

ED-UV SF

CLOSE CONTROL UNITS FOR TELECOM CENTRES - DIRECT EXPANSION AND CHILLED WATER CLOSE CONTROL UNITS WITH FREE-COOLING SYSTEM

COOLING CAPACITY FROM 4 TO 26,8 kW

ED.P 161 SF E K



The range of close control units with in-built free-cooling system of packaged and direct expansion type (ED.P SF series) or with remote condenser (ED.A SF series) or of chilled water type (UV SF series) 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 with nitrogen charge.

These units are available as follows:

Packaged version:

- **ED.P SF.E.K** displacement air diffusion,
- **ED.P SF.U.K** upflow,
- **ED.P SF.D.K** downflow.

Split version with remote condenser:

- **ED.A SF.E.K** displacement air diffusion,
- **ED.A SF.U.K** upflow,
- **ED.A SF.D.K** downflow.

Chilled water version:

- **UV SF.E** displacement air diffusion,
- **UV SF.U** upflow,
- **UV SF.D** downflow.

Operation limits: ambient temperature from 20°C to 37°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 closing panels, fixed to frame with quick opening connections, are made of steel sheet and painted with epoxy powders and are internally insulated with sound-proofing material, reducing the overall sound level of the unit and allowing a good air tightness. The access to the main components and the operation also with open panels allow more accurate regulations and more quick intervention timing for ordinary and extraordinary service operations.

For ED.A SF and ED.P SF sizes, high-efficiency **scroll compressor** (COP 3.37 under ARI conditions), with low sound level, internal heat protection, installed on rubber vibration dampers, supplied with crankcase heater when necessary. In the case of 2 circuit units, in case of problem on one of the circuit, the 50% operation of the unit is anyway granted.

For ED.A SF and ED.P SF sizes, 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.

For packaged sizes ED.P SF, **condensing coil** with copper tubes and aluminium fins.

For UV sizes, **chilled water coil** with copper pipe 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 and it is equipped with purging air valves, three-way modulating valve with servomotor, electronically controlled.

Centrifugal fans with low-speed aluminium impeller, statically and dynamically balanced, with electrical motor directly coupled to an external rotor 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. They are equipped with a low airflow alarm which, by means of a pressure switch, stops the unit operation in case of fans problems and with a differential air flow switch for clogged filter alarm. For packaged sizes only (ED.P), their rotation speed is suitably regulated by an electronic pressostatic device to control the condensing pressure.

In-built **free-cooling system**, made by a dampers modulating the external air, controlled by a proportional servomotor, with the possibility of a simultaneous operation of the compressor (for sizes ED.A SF and ED.P SF) and of free-cooling.

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

Washable **air filters** - Efficiency F4 - of pleated type, they are made of synthetic fibre and are contained in a suitable metal frame.

Cooling circuit (for ED sizes) made of: copper pipes with condensing insulation on the suction line, thermostatic valve, high and low pressure switches, high pressure safety valve, dehydrating filter, sight glass.

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.

Unit management **microprocessor** installed on the internal safety panel of the electrical board, complete with hour counter.

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 triphase, 460V triphase. 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 150 mm to max 580 mm for installation on raised floors. It is provided with adjustable feet.

CS Compressors inrush counter (for ED sizes): Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors.

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.

IG Watch card: Electronic card to program the switch-over and rotation between to units, after a pre-set time.

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.

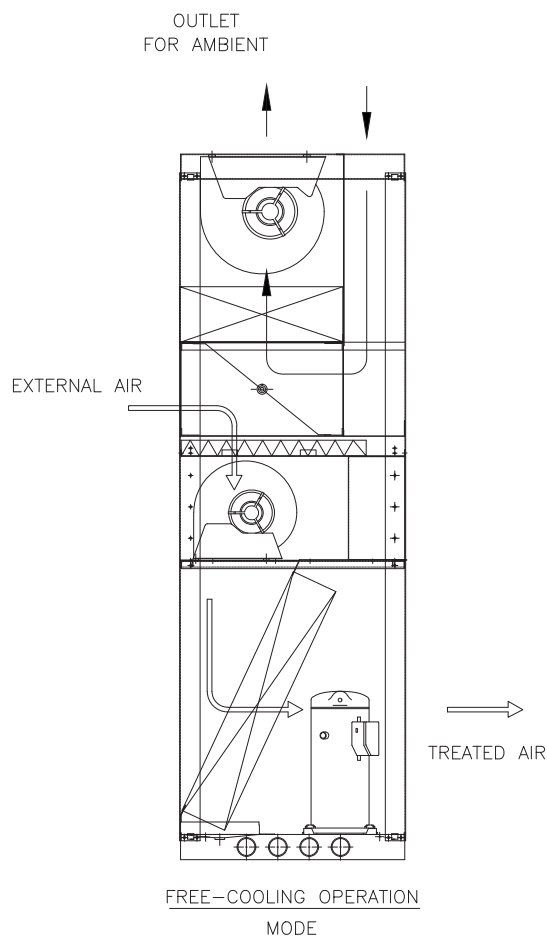
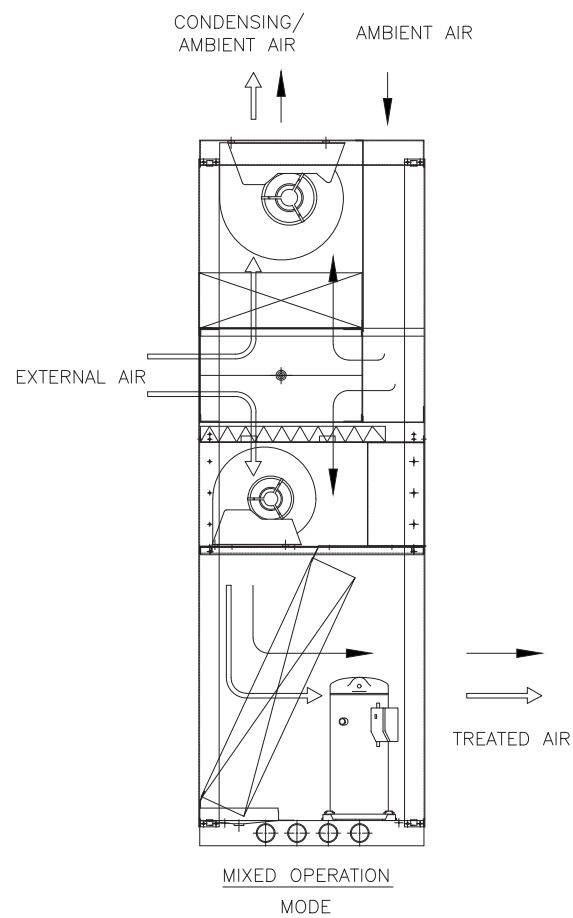
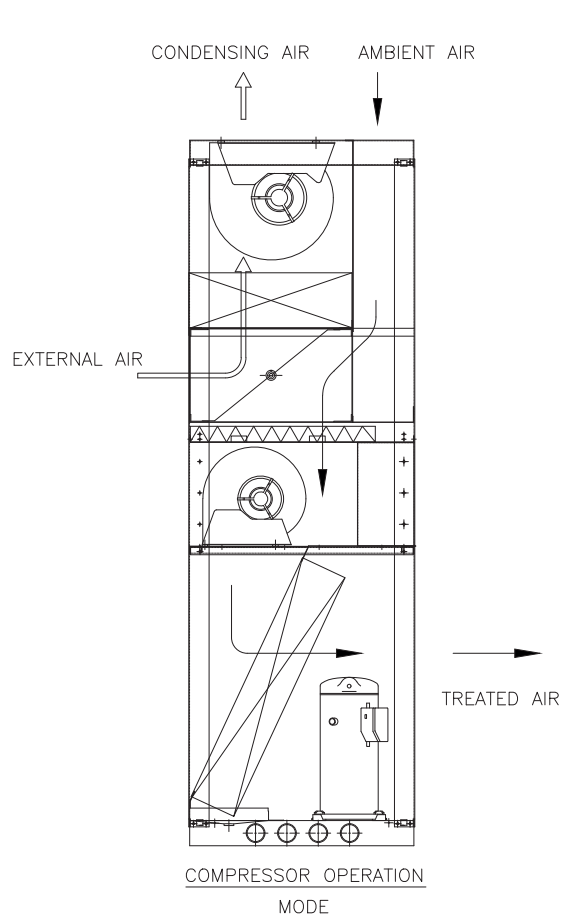
KC Spare filter (F4) kit: as a replacement to the ones on board of the unit.

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.

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, so to reduce the energy absorption. They are controlled by the microprocessor on board.

RG Fans speed regulation: control of the remote condenser's fans speed by means of voltage regulation, so to allow operation of the condenser down to -20°C. It allows the condensing pressure control by means of a pressure switch managed by the microprocessor.

CLOSE CONTROL UNITS WITH CHILLED WATER FOR TELECOM CENTERS WITH FREE-COOLING



CLOSE CONTROL UNITS WITH CHILLED WATER FOR TELECOM CENTERS WITH FREE-COOLING

Technical data with refrigerant R407C - ED.P SF packaged versions

ED.P SF			51 K	71 K	131 K	161 K	181 K	191 K	262 K
Cooling capacity									
Total	(29°C - 45%)	kW	5,6	9,3	13,4	18,1	17,0	19,9	26,8
Sensible	(29°C - 45%)	kW	4,1	7,2	9,4	15,0	13,4	14,5	18,8
Total	(27°C - 45%)	kW	5,2	8,7	12,5	16,9	15,9	18,6	25,1
Sensible	(27°C - 45%)	kW	4,0	7,1	9,2	14,7	13,1	14,2	18,4
Total	(25°C - 45%)	kW	4,9	8,2	11,8	16,0	15,0	17,6	23,7
Sensible	(25°C - 45%)	kW	3,9	6,9	8,9	14,3	12,8	13,8	17,9
Nominal absorbed power	(29°C - 45%)	kW	1,7	2,5	3,8	4,8	4,7	5,4	7,8
Nominal absorbed current	(29°C - 45%)	A	2,9	4,7	6,8	8,9	8,6	9,4	13,6
Scroll compressors									
Quantity		n	1	1	1	1	1	1	2
Circuits		n	1	1	1	1	1	1	2
Standard steps capacity		%	0 - 100						0-50-100
Maximum absorbed current		A	4	6	8	11	11	13	18
Inrush current		A	24	40	50	66	66	74	100
Evaporating centrifugal fans									
Quantity		n	1	1	2	2	2	2	3
Standard motor power		kW	0,25	0,37	0,38	0,42	0,60	0,60	0,94
Standard air flow		l/s	375	600	550	583	940	900	1.100
Standard air flow		m³/h	1.350	2.700	2.600	2.100	3.384	3.240	3.960
Standard nominal absorbed current		A	0,9	2,3	3,6	3,9	3,8	3,8	5,8
Standard available external pressure		Pa	-	-	-	-	-	-	-
Condensing centrifugal fans									
Quantity		n	1	1	1	1	2	2	3
Standard motor power		kW	0,75	1,09	1,09	1,09	1,34	1,34	3,25
Standard air flow		l/s	640	1.070	1.050	870	1.500	1.500	2.100
Standard air flow		m³/h	2.304	3.852	3.780	3.100	5.400	5.400	7.560
Standard nominal absorbed current		A	4,7	6,8	6,8	6,8	8,4	8,4	14,9
Standard available external pressure		Pa	65	65	70	65	70	70	70
Sound pressure levels									
Sound pressure levels		dB(A)	46	46	51	52	52	52	54
Electrical heaters									
Power		kW	3	3	3	3	4,5	4,5	6
Steps		n	1	1	1	1	1	1	2
Absorbed current		A	7,5	7,5	7,5	7,5	11,25	11,25	15
Dimensions									
Length		mm	900	900	900	900	1.200	1.200	1.800
Width		mm	750	750	750	750	750	750	750
Height		mm	2.250	2.250	2.250	2.250	2.250	2.250	2.250
Weight		kg	220	235	260	260	335	350	410
Power supply									
Power supply		V / ph / Hz	400V / 50 Hz / 3Ph + N + T						
REMARKS									
- Operation limit: ambient temperature from 20 to 37°C.									
- Measured at 2 m in open field (ISO 3746) with air suction and air discharge in ducts.									
- External air temperature: 35°C (max 40°C).									

CLOSE CONTROL UNITS WITH CHILLED WATER FOR TELECOM CENTERS WITH FREE-COOLING

Technical data with refrigerant R407C - ED.A SF Split version

ED.A SF			51 K	71 K	131 K	161 K	181 K	191 K	262 K
Cooling capacity									
Total	(29°C - 45%)	kW	5,6	9,3	13,4	18,1	17,0	19,9	26,8
Sensible	(29°C - 45%)	kW	4,1	7,2	9,4	15,0	13,4	14,5	18,8
Total	(27°C - 45%)	kW	5,3	8,8	12,7	16,9	16,1	18,9	25,5
Sensible	(27°C - 45%)	kW	4,0	7,1	9,2	14,7	13,1	14,2	18,4
Total	(25°C - 45%)	kW	5,0	8,4	12,1	16,0	15,3	17,9	24,1
Sensible	(25°C - 45%)	kW	3,9	6,9	9,0	14,3	12,9	19,1	18,1
Nominal absorbed power	(29°C - 45%)	kW	1,7	2,5	3,8	4,8	4,7	5,4	7,8
Nominal absorbed current	(29°C - 45%)	A	2,9	4,7	6,8	8,9	8,6	9,4	13,6
Scroll compressors									
Quantity		n	1	1	1	1	1	1	2
Circuits		n	1	1	1	1	1	1	2
Standard steps capacity		%	0 - 100						0-50-100
Maximum absorbed current		A	4	6	8	11	11	13	18
Inrush current		A	24	40	50	66	66	74	100
Evaporating centrifugal fans									
Quantity		n	1	1	2	2	2	2	3
Standard motor power		kW	0,25	0,37	0,38	0,42	0,60	0,60	0,94
Standard air flow		l/s	375	600	550	583	940	900	1100
Standard air flow		m³/h	1.350	2.160	1.980	2.100	3.384	3.240	3.960
Standard nominal absorbed current		A	0,9	2,3	3,6	3,9	3,8	3,8	5,8
Standard available external pressure		Pa	-	-	-	-	-	-	-
Sound pressure levels									
Sound pressure levels		dB(A)	45	45	50	51	51	51	53
Electrical heaters									
Power		kW	3	3	3	3	4,5	4,5	6
Steps		n	1	1	1	1	1	1	2
Absorbed current		A	7,5	7,5	7,5	7,5	11,25	11,25	15
Dimensions									
Length		mm	900	900	900	900	1.200	1.200	1.800
Width		mm	750	750	750	750	750	750	750
Height - E vers.		mm	1.900	1.900	1.900	1.900	1.900	1.900	1.900
Height - U-D vers.		mm	2.250	2.250	2.250	2.250	2.250	2.250	2.250
Weight		kg	220	235	260	260	335	350	410
Remote condenser									
Remote condenser		CR	11	14	27	27	27	30	27
Quantity		n	1	1	1	1	1	1	2
Power supply									
Power supply		V / ph / Hz	400V / 50 Hz / 3Ph + N + T						
REMARKS									
- Operation limit: ambient temperature from 20 to 37°C.									
- Condensing temperature 49 °C Dew.									
- Measured at 2 m in open field (ISO 3746) with air suction and air discharge in ducts.									
- Remote condenser selected for 35 °C external air temperature (see remote condensers).									

CLOSE CONTROL UNITS WITH CHILLED WATER FOR TELECOM CENTERS WITH FREE-COOLING

Technical data - UV SF

UV SF			160	180	220	250	300	340
Cooling capacity								
Total	(29°C - 45%)	kW	16,1	19,1	22,1	25,8	30,2	34,4
Sensible	(29°C - 45%)	kW	10,0	11,6	13,0	15,7	18,4	20,6
Water flow rate	(29°C - 45%)	l/s	0,77	0,91	1,06	1,23	1,44	1,65
Water pressure drop (coil + valve)	(29°C - 45%)	kPa	30	50	40	30	45	60
Total	(27°C - 45%)	kW	13,4	15,9	18,4	21,5	25,2	28,7
Sensible	(27°C - 45%)	kW	9,2	10,7	11,9	14,4	16,9	18,9
Water flow rate	(27°C - 45%)	l/s	0,64	0,76	0,88	1,03	1,20	1,37
Water pressure drop (coil + valve)	(27°C - 45%)	kPa	28	47	39	28	43	58
Total	(25°C - 45%)	kW	10,9	13,0	15,1	17,5	20,5	23,4
Sensible	(25°C - 45%)	kW	8,2	9,5	10,7	12,8	15,1	16,9
Water flow rate	(25°C - 45%)	l/s	0,52	0,62	0,72	0,84	0,98	1,12
Water pressure drop (coil + valve)	(25°C - 45%)	kPa	27	45	37	25	40	56
Chilled water coil centrifugal fans								
Quantity		n	1	1	1	2	2	2
Standard motor power		kW	0,37	0,37	0,37	0,60	0,60	0,60
Standard air flow		l/s	600	600	550	950	940	940
Standard air flow		m³/h	2.160	2.160	1.980	3.420	3.384	3.384
Standard nominal absorbed current		A	2,3	2,3	2,3	3,8	3,8	3,8
Standard available external pressure		Pa	-	-	-	-	-	-
Sound pressure levels								
Sound pressure levels		dB(A)	47	51	52	51	59	59
Electrical heaters								
Power		kW	3	3	3	4,5	4,5	4,5
Steps		n	1	1	1	1	1	1
Absorbed current		A	7,5	7,5	7,5	11,25	11,25	11,25
Dimensions								
Length		mm	900	900	900	1.200	1.200	1.200
Width		mm	750	750	750	750	750	750
Height - E vers.		mm	1.900	1.900	1.900	1.900	1.900	1.900
Height - U-D vers.		mm	2.250	2.250	2.250	2.250	2.250	2.250
Weight		kg	160	175	185	240	250	260
Power supply								
Power supply		V / ph / Hz	400V / 50 Hz / 3Ph + N + T					
REMARKS								
- Operation limit: ambient temperature from 20 to 37°C.								
- Nominal condition referred to: water 7/12 °C - 0% Glycol.								
- Measured at 2 m in open field (ISO 3746) with air suction and air discharge in ducts.								