROL UNITS WITH REMOTE CONDENSING

Technical data sheet - 1-circuit units - ED.E D Version

ED.E D		71	81	101	131	161	211	271	331	421	501	591	771	921	991
Frame															
Frame			1		2		3		4		5		6		7
Cooling capacity															
Total cooling capacity (27°C - 50% R.H.)	kW	8,8	11,7	14,5	18,9	24,0	29,0	38,5	40,8	54,2	72,1	90,8	113,9	117,3	151,8
Sensible cooling capacity (27°C - 50% R.H.)	kW	7,0	9,1	11,0	14,5	17,2	22,6	28,1	31,7	38,8	55,8	65,9	81,5	89,3	108,2
SHR @ 27°C-50% U.R.	%	80%	78%	76%	77%	72%	78%	73%	78%	72%	77%	73%	72%	76%	71%
Total cooling capacity (24°C - 50% R.H.)	kW	6,3	8,1	10,4	13,2	17,1	20,4	27,5	28,5	38,5	50,4	64,9	81,1	82,6	108,7
Sensible cooling capacity (24°C - 50% R.H.)	kW	5,9	7,6	9,2	12,1	14,3	18,9	23,6	26,4	32,1	46,6	54,8	67,5	74,4	89,3
SHR @ 24°C-50% U.R.	%	94%	94%	88%	92%	84%	93%	86%	93%	83%	92%	84%	83%	90%	82%
Total cooling capacity (22°C - 50% R.H.)	kW	5,3	6,8	8,2	10,9	13,3	16,9	21,4	23,8	30,1	41,9	51,0	63,2	65,5	87,7
Sensible cooling capacity (22°C - 50% R.H.)	kW	5,3	6,8	8,1	10,9	12,4	16,9	20,5	23,8	27,9	41,9	47,6	58,5	65,5	79,3
SHR @ 22°C-50% U.R.	%	100%	100%	99%	100%	93%	100%	96%	100%	93%	100%	93%	93%	100%	90%
AC fans with autotransformer															
Quantity	n.	1	1	1	1	1	1	1	1	1	2	2	2	3	3
Fan(s) supply voltage	V	320	340	400	340	400	300	340	290	320	260	280	340	310	360
Air flow	m³/h	2.330	2.330	2.330	3.500	3.500	5.610	5.610	7.880	7.880	13.820	13.820	16.550	21.600	21.600
Available pressure	Pa	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Rotation speed	rpm	1.281	1.307	1.353	1.325	1.361	1.094	1.142	1.207	1.256	1.144	1.185	1.287	1.239	1.307
Input power	kW	0,39	0,4	0,44	0,69	0,74	1,04	1,14	1,68	1,82	3,08	3,3	3,79	5,37	5,92
Input current	A	0,97	0,97	1,06	1,45	1,53	2,63	2,63	4,12	4,09	8,38	8,36	8,08	12,39	12,21
Max available pressure (max ESP)	Pa	57	43	22	45	20	118	66	176	117	238	195	84	132	80
Sound pressure level @ 2 m - D Version	dB(A)	46	46	47	51	51	54	55	57	58	58	59	62	62	63
Sound press level @ 2 m - D Version (max ESP)	dB(A)	47	47	47	52	52	57	57	60	60	62	62	63	64	64
EC Fans - HP (High pressure)															
Quantity	n.	1	1	1	1	1	1	1	1	1	2	2	2	3	3
Air flow	m³/h	2.330	2.330	2.330	3.500	3.500	5.610	5.610	7.880	7.880	13.820	13.820	16.550	21.600	21.600
Max available pressure (max ESP)	Pa	640	623	594	454	415	648	603	521	473	582	536	444	490	431
Rotation speed	rpm	1.297	1.320	1.353	1.342	1.376	1.265	1.317	1.186	1.237	1.125	1.166	1.265	1.223	1.268
Input power	kW	0,34	0,35	0,38	0,6	0,64	0,91	1,03	1,28	1,48	2,25	2,52	3,13	4,35	4,86
Sound pressure level @ 2 m - D Version	dB(A)	45	45	46	51	51	55	55	55	55	56	57	60	60	60
Sound press. level @ 2 m - D Version (max ESP)	dB(A)	61	61	61	60	60	61	61	60	60	63	63	63	65	65
Humidifier															
Steam production (nominal)	kg/h	1,5	1,5	1,5	3	3	5	5	8	8	8	8	8	8	8
Steam production (max)	kg/h	3	3	3	3	3	8	8	8	8	8	8	8	8	8
Maximum input power	kW	1,12	1,12	1,12	2,25	2,25	3,75	3,75	6	6	6	6	6	6	6
Maximum input current	A	5	5	5	10	10	10	5,5	8,7	8,7	8,7	8,7	8,7	8,7	8,7
Specific conductivity at 20°C (min/max)	µS/cm								300 / 1 250						
Total hardness (min/max)	mg/l CaCO ₃								100 / 400						
Electrical heaters															
Steps	n.	1	1	1	3	3	2	2	3	3	3	3	3	3	3
Power	kW	3	3	3	4,5	4,5	6	6	9	9	15	15	18	18	18
Input current	A	4,3	4,3	4,3	6,5	6,5	8,7	8,7	13	13	21,7	21,7	26	26	26
Oversized electrical heaters															
Steps	n.	3	3	3	2	2	3	3	3	3	3	3	3	3	3
Power	kW	4,5	4,5	4,5	6	6	9	9	12	12	18	18	24	27	27
Input current	A	6,5	6,5	6,5	8,7	8,7	13	13	17,3	17,3	26	26	34,6	39	39
Hot water coil															
Heating capacity	kW	4,5	4,5	4,5	6,90	6,90	10,2	10,2	19,8	19,8	35,7	35,7	43,70	54,3	54,3
Water flow rate	m³/h	0,8	0,8	0,8	1,20	1,20	1,8	1,8	3,4	3,4	6,2	6,2	7,60	9,5	9,5
Pressure drop (coil+3-way valve)	kPa	37	37	37	35	35	55	55	77	77	79	79	70	79	79
Internal volume of the coil	dm³	1	1	1	1,3	1,3	1,5	1,5	2,8	2,8	5,3	5,3	6,5	10,1	10,1
Hot gas coil															
Heating capacity	kW	5,1	5,1	5,1	7,5	7,5	9,8	9,8	14,5	14,5	30	30	37,6	50,3	50,3
Condensing water pump															
Nominal water flow	l/h	27,5	27,5	27,5	390	390	390	390	390	390	390	390	390	390	390
Max water flow (pressure = 0 m)	l/h	34	34	34	500	500	500	500	500	500	500	500	500	500	500
Max height (water flow = 0 m³/h)	l/h	15,0	15,0	15,0	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40
Condensing water pump + humidifier															
Nominal water flow	l/h	-	-	-	-	-	-	-	600	600	600	600	600	600	600
Max water flow (pressure = 0 m)	l/h	-	-	-	-	-	-	-	900	900	900	900	900	900	900
Max height (water flow = 0 m³/h)	m	-	-	-	-	-	-	-	6,0	6,0	6,0	6,0	6,0	6,0	6,0
Dimensions															
Length	mm	550	550	550	750	750	980	980	1'160	1'160	1'860	1'860	2.210	2.565	2.565
Width	mm	550	550	550	550	550	750	750	850	850	850	850	850	850	850
Height	mm	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980
Weight - D Version	kg	153	155	158	189	194	257	266	315	325	450	478	539	615	647
Remote condensing unit															
Model	MCX	71 Kc	81 Kc	101 Kc	131 Kc	161 Kc	211 Kc	271 Kc	331 Kc	421 Kc	501 Kc	591 Kc	771 Kc	921 Kc	991 Kc
Cooling circuits	n.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Compressors	n.	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cooling capacity	kW	6,5	8,4	11,5	14,6	18,7	21,2	28,6	28,6	40,8	50,2	65,8	81,6	81,6	117,2
Total input power	kW	2,0	2,6	3,1	4,3	5,5	6,4	8,3	8,3	12,0	14,0	19,2	23,8	23,8	41,2
Total input current	A	3,9	5,4	5,9	8,2	12,1	14,2	18,5	18,5	24,1	28,5	37,3	39,0	39,0	68,7
Maximum total input current	A	5,3	10,6	14,3	16,3	20,3	20,3	28,6	28,6	40,2	43,8	56,2	58,2	58,2	98,3
Total inrush current	A	28,6	45,6	61,3	71,3	88,3	101,3	113,6	113,6	163,2	202,2	220,2	215,2	215,2	249,3
Power supply															
Power supply	V/ph/Hz								400 / 3 / 50 + T + N						
REMARKS															
- Evaporating temperature 8°C; Inlet vapor quality = 0,30; - Filters calculated for 20% dirt; - Max pressure is referred to the nominal air flow and the max tension/regulation; - Hot water coil calculated for: water 40/45°C, ambient temperature 20°C and available pressure of 20 Pa; - The condensing water pump is calculated for a 2 m vertical difference in height respect to the pump; total length of the discharge pipe of 5 m, internal (diameter of the flexible pipe of 12 mm) (6 mm for ED.E 71-81-101); - Remote condensing units suggested for external air temperature of 35°C.															

CLOSE CONTROL UNITS WITH REMOTE CONDENSING

Technical data sheet - 2-circuits units - ED.E D Version

ED.E D		332 Kc	422 Kc	502 Kc	642 Kc	852 Kc	922 Kc	1122 Kc	1462 Kc
Frame									
Frame		4		5		6		7	8
Cooling capacity									
Total cooling capacity (27°C - 50% R.H.)	kW	40,8	54,2	72,1	90,8	113,9	117,3	151,8	189,1
Sensible cooling capacity (27°C - 50% R.H.)	kW	31,7	38,8	55,8	65,9	81,5	89,3	108,2	135,2
SHR @ 27°C-50% U.R.	%	78%	72%	77%	73%	72%	76%	71%	71%
Total cooling capacity (24°C - 50% R.H.)	kW	28,5	38,5	50,4	64,9	81,1	82,6	108,7	135,5
Sensible cooling capacity (24°C - 50% R.H.)	kW	26,4	32,1	46,6	54,8	67,5	74,4	89,3	111,7
SHR @ 24°C-50% U.R.	%	93%	83%	92%	84%	83%	90%	82%	82%
Total cooling capacity (22°C - 50% R.H.)	kW	23,8	30,1	41,9	51,0	63,2	65,5	87,7	107,6
Sensible cooling capacity (22°C - 50% R.H.)	kW	23,8	27,9	41,9	47,6	58,5	65,5	79,3	98,3
SHR @ 22°C-50% U.R.	%	100%	93%	100%	93%	93%	100%	90%	91%
AC fans with autotransformer									
Quantity	n.	1	1	2	2	2	3	3	4
Fan(s) supply voltage	V	290	320	260	280	340	310	360	360
Air flow	m³/h	7'880	7'880	13'820	13'820	16'550	21'600	21'600	27'200
Available pressure	Pa	20	20	20	20	20	20	20	20
Rotation speed	rpm	1.207	1.256	1.144	1.185	1.287	1.239	1.307	1.307
Input power	kW	1,68	1,82	3,08	3,3	3,79	5,37	5,92	7,87
Input current	A	4,12	4,09	8,38	8,36	8,08	12,39	12,21	16,24
Max available pressure (max ESP)	Pa	176	117	238	195	84	132	80	80
Sound pressure level @ 2 m - D Version	dB(A)	57	58	58	59	62	62	63	64
Sound pressure level @ 2 m - D Version (max ESP)	dB(A)	60	60	62	62	63	64	64	65
EC Fans - HP (High pressure)									
Quantity	n.	1	1	2	2	2	3	3	4
Air flow	m³/h	7'880	7'880	13'820	13'820	16'550	21'600	21'600	27'200
Max available pressure (max ESP)	Pa	521	473	582	536	444	490	431	438
Rotation speed	rpm	1.186	1.237	1.125	1.166	1.265	1.223	1.268	1.269
Input power	kW	1,28	1,48	2,25	2,52	3,13	4,35	4,86	6,51
Sound pressure level @ 2 m - D Version	dB(A)	55	55	56	57	60	60	60	61
Sound pressure level @ 2 m - D Version (max ESP)	dB(A)	60	60	63	63	63	65	65	66
Humidifier									
Steam production (nominal)	kg/h	8	8	8	8	8	8	8	8
Steam production (max)	kg/h	8	8	8	8	8	8	8	8
Maximum input power	kW	6	6	6	6	6	6	6	6
Maximum input current	A	8,7	8,7	8,7	8,7	8,7	8,7	8,7	8,7
Specific conductivity at 20°C (min/max)	µS/cm	300 / 1'250							
Total hardness (min/max)	mg/l CaCo3	100 / 400							
Electrical heaters									
Steps	n.	3	3	3	3	3	3	3	3
Power	kW	9	9	15	15	18	24	24	27
Input current	A	13	13	21,7	21,7	26	34,6	34,6	39
Oversized electrical heaters									
Steps	n.	3	3	3	3	3	3	3	3
Power	kW	12	12	18	18	24	27	27	36
Input current	A	17,3	17,3	26	26	34,6	39	39	52
Hot water coil									
Heating capacity	kW	19,8	19,8	35,7	35,7	43,7	54,3	54,3	73,5
Water flow rate	m³/h	3,4	3,4	6,2	6,2	7,6	9,5	9,5	12,8
Pressure drop (coil+3-way valve)	kPa	77	77	79	79	70	79	79	82
Internal volume of the coil	dm³	2,8	2,8	5,3	5,3	6,6	10,1	10,1	12,4
Hot gas coil									
Heating capacity	kW	15,4	15,4	29	29	37,1	44,2	44,2	58,4
Condensing water pump									
Nominal water flow	l/h	390	390	390	390	390	390	390	390
Max water flow (pressure = 0 m)	l/h	500	500	500	500	500	500	500	500
Max height (water flow = 0 m³/h)	l/h	5,40	5,40	5,40	5,40	5,40	5,40	5,40	5,40
Condensing water pump + humidifier									
Nominal water flow	l/h	600	600	600	600	600	600	600	600
Max water flow (pressure = 0 m)	l/h	900	900	900	900	900	900	900	900
Max height (water flow = 0 m³/h)	m	6,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0
Dimensions									
Length	mm	1'160	1'160	1'860	1'860	2'210	2'565	2'565	3'100
Width	mm	850	850	850	850	850	850	850	850
Height	mm	1'980	1'980	1'980	1'980	1'980	1'980	1'980	1'980
Weight - D Version	kg	320	331	466	485	845	616	648	817
Remote condensing unit									
Model	MCX	332 Kc	422 Kc	502 Kc	642 Kc	852 Kc	852 Kc	1122 Kc	1462 Kc
Cooling circuits	n.					2			
Compressors	n.	2	2	2	2	2	2	2	2
Cooling capacity	kW	29,3	42,6	54,8	70,1	82,6	82,6	104,5	135,6
Total input power	kW	8,8	13,4	17,3	22,6	25,0	25,0	28,4	38,6
Total input current	A	17,5	30,9	35,5	45,2	47,7	47,7	48,7	65,0
Maximum total input current	A	33,6	43,1	55,1	67,8	77,9	77,9	76,3	98,3
Total inrush current	A	80,5	118,1	130,4	173,9	184,9	184,9	183,3	247,6
Power supply									
Power supply	V/ph/Hz	400 / 3 / 50 + T + N							
REMARKS									

- Evaporating temperature 8°C; Inlet vapor quality = 0,30; - Filters calculated for 20% dirt; - Max pressure is referred to the nominal air flow and the max tension/regulation; - Hot water coil calculated for: water 40/45°C, ambient temperature 20°C and available pressure of 20 Pa; - The condensing water pump is calculated for a 2 m vertical difference in height respect to the pump; total length of the discharge pipe of 5 m, internal (diameter of the flexible pipe of 12 mm); - Remote condensing units suggested for external air temperature of 35°C.