

MINIPAC: Telecommunication packaged air conditioners with free-cooling system for outdoor installation.

Cooling Capacity: 4,2 ÷ 18,9 kW



UPS_{48VDC}
RC Hi-Tech

FREE_{COOLING}
RC Hi-Tech

rcgroupairconditioning



MAIN FEATURES

- Telecommunication packaged air conditioners.
- Proportional automatic free-cooling system. Three working mode.
- 9 models available for a wide selection opportunity.
- Average step of 1,5kW.
- Rotary or scroll compressor.
- R407c refrigerant charge.
- Supply fans directly coupled to brushless type electric motors.
- Horizontal air flow.
- Double power supply (Network + 48VDC UPS)
- Suitable for outdoor installation.

- mechanical cooling: the compressor or the chilled water are used to cool the ambient

DOUBLE POWER SUPPLY

(Network + 48VDC UPC)

WORKING LIMITS

Room humidity from 20 up to 75% rH

Room temperature from 16 up to 35°C

Ambient temperature from -30 up to 45°C

MAIN BENEFITS

- The proprietary software foresees unit working with the lowest noise emission during the night.
- Working continuity even during black-out periods.
- Automatic restart of the unit.
- Availability of electric heater.
- Full frontal inspection.
- Easily of maintenance.

PROPORTIONAL FREE-COOLING SYSTEM

The cooling system is totally proportional and allows three working modes:

- total free-cooling: only fresh air is used to cool the ambient;
- partial free-cooling: the fresh air is used for a pre-cooling and the compressor or the chilled water are used to balance the load;



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MAIN COMPONENTS

FRAMEWORK

- Base and frame in galvanized steel sheet, painted with epoxy powders.
- Galvanized steel sheet panels painted with epoxy powders, internally insulated with noise absorption material and seals to ensure air tight with the panels.
- Panels fixed with safety screws.
- Total front access for routine maintenance.
- Colour RAL 9002

ON / OFF COMPRESSOR

- Rotary compressor with rotary vane (model R1) optimized for R407C refrigerant.
- Scroll compressor (model Z1) with spiral profile optimized for R410A refrigerant.
- Electric motor with direct on line starting.
- Rubber supports.

FILTER SECTION

- Washable air filters with G4 efficiency, with cells in synthetic fibre and metallic frame (EN 779-2002).

EVAPORATING SECTION

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Frame in galvanized steel.
- Condensate tray in peraluman with PVC flexible discharge pipe.

SUPPLY FANS SECTION

Power supply 48VDC from UPS

- Axial fans with sickle-shaped blade and fan guard, directly coupled to external rotor electric motor (units size S0, S1, S1S).
- Double suction centrifugal fans with forward curved vanes directly coupled to external rotor electric motor (units size S2, S3).
- Brushless type electric motor with continuous variation of the rotation speed. The motor rotation control is obtained by signal coming from the microprocessor control.
- Temperature sensor on room air intake
- Temperature sensor on room air delivery.
- Grille on room air suction.
- Double row adjustable grille on air delivery.
- System for air flow loss alarm

REFRIGERANT CIRCUIT

- Thermostatic expansion valve.
- Sight glass.
- Filter dryer on liquid line.
- Pressure transducer with indication, control and protection functions, on high pressure.
- Low pressure safety switch.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- R407C refrigerant charge and lubricant oil.

CONDENSING COIL

- Heat exchanger coil with high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
 - Maximum capacity relative to the size of the exchanger.
 - Minimum charge of refrigerant.
 - Reduction of the air flow required for the heat exchange.
- Frame in galvanized steel.
- Grille on air suction/discharge.

CONDENSER FANS SECTION

- Axial fan with sickle-shaped blade, fan guard and optimized for low noise levels.
- External rotor AC type electric motor with stepless variable speed for condensing pressure control.
- IP54 enclosure class.

DIRECT FREE-COOLING SECTION

Power supply 48VDC from UPS

- Deviating damper on ambient air.
- Proportional servomotor directly driven by microprocessor control.
- Grille on ambient air suction.
- Temperature sensor on ambient air.

ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for outdoor installation, complete with:

- Double power supply, from network and from UPS 48VDC
 - Units size S0, S1, S1S:
 - 230/1/50 power supply for compressor, condenser fan and eventual electric heater.
 - Units size S2, S3:
 - 400/3/50+N power supply for compressor, condenser fan and eventual electric heater.
- For all units:
 - 48 VDC power supply from UPS for supply fans, free-cooling damper servomotor, auxiliary circuit and microprocessor control.
- Magnetothermic switch for 230/1/50 or 400/3/50+N power supply line (from network)
- Magnetothermic switch for 48VDC power supply line (from UPS)
- Contactor on compressor.
- Phases monitoring relay (only S2, S3 units)
- Auxiliary circuit 48VDC (from UPS).
- Terminals for General Alarm 1
- Terminals for General Alarm 2

CONTROL SYSTEM

Power supply 48VDC from UPS

- Microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
 - Real time clock.
 - Main components hour-meter.
 - Menu with protection password.
 - LAN connection.
 - LN function to obtain a low noise unit running. The system works proportionally to the load on the fan rotation speed either of the condenser fan or the supply fan. The system allows a low noise unit running during night time anyway according to the programmed sets.
 - Automatic restart of the unit in case of power failure

OPTIONAL ACCESSORIES

MINIPAC MODEL SIZE	04 R1 S0 XS	05 R1 S1 XS	06 Z1 S1 XS	08 Z1 S1/S XS	09 Z1 S1/S XS	11 Z1 S2 XS	13 Z1 S2 XS	16 Z1 S3 XS	20 Z1 S3 XS
169 - Mounting brackets	•	•	•	•	•	•	•	•	•
311 - Electric heater	•	•	•	•	•	•	•	•	•
909 - Clogged filters alarm	•	•	•	•	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•	•	•	•	•

• available accessory; - not available accessory

TECHNICAL DATA

MINIPAC MODEL SIZE		04 R1 S0 XS	05 R1 S1 XS	06 Z1 S1 XS	08 Z1 S1/S XS	09 Z1 S1/S XS	11 Z1 S2 XS	13 Z1 S2 XS	16 Z1 S3 XS	20 Z1 S3 XS
Cooling capacity(1)										
Total	kW	4,2	5,6	6,3	8,6	9,3	11,6	12,4	16,5	18,9
Sensible	kW	4,2	5,5	6,3	8,2	9,3	11,3	12,4	16,1	18,9
SHR	kW/kW	1,00	0,99	1,00	0,96	1,00	0,97	1,00	0,98	1,00
Unit power input										
48VDC power supply from UPS	kW	0,11	0,22	0,22	0,39	0,39	0,48	0,63	0,67	1,09
Power supply from network	kW	1,18	1,43	1,88	2,21	2,79	3,00	4,00	4,81	6,50
Treatment fans	n.	2	2	2	2	2	2	2	2	2
Air flow	m³/h	1100	1750	1750	2200	2200	3200	3700	4300	5000
Nominal external static pressure	Pa	20	20	20	20	20	30	30	30	30
Compressors										
Quantity	n.	1	1	1	1	1	1	1	1	1
Capacity steps	n.	1	1	1	1	1	1	1	1	1
Condenser fans										
Quantity	n.	1	1	1	1	1	1	1	1	1
Air flow	m³/h	1600	1400	1900	2750	3600	4400	4400	4400	6200
Air filter	n.	1	1	1	1	1	1	1	2	2
Efficiency	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4
Refrigerant										
Total refrigerant charge	kg	1,3	1,6	1,6	1,7	1,7	3,0	3,3	4,0	4,5
Gas circuits	n.	1	1	1	1	1	1	1	1	1
Power supply	V/Ph/Hz	230/1/50+48VDC	230/1/50+48VDC	230/1/50+48VDC	230/1/50+48VDC	230/1/50+48VDC	400/3/50+48VDC	400/3/50+48VDC	400/3/50+48VDC	400/3/50+48VDC
Max operating current (FLA)										
48VDC power supply from UPS	A	3,7	6,0	6,0	9,7	9,7	11,5	14,6	15,5	24,0
Power supply from network	A	8,6	9,9	12,1	15,5	18,8	8,2	9,2	13,6	19,0
Starting current (LRA)										
48VDC power supply from UPS	A	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0
Power supply from network	A	32,6	33,4	47,7	61,7	77,5	47,2	53,2	67,2	104,0
EER (1)	kW/kW	3,29	3,36	3,00	3,30	2,91	3,33	2,68	3,01	2,49
Sound pressure - ISO 3744 (2)										
On air intake	dB(A)	63,0	55,0	55,0	60,0	60,0	64,0	67,0	69,0	71,5
On front side	dB(A)	54,0	52,0	57,0	57,0	62,0	58,0	58,0	58,0	64,0
Net weight	kg	135	155	165	195	200	220	235	270	290

THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FANS MOTOR THERMAL LOAD

(1) Referred to entering air at 28°C with 40% RH and outdoor air temperature 35°C

(2) Sound pressure 1m far in free field according to ISO3744 norm.

TECHNICAL DATA - OPTIONAL ACCESSORIES

MINIPAC MODEL SIZE		04 R1 S0 XS	05 R1 S1 XS	06 Z1 S1 XS	08 Z1 S1/S XS	09 Z1 S1/S XS	11 Z1 S2 XS	13 Z1 S2 XS	16 Z1 S3 XS	20 Z1 S3 XS
Electric heater										
Heating capacity	kW	1,0	1,5	1,5	1,5	1,5	4,5	4,5	4,5	4,5
Capacity steps	n.	1	1	1	1	1	1	1	1	1

DIMENSIONS (mm)

SIZE	a	b	c
S0	660	500	1303
S1	831	535	1500
S1S	903	620	1760
S2	1000	700	2004
S3	1000	700	2352

