



Fresh solutions in the world of climate

ROOF TOPS

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TABLE OF SYMBOLS

OPERATING MODE



Only cooling



Cooling – heating



Only Heating

CONDENSER



Air cooled



Water cooled



Condenserless

COMPRESSOR



Scroll



Reciprocating



Twin screw or screw

MOUNTING METHOD



External (Outside)



Internal (Inside)



Roof top

OPTIONS



Reversal on water



Free-Cooling



Anti-freeze



Hydro pack



ECSO Soft Fan



Electronic
thermostatic valve



Direct connect fan



Variable expense



Thermo dynamic
heat recycling

VENTILATION (ROOF TOPS)



Filtration



Fan



Mixing



Recovery



Heating



Cooling



Heat pump



Noise reduction



Moisture

We have devised this table of symbols, indicating all the basic functions and characteristics of the unit, to make the use of this guide easy.

EKRSA

Roof top from 40 kW to 200 kW

EKRSA Packaged air-conditioners
EKRSA...H Reversible heat pumps



General features

FRAME

The supporting frame of the unit is of extruded aluminium profiles, connected with 3 way joints – no use is made of any screws that protrude from the framework. The frame sits on a base of galvanised steel spars. The frame is fitted with polyurethane injected sandwich panels – the outer steel surface has been pre-painted RAL 9002. The seal is guaranteed by specific long-duration gaskets ensuring that the panels remain perfectly airtight in time despite the pressure that is created during normal operation.

Condensing section

COMPRESSORS

Hermetic scroll compressors equipped with crankcase heater and klixon for overload protection and complete with oil sight glass. The compressors are mounted on rubber shock absorbers.

CONDENSER (EVAPORATOR in the H-version)

Copper tube and aluminium finned equipped with, a protection grill.

AXIAL FANS

With aerodynamic designed blades manufactured in Al/Mg, directly coupled to a three phase electric motor with external rotor and fitted with thermal contact. A safety fan guard is fitted on air flow discharge.

REFRIGERANT CIRCUIT

The refrigerant circuit includes: dryer, sightglass, thermostatic valve “schrader” valve.

To protect the refrigerant circuit, following devices are fitted: manual reset high pressure switch, automatic reset low pressure switch. Furthermore, where required, manual reset safety pressure switch and safety valve are also fitted.

In the heat pump unit version (H) the refrigerant circuit also has the following fitted: safety thermostat on the compressor discharge line, 4-way valve, non-return valve, solenoid valve, liquid receiver.

ELECTRICAL BOARD

Weather proof to IP55 protection level. The board is fitted with:

- Main interlocking automatic circuit breaker, main fuses, compressor contactor, auxiliary circuit transformer, air handling section control.
- The board also has a microprocessor to automatically control the unit, complete with a display of the operating status as well as all alarm situations.

Air handling section

VERSIONS STANDARD SECTION

This section can provide: air discharge downwards, upwards or through the side; return air from below or horizontally.

The section includes: belt-driven centrifugal air supply fan with a variable pulley and a 3-phase electric motor, the entire assembly is mounted on rubber shock absorbers to reduce to a minimum vibrations and consequently the sound level; heat exchanger with copper tubes and aluminium fins, stainless steel condensate tray complete with drain, section to accommodate post-heating; filter section with G4 rated pleated filters.

M / M1 – Standard section + Mixing section chamber

This section allows outside air to be mixed with the back return air. The size allows 2 driven dampers to be fitted capable of handling 100% of the airflow and that can be placed in various positions of the section (upper panel, lower panel, left and/or right side panel).

EM – Standard section + Return air section/free cooling economizer

This section allows the discharge of the extracted air as well as the mixing of outside air with the re-circulated air. The fan assembly with its drive system and motor are mounted on rubber shock absorbers to reduce to a minimum vibrations and consequently the sound level. Three driven dampers can be fitted and appropriately positioned to allow for a total recirculation of the air, or to mix the air or to allow operation with 100% of outside air which would be the free cooling economizer version.

G – Standard section + Heating section

This section contains a combustion chamber with two smoke passes (STAINLESS STEEL AISI 430) that has with a tubular exchanger with a large exchange surface and inspection points on the smoke pipes, damper cut fire; a single/dual/modular burner complete with gas ramp. This section is totally insulated with sandwich panels with class 0 lining. This section can be integrated with the other previous versions.

COMPACT – EM Vertical version

This is a variation of the EM design in which the sections are positioned on top of the base section, therefore having a vertical structure and consequently having a very small footprint.

MODEL		51	61	71	91	101	121	131	151	172	182	202
NOMINAL AIR FLOW	m³/h	9200	10200	12600	15000	18000	21000	24000	27000	30000	33000	36000
COOLING EKRSA												
Cooling capacity	kW	48	55	67	80	100	113	127	148	160	176	190
Absorbed (1)	kW	14,1	18,1	20,3	26,1	32,5	37,3	44,2	44,7	50,6	54,5	61
Hot water coil (2)	kW	55	58	74	88	105	124	140	163	170	194	200
HEATING EKRSA...H												
Heating capacity	kW	49	57	66	81	100	111	127	148	163	182	198
Absorbed power (1)	kW	12,8	16,3	18,3	22,5	27,6	31,6	35,2	39,5	45,6	47,4	52,6
CONDENSING SECTION												
Compressors	n°	2										
Refrigerant circuits	n°	1								2		
Step control	%	0-50-100										
Fans	n°	1	1	2	2	2	2	2	4	4	4	4
Nominal air flow (3)	m³/s	3,4	3,4	6,1	6,1	6,6	9,4	9,4	12,3	12,3	13,2	13,2
Refrigerant		R407C										
Electrical power supply	V/f/Hz	400/3/50										
AIR HANDLING SECTION												
Nominal air flow	m³/s	2,5	2,8	3,5	4,2	5	5,8	6,6	7,5	8,4	9,1	10
ESP	Pa	200										
Fans	n°	1										
Fan motor nominal capacity	kW	2,2	3	3	4	5,5	4	7,5	5,5	7,5	9,2	9,2
Fan motor nominal current	A	5,6	7,1	7,1	9,2	13,1	9,2	16,6	13,1	16,6	19	19
Filter		G4										
ELECTRICAL DATA M E M1 VERSIONS (ESCLUDING EM VERSION)												
FLA	A	48	54	61	73	87	97	118	126	139	154	169
LRA	A	130	158	167	215	254	281	303	348	361	403	418
Electrical power supply	V/f/Hz	400/3/50										
SOUND PRESSURE LEVEL AT 1 M (4)												
STD version	dB(A)	72	72	75	75	75	75	79	79	79	79	79
LN version	dB(A)	65	65	67	67	68	68	71	71	71	71	71
VLN version	dB(A)	61	62	63	62	63	63	66	66	66	66	66
EM VERSION												
Return air flow	m³/s	2,5	2,8	3,5	4,2	5	5,8	6,6	7,5	8,4	9,1	10
ESP	Pa	100										
Fans	n°	1										
Fan motor nominal capacity	kW	2,2	2,2	2,2	3	3	3	5,5	5,5	5,5	5,5	7,5
Fan motor nominal current	A	5,6	5,6	5,6	7,1	7,1	7,1	13,1	13,1	13,1	13,1	16,6
DIMENSIONS												
Length	mm	5150	5150	5300	5450	5750	5900	6150	6700	7400	7800	8050
Width	mm	1800	1800	2100	2100	2250	2250	2250	2250	2300	2300	2300
Height	mm	2115	2115	2115	2115	2315	2315	2360	2360	2435	2435	2435
Weight	kg	1300	1300	1550	1670	2400	2510	2600	2900	3200	3290	3400

Performances in cooling mode :

- ambient air temp. 35°C, evaporator inlet air temp. 27°C-50% R.U.

Performances in heating mode :

- ambient air temp. 7°C db / 6 wb; condenser inlet air temp. 20°C

Remarks: 1) Compressors + axial fans (except radial fans).

2) Water temp. from 80°C to 70°C; air inlet temp. 20°C.

3) Max air flow in LN version.

4) Sound pressure level measured in free field at 1 m (air suction on condensing section) and 1,5 m from the ground; air handling section ducted, both on return air and on discharge air. According to DIN 45635

ROOF TOP PLANT DUO

POSSIBLE COMBINATIONS:

DUO/GTM/PAC

Heating module unit

DUO/E..CAE/PAC/GTM

Cooling/heating rooftop unit

DUO/E..MAE/GTM/UTA

Air conditioner unit

DUO/E..CAE/PAC/GTM/UTA

Roof top plant unit

Air conditioning self-contained single package unit covering all seasons manufactured assembling together different modules into one single package unit for outdoor installation.

- Modulating gas heater GTM
 - Water storage/circulating kit PAC
 - Air cooled water chiller E..CAE
 - Air cooled condensing unit E..MAE
 - Air handling unit UTA
- There are all the units able to produce:
- thermal energy +
 - chilled water +
 - air conditioned.



In particular DUO has been designed to meet the requirements of medium to large commercial and industrial buildings. In comparison with conventional solutions the system offers the following advantages:

- System designing can be reduced and simplified.
- Higher coefficient of performance of the assembly in comparison with that of any conventional system.
- Lower cost of the self contained assembly in comparison with the cost of each single unit due to the process of the standardisation of the components and manufacturing procedures.
- Mechanical plant space and running costs of the heating room can be reduced.
- Installation time can be reduced.
- Site labour costs lower.
- Start up and commissioning times can be reduced because the unit is assembled in the factory and run and function tested, before shipment.
- Saving in cost because only one warranty and one yearly after service contract.

GMT THERMAL MODULATING HEATER

Model	GTM	11	12	13	14	15	16
Capacity	kw	28	56	84	112	140	168
Boiler	n°	1	2	3	4	5	6

- For other fuel or higher capacity please contact head office.

PAC WATER STORAGE TANK/CIRCULATING KIT

Mod.	300	500	750
Capacity	300 lt	500 lt	750 lt

E..CAE AIR COOLED WATER CHILLER

Mod.	52	82	92	102	122	152	182	202	252	302	352	392	452
kw	27,2	34,0	40,2	52,8	66,0	85	95	105	121	136	158	180	207

E..MAE AIR COOLED CONDENSING UNIT

Mod.	52	82	92	102	122	152	182	202	252	302	352	392	452
kw	32,8	40,4	48,6	63,4	80	106	115	124,5	144	161	187	212	240

UTA AIR HANDLING UNIT

Model	UTA	700	1000	1800	2400	3100	3900	4500
Max. air flow	m³/h	7000	10000	18000	24000	31000	39000	45000
Avail stat press.	Pa	150	150	150	150	150	150	150