ecodirna

natural comfort in your vehicle

www.dirna.co.uk
www.bycool.co.uk

dirna
Air conditioning for vehicles

ecodirna

DIRNA is engaged with the environment developing and manufacturing air conditioning units, for industrial vehicles which are completely electrical, connected directly to the battery and working engine OFF by preventing atmospheric emissions of CO2. Furthermore, they contribute saving fuel costs expenses and allowing a more comfortable and proper rest.

The **DIRNA** electrical units **are compatible** with the requirements of the **North American Environmental Protection Agency** (EPA) and with EU regulations on anti-idling in haulage vehicles.

Dirna's BYCOOL range is composed by 3 product lines.

green line

Standalone Air Conditioning Systems.

blue line

Standalone evaporative cab coolers.

SUN

Electrical heating units.

green line

ELECTRICAL STANDALONE AIR CONDITIONING SYSTEMS

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blue line

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SUN

ELECTRICAL HEATING UNIT

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dirna

Air conditioning for vehicles

green line

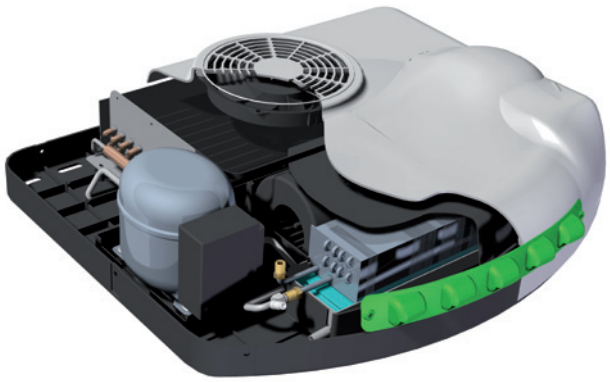
COMPACT

Bycool Compact are high performance standalone air conditioning systems with electrical compressors in a closed circuit with second-generation inverter technology, the cooling power is regulated automatically with minimum consumption. These systems are exclusively designed for On-Road vehicles.

The **Compact** systems are the perfect solution for overnight rest in the truck cabin, and, depending on the model, can also be used to maintain a comfortable temperature inside the cabin during goods loading and unloading operations, compulsory stoppage periods or when resting, sleeping, etc.

CHARACTERISTICS

- Air conditioning systems for installation **on the roof.**
- **Manual and automatic** function.
- Easy mounting **without having to drill the cabin roof**, can be adjusted to all types of cabins.
- **Digital thermometer** (in ºC and ºF).
- **Interior control panel.**
- **Pre-charged systems.**
- **Double battery protection.**
- Systems prepared for hazardous goods transport **(ADR)**.
- **2 years warranty** in accordance with our general sales conditions. Check our website.



The most advanced technology at your service.

Electronic display

Control of all functions by radio frequency (RF) from the remote control

maximum comfort

www.dirna.co.uk

COMPACT RANGE

The **Compact** range is composed by 4 models designed to be adapted to the individual needs of each customer in terms of the space to cool and the climatological conditions of the working environment and voltage of the vehicle.

Consoles adapted to every type of vehicle.

COMPACT 1.4

new

Standalone air conditioning unit with the **engine switched OFF or ON for NIGHT-TIME use**, maintaining the temperature during the day.

This unit is used mainly to cool down the truck cabin during the driver's overnight rest periods and during loading and unloading operations.

1.400 W
INSTALLATION ON THE ROOF
On-Road trucks, electrical vehicles, sweepers, forklifts
AVAILABLE IN 12V and 24V

CAMPER version for mobile homes and caravans.

COMPACT 1.6

new

Standalone air conditioning unit with the **engine switched OFF or ON for NIGHT-TIME use**, maintaining the temperature during the day.

This unit is used mainly to cool down the truck cabin during the driver's overnight rest periods and during loading and unloading operations.

1.600 W
INSTALLATION ON THE ROOF
On-Road trucks, electrical vehicles
AVAILABLE IN 24V

COMPACT 2.0

new

Standalone air conditioning unit with the **engine switched OFF or ON for NIGHT-TIME use**, maintaining the temperature during the day.

This unit is used mainly to cool down the cabin for resting and feeling comfortable.

2.000 W
INSTALLATION ON THE ROOF
Electrical vehicles, ambulances, forklifts, sweepers
AVAILABLE IN 12V

COMPACT 3.0 N&D

new

Standalone air conditioning unit with the **engine switched OFF or ON for both NIGHT-TIME and DAY-TIME use**. It is fitted with two compressors and two independent evaporator and condenser circuits, acting like two air conditioning units in one.

This unit is used mainly to cool down the truck cabin during the driver's rest periods, during loading and unloading operations and whilst driving.

3.000 W
INSTALLATION ON THE ROOF
On-Road trucks, electrical vehicles
AVAILABLE IN 24V

green line

DINAMIC

Bycool Dinamic is a high performance standalone air conditioning unit working with one electrical compressor and inverter technology with automatic regulation of temperature. Due to its very low electrical consumption, the unit is particularly suitable for the night-time use working engine OFF. Exclusively designed for On-Road trucks.

The **Dinamic** unit fitted on the rear side of the cabin (the hatch remaining intact), regulates the temperature and allows sleeping and resting during the night in the most favourable and comfortable conditions.

The most advanced technology at your service.

CHARACTERISTICS

- **Installation on the rear wall of the cabin.**
- **Manual and automatic** function.
- **Digital thermometer** (in ºC and ºF).
- **Interior control panel**.
- **Double battery protection**.
- **2 years warranty** in accordance with our general sales conditions. Check our website.

Electronic display

Control of all functions by radio frequency (RF) from the remote control

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DINAMIC 1.1

Standalone air conditioning unit for **NIGHT use** and installation on the rear wall of the cabin.

This unit is used mainly to cool down the truck cabin during the driver's rest periods, during loading and unloading operations. Perfect for vehicles on which it is not possible to install top roof units.

1.100 W

INSTALLATION ON THE REAR WALL

Car transporter trucks, cabins with excess height, American cabins or cabins without a hatch

AVAILABLE IN 12V AND 24V

Technical Characteristics

MODEL	COMPACT 1.4	COMPACT 1.6	COMPACT 2.0	COMPACT 3.0 N&D
Use	Night	Night	Night	Night/Day
Compressor	2 hermetic	1 hermetic	2 hermetic	2 hermetic
Refrigerant gas	R134A	R134A	R134A	R134A
Pre-charged with gas	Yes	Yes	Yes	Yes
Voltage	12 V / 24 V	24 V	12 V	24 V
Power W (*)	1.400 W	1.600 W	2.000 W	3.000 W
BTU (*)	4.777	5.459	6.824	10.236
KCAL/h (*)	1.204	1.376	1.720	2.580
Electrical consumption	12 V 18 A/h - 28 A/h 24 V 10,5 A/h - 18 A/h	7 A/h - 22 A/h	22 A/h - 64 A/h	Engine switched off 11 A/h - 24 A/h Engine started up 25 A/h - 38 A/h
Maximum air flow	800 m^3	800 m^3	800 m^3	800 m^3
Air curtain speeds	5	5	5	5
Compressor control unit	Standard	Standard	Standard	Standard
Electronic control	Yes	Yes	Yes	Yes
Remote control	Yes	Yes	Yes	Yes
Inverter technology	Yes	Yes	Yes	Yes
Double battery protection	Standard	Standard	Standard	Standard
Minimum battery required	(**)	(**)	(**)	180 A
Minimum alternator required	(**)	(**)	120 A/h	80 A/h
Dimensions and weight	826 x 726 x 176 mm 29,9 kg	826 x 726 x 203 mm 33 kg	826 x 726 x 203 mm 40 kg	826 x 726 x 203 mm 39,3 kg

MODEL	DINAMIC 1.1 24V	DINAMIC 1.1 12V
Use	Night	Night
Compressor	1 hermetic	1 hermetic
Refrigerant gas	R134A	R134A
Pre-charged with gas	No	No
Voltage	24 V	12 V
Power W (*)	1.050 W	1.050 W
BTU (*)	3.853	3.853
KCAL/h (*)	903	903
Electrical consumption	9,5 A/h - 16 A/h	12 A/h - 27 A/h
Maximum air flow	420 m^3	420 m^3
Air curtain speeds	5	5
Compressor control unit	Standard	Standard
Electronic control	Sí	Sí
Remote control	to consult	Standard
Double battery protection	Standard	Standard
Minimum battery required	(**)	(**)
Minimum alternator required	(**)	(**)
Condenser unit: dimensions and weight	785 x 630 x 197 mm 18 kg	785 x 630 x 197 mm 24 kg
Evaporator: dimensions and weight	308 x 650 x 128 mm 5 kg	308 x 650 x 128 mm 5 kg

(*) In accordance with JIS standard, test conditions: outside temperature 35ºC, return temperature 27ºC.

(**) Works correctly with the battery and alternator mounted as standard version in the vehicle.

green line

new INTEGRAL POWER

INTEGRAL POWER is an air conditioning roof unit assisted by an integrated Powerful Moto-Compressor. **INTEGRAL POWER** is connected directly to the battery which allows the unit working with the engine switched OFF. It is the perfect unit to be mounted on **OFF-Road vehicles**.

INTEGRAL POWER is the perfect solution for resting or working with the engine switched OFF or ON.

The most advanced technology at your service.

CHARACTERISTICS

- **Manual and automatic** function.
- **Digital thermometer** (in ºC and ºF).
- **Air blower with 5 speeds.**
- **Easy mounting.**
- **Very resistant structure.**
- **Low maintenance costs.**
- **Pre-charged system.**
- **Double battery protection.**
- **2 years warranty** in accordance with our general sales conditions. Check our website.

Electronic display

Control of all functions by radio frequency (RF) from the remote control

maximum comfort

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INTEGRAL POWER

Compact standalone air conditioning unit, working with the engine switched OFF and ON for NIGHT and DAY use. Complete unit to be installed on the roof.

3.200 W

INSTALLATION ON THE ROOF

OFF-Road trucks, mining trucks, cranes, agriculture vehicles and construction works machines

AVAILABLE IN 24V

Applications

	Light vehicles	Trucks	Forklifts, Sweepers	Construction Works M.	Agriculture vehicles	Special vehicles
INTEGRAL POWER	✘	✔	✔	✔	✔	✔

Technical Characteristics

MODEL	INTEGRAL POWER
Use	Night/Day
Compressor	Powerful Moto-Compressor unit
Refrigerant gas	R134A
Pre-charged with gas	Yes
Voltage	24 V
Power W (*)	3.200 W
BTU (*)	10.921
KCAL/h (*)	2.752
Electrical consumption	30 A/h - 45 A/h (**)
Maximum air flow	700 m^3
Air curtain speeds	5
Compressor control unit	Standard
Electronic control	Yes
Remote control	Yes
Double battery protection	Standard
Minimum alternator required	75 A/h - 28 V
Dimensions and weight	655 x 730 x 210 mm 43,5 kg

(*) In accordance with JIS standard, test conditions: outside temperature 35°C, return temperature 27°C.
(**) Test conditions: outside temperature between 30 °C and 42 °C.

green line

COMPACT ROOF UNITS

The **COMPACT ROOF UNITS** are air conditioning systems composed by evaporator-condenser units with 3 air curtain speed levels, adjustable thermostat, suitable for **every type of vehicle**. The « T » range runs with a compressor engine or with an electrical Powerful **Moto-Compressor** unit, connected to the battery.

Our COMPACT ROOF UNITS « T » are the perfect solution to cool down the cabin, with easy mounting and high cooling capacity. To put into operation the « T » range, independent support of compressor and compressor have to be installed in the engine part of the vehicle **(compressor and support of compressor are not included in the unit).**

The most advanced technology at your service.

CHARACTERISTICS

- **Easy mounting.**
- **Low maintenance costs.**
- **2 years warranty** in accordance with our general sales conditions. Check our website.

WORKING WITH A POWERFUL MOTO-COMPRESSOR UNIT

- **Manual and automatic** function.
- **Digital thermometer** (in ºC and ºF).
- **Double battery protection.**
- **Does not overheat the engine.**

Electronic display

Control of temperature and blower speed by radio frequency (RF) from the remote control

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COMPACTO T3

Cooling power	3.000 W (*)	
Heating	Optional	
Voltage	12V	24V
Electrical consumption	18 A/h	9 A/h
Air flow	700 m³/h	
Dimensions	600 x 730 x 145 mm	
Weight	18 Kg	

(*) The **T3** unit can be installed together with the Powerful **Moto-Compressor** unit maintaining the cooling capacity of 3000 W. The power consumption is fed by the Powerful Moto-Compressor unit in 24 V: 30 A/h - 45 A/h (**)

COMPACTO T4

Cooling power	4.000 W (*)	
Voltage	12V	24V
Electrical consumption	18 A/h	9 A/h
Air flow	700 m³/h	
Dimensions	800 x 475 x 180 mm	
Weight	21 Kg	

(*) The **T3** unit can be installed together with the Powerful **Moto-Compressor** unit maintaining the cooling capacity of 3200 W. The power consumption is fed by the Powerful Moto-Compressor unit in 24 V: 30 A/h - 45 A/h (**)

COMPACTO T5

Cooling power	5.000 W (*)	
Voltage	12V	24V
Electrical consumption	22 A/h	11 A/h
Air flow	700 m³/h	
Dimensions	655 x 730 x 165 mm	
Weight	25 Kg	

(*) The **T3** unit can be installed together with the Powerful **Moto-Compressor** unit maintaining the cooling capacity of 3200 W. The power consumption is fed by the Powerful Moto-Compressor unit in 24 V: 30 A/h - 45 A/h (**)

(**) Test conditions: outside temperature between 30 °C and 42 °C.

APPLICATIONS

	Light vehicles	Trucks	Forklifts, Sweepers	Construction Works M.	Agriculture vehicles	Special vehicles
COMPACTO T3	✔	✘	✔	✘	✘	✔
COMPACTO T4	✔	✘	✔	✔	✘	✔
COMPACTO T5	✔	✔	✔	✔	✔	✔

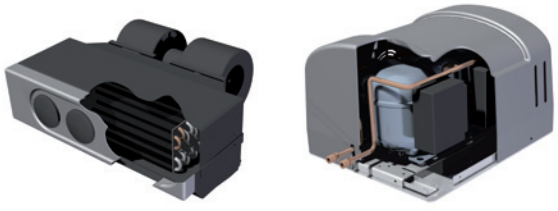
green line

SPLIT

Split is a range of air conditioning units for NIGHT-TIME and DAY-TIME use working with the engine switched OFF and ON. The outstanding feature of the Split is its **versatility**. The design of its four units facilitates an easy adaptation to all types of cabins according to the requirements of the customer and the available space.

The **Split** units must be powered directly from the vehicle battery. The Split air conditioning systems are made up of 4 components :

- Electronic control
- Compressor unit
- Evaporator unit
- Condenser unit



The most advanced technology at your service.

maximum comfort

CHARACTERISTICS

- **Flexibility**, multiple installation locations for its 4 components.
- **Manual and automatic** function.
- **Programming time between 1 and 9 hours.**
- **Digital thermometer** (in ºC and ºF).
- **Low maintenance costs.**
- **Double battery protection.**
- **2 years warranty** in accordance with our general sales conditions. Check our website.

Electronic display

Control of all functions by radio frequency (RF) from the remote control

www.dirna.co.uk

SPLIT 2.0 - SPLIT 3.0

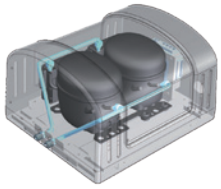
2.000 W / 3.000 W

VERSATIL INSTALLATION

Trucks, electrical vehicles, mobile homes and caravans

AVAILABLE IN 12 V (2.0)

AVAILABLE IN 24 V (3.0)



OPTION

Evaporator unit available in horizontal or vertical

SPLIT

The unit can be installed with hermetic compressors or with the powerful Moto-compressor unit for **OFF-Road vehicles** or for those which are running in extreme working conditions.

MAXIMUM DISTANCES BETWEEN THE COMPONENTS	
Condenser unit – Evaporator unit	3,50 m
Evaporator unit – Compressor unit	3,00 m
Compressor unit – Condenser unit	2,00 m

TECHNICAL CHARACTERISTICS

MODEL	SPLIT 2.0	SPLIT 3.0	SPLIT 3.0 OFF ROAD
Use	Night/Day	Night/Day	Night/Day
Compressor	2 hermetic	2 hermetic	P. Moto-Compressor unit
Refrigerant gas	R134A	R134A	R134A
Voltage	12 V	24 V	24 V
Power W (*)	2.000 W	3.000 W	3.200 W
BTU (*)	6.824	10.236	10.921
KCAL/h (*)	1.720	2.580	2.752
Electrical consumption	42 A/h - 62 A/h	12 A/h - 38 A/h	30 A/h - 45 A/h (***)
Air curtain speeds	5	5	5
Compressor control unit	Standard	Standard	Standard
Electronic control	Yes	Yes	Yes
Remote control	Yes	Yes	Yes
Double battery protection	Standard	Standard	Standard
Maximum air flow	670 m^3/h	800 m^3/h	800 m^3/h
Minimum battery required	(**)	180 A	180 A
Minimum alternator required	120 A/h	80 A/h	75 A/h - 28 V
Evaporator: dimensions and weight	410 x 270 x 125 mm 5 kg	410 x 270 x 125 mm 5 kg	410 x 270 x 125 mm 5 kg
Condenser unit: dimensions and weight	620 x 500 x 130 mm 6,5 kg	620 x 500 x 130 mm 6,5 kg	620 x 500 x 130 mm 6,5 kg
Compressors: dimensions and weight	430 x 370 x 260 mm 22 kg	430 x 370 x 260 mm 22 kg	664 x 265 x 151 mm 28 kg

(*) In accordance with JIS standard, test conditions: outside temperature 35°C, return temperature 27°C.

(**) Works correctly with the battery and alternator mounted as standard version in the vehicle.

(***) Test conditions: outside temperature between 30 °C and 42 °C.

blue line

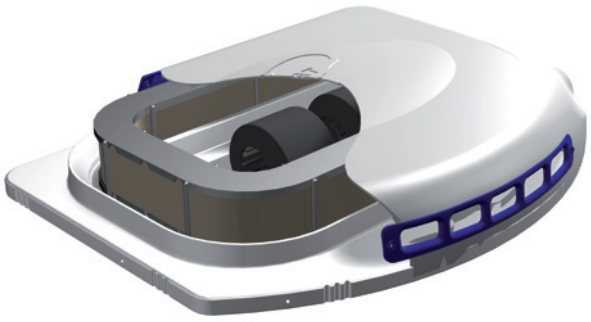
bycool

The **Bycool** evaporative units are cooling systems for truck cabins and other vehicles, using the natural evaporation of water, either with the engine running or switched OFF, during the day-time and night-time, for resting in the cabin and for loading and unloading operations.

Contrary to the conventional air conditioning systems, the evaporative coolers Bycool are using the natural principles to cool the air :

« When a liquid evaporates, it absorbs heat »

The evaporative systems **Bycool** are based on this principle. The outside hot air passes through a humid filter where the water evaporates, absorbing the heat and cooling the air.



The most advanced technology at your service.

CHARACTERISTICS

- Installation **on the roof** or **at the rear wall of the cabin.**
- **Manual and automatic** function.
- Easy mounting, can be adjusted to all types of hatches.
- **Low electrical consumption** (from 0,4 to 4 A/h).
- **Air flow : 900 m³/h.**
- **Digital thermometer** (in °C and °F).
- Systems prepared for hazardous goods transport **(ADR)**.
- Time programming function.
- **2 years warranty** in accordance with our general sales conditions. Check our website.

Electronic display

Control of all functions by radio frequency (RF) from the remote control

maximum comfort

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FLAT

Extra-flat evaporative cooler for a better installation on trucks equipped with spoiler, with active carbon filter, prevents the entry of dust, pollen and particles in suspension in dusty environment working places.

INSTALLATION ON THE ROOF
On-Road trucks, construction works machines, agriculture vehicles
818 x 718 x 135 mm
14,8 Kg
AVAILABLE IN 12V AND 24V

REVOLUTION

High efficient evaporative cooler for driving or resting in the cabin in the most favourable temperature and humidity conditions, thus avoiding overnight accommodation expenses.

INSTALLATION ON THE ROOF
On-Road trucks
787 x 860 x 160 mm
17 Kg
AVAILABLE IN 12V AND 24V

CAMPER

High efficient evaporative cooler for mobile homes and caravans.

INSTALLATION ON THE ROOF
Mobile homes and caravans
787 x 860 x 160 mm
17 Kg
AVAILABLE IN 12V

MOCHILA

Evaporative cooler with maximum efficiency for vehicles which require a rear wall installation are equipped with active carbon filter at the air louvers and making the work more comfortable.

INSTALLATION AT THE REAR WALL
Car transporter trucks, cranes, cabins with excess height, American cabins or cabins without a hatch
496 x 832 x 150 mm
6,4 Kg
AVAILABLE IN 12 V AND 24 V

Water tanks

Standard

Camper

Bycool provides 2 types of water tanks. Available also a kit for installing the water tank under the chassis.

	Width	Lenght	Height	Capacity
Standard	130 mm	550 mm	550 mm	27 litros
Camper	200 mm	350 mm	330 mm	15 litros

Fungicide cap

Keep the water tank clean with the water treatment for evaporative coolers Bycool. Easy to replace, our fungicide cap maintains the water clean in perfect conditions.

PARKING HEATER

SUN is a compact electrical heating unit with electronic and remote control designed to heat the cabin of the vehicles most efficiently as possible.

SUN a heating unit entirely electrical, independent from the engine and connected directly to the battery, maintains the cabin at favourable temperature conditions and prevents emissions of CO_2 into the atmosphere.

SUN unit connected to the battery is working with the engine of the vehicle switched OFF. This allows saving fuel which would be consumed with the engine on.

CHARACTERISTICS

- **Manual or automatic** function.
- Switch Off programming function.
- Defog function.
- **Digital thermometer** (in ºC and ºF).
- **Wake-up** programming function.
- **Battery protection.**
- Supports multi-emplacements included.
- **2 years warranty** in accordance with our general sales conditions. Check our website.

TECHNICAL CHARACTERISTICS		
Voltage	24V	12V
Heating capacity	~1000 w	~500 w
Electrical consumption	22 ÷ 33 A	25 ÷ 39 A
Air flow	250 m³	100 m³
Weight	2,76 kg	2,76 kg
Dimensions	300 x 240 x 139 mm	

Level of battery on the display

Electronic display

Control of temperature and blower speed by radio frequency (RF) from the remote control

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Made in the EU

2 YEARS WARRANTY

e9 Certification for European Electromagnetic Compatibility Directive **2009/19/EC**

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Air conditioning for vehicles

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