

Off-Grid DC 48V solar air conditioner including solar plant, batteries and smart management of energy



DC 48V direct operation without converter

FREECOLD autonomous air conditioners operate directly in DC 48V voltage powered from photovoltaics and batteries, without converting energy into 230V current and therefore without loss of efficiency.

When the sun shines, the air conditioners work on the photovoltaic source which simultaneously recharges the batteries. An MPPT controller ⁽¹⁾ optimizes this charge with an efficiency greater than 95%.

Autonomy is ensured by maintenance-free AGM ⁽²⁾ solar batteries made in Germany. Their capacity is defined according to the air conditioner and the desired autonomy; as standard, the 5-hour autonomy is dedicated to shops and offices that need to be refreshed during the day; the 12-hour autonomy is intended for domestic use, allowing refreshment day and night.

Thus, FREECOLD 100% solar air conditioners offer those who work and live where there is no grid power supply or where electricity is weak and expensive, to enjoy from air conditioning economically and freely.

100% solar air conditioners CMS09, CMS12 et CMS18

A strong design with a 5-year warranty on the compressor and 3 years on other parts;

Powers of 2,600 W (9,000 btu) 3,500 W (12,000 btu) and 5,000 W (18,000 btu) in air conditioning and heating;

Their advantages: very low noise operation and significant energy savings [class A+++], with refrigeration efficiency ratio EER ⁽³⁾ greater than 5;

Easy installation and time saving with the mounting plate and the installation bracket designed to facilitate the connection of fittings;

Easy access to filters for faster and more efficient maintenance;

Simplicity and ease to control from the compact and intuitive infrared remote control.

The solar plant

6 to 9 photovoltaic modules (EU origin) come with their electric cable for easy and fast commissioning.

The solar plant, with a capacity of 2 and 3 kWp, for absorbed electrical power of 0.9 and 1.3 kW, powers air conditioner directly and recharges batteries to ensure the autonomy.

The installation is secured by DC disconnect, surge protector and grounding of the photovoltaic field.

(1) MPPT : MPPT controllers (Maximum Power Point Tracking) track the voltage from solar panels to maximize their output power ;

(2) AGM : In an AGM (Absorbent Glass Mat) battery, the lead plates are separated by a microporous fiberglass element that contains the acid electrolyte like a sponge. This reduces the risk of electrolyte leakage and provides high cyclic stability, allowing the battery to be charged and discharged without loss of performance.

(3) EER: Energy Efficiency Ratio is defined as cold power output divided by electrical power input. It is a yield, but higher than 1 and the higher it is, the more economical the air conditioner.

100% solar air conditioner CMS09 / 5-hour autonomy including 2 kWp solar plant and 5,7 kWh batteries

- ✓ Power: 9.000 btu (2.600 W) DC power supply: 42V – 60V
- ✓ Air conditioning EER = 5,35 Absorbed electrical power: 475 W
- ✓ R410A refrigerant charge: 0,95 kg Operation temperature: 50°C
- ✓ Compressor: Toshiba – GMCC DC 48V Maximum input consumption: 1.050 W
- ✓ Dimensions WDH / weight : Ind.U: 850 x 185 x 290 mm / 8,2 kg Out.U : 835 x 320 x 540 mm / 35 kg
- ✓ 2 kWp solar plant made up of 6x 325Wp photovoltaic modules (Spain origin)
- ✓ Maintenance-free AGM batteries: 4 x 120 Ah / 12V (Germany origin)

100% solar air conditioner CMS12 / 5-hour autonomy including 2 kWp solar plant and 7 kWh batteries

- ✓ Power: 12.000 btu (3.500 W) DC power supply: 42V – 60V
- ✓ Air conditioning EER = 5,25 Absorbed electrical power: 635 W
- ✓ R410A refrigerant charge: 1,05 kg Operation temperature: 50°C
- ✓ Compressor: Toshiba – GMCC DC 48V Maximum input consumption: 1.200 W
- ✓ Dimensions WDH / weight : Ind.U: 850 x 185 x 290 mm / 8,2 kg Out.U : 835 x 320 x 540 mm / 35 kg
- ✓ 2 kWp solar plant made up of 6x 325Wp photovoltaic modules (Spain origin)
- ✓ Maintenance-free AGM batteries: 4 x 150 Ah / 12V (Germany origin)

100% solar air conditioner CMS12 / 12-hour autonomy including 3 kWp solar plant and 16,8 kWh batteries

- ✓ Power: 12.000 btu (3.500 W) DC power supply: 42V – 60V
- ✓ Air conditioning EER = 5,25 Absorbed electrical power: 635 W
- ✓ R410A refrigerant charge: 1,05 kg Operation temperature: 50°C
- ✓ Compressor: Toshiba – GMCC DC 48V Maximum input consumption: 1.200 W
- ✓ Dimensions WDH / weight : Ind.U: 850 x 185 x 290 mm / 8,2 kg Out.U : 835 x 320 x 540 mm / 35 kg
- ✓ 3 kWp solar plant made up of 9x 325Wp photovoltaic modules (Spain origin)
- ✓ Maintenance-free AGM batteries: 8 x 175 Ah / 12V (Germany origin)

100% solar air conditioner CMS18 / 5-hour autonomy including 3 kWp solar plant and 10 kWh batteries

- ✓ Power: 18.000 btu (5.000 W) DC power supply: 42V – 60V
- ✓ Air conditioning EER = 5,15 Absorbed electrical power: 890 W
- ✓ R410A refrigerant charge: 1,35 kg Operation temperature: 50°C
- ✓ Compressor: Toshiba – GMCC DC 48V Maximum input consumption: 1.500 W
- ✓ Dimensions WDH / weight : Ind.U: 960 x 213 x 302 mm / 9,5 kg Out.U : 835 x 320 x 540 mm / 39 kg
- ✓ 3 kWp solar plant made up of 9x 325Wp photovoltaic modules (Spain origin)
- ✓ Maintenance-free AGM batteries: 4 x 210 Ah / 12V (Germany origin)

Our air conditioners are delivered in complete kits, including preinstalled wiring and precharged refrigerant.