

Single Skin CN Series

Product Profile



 biniclima®



Your projects, challenges and requirements are our focus. We have a dedicated team that can engineer tailored solutions for your commercial HVAC application.

Oceania Solutions Group is an Australian owned business that focuses on providing engineered HVAC solutions. We value the importance of relationships with our clients and partners. Our team enjoy collaborating and solving complex 'design and construct' projects for your business with our product solutions.

Oceania Solutions Group are proud of our extensive portfolio and experience within HVAC industry. From industrial applications through to commercial air conditioning installations for tropical and high humidity environments.

Operating throughout Australia, New Zealand and the South Pacific Islands, we provide engineered technical data and commercial support for a wide range of HVAC solutions.

Our experienced team of HVAC professionals work hand-in-hand with market leading suppliers of HVAC solutions and equipment.

With international accreditation from Eurovent, CTI, AHRI, TÜV and AMCA, our products are rigorously tested and certified, meeting Australian and New Zealand standards and regulations.

Partnering with trusted international suppliers, we are available to provide an engineered solution for your next project.

Contents

Company overview	04
Product technical data and dimensions	05
General information	10
Important notes	11
Installation and maintenance manual	12
Operating limits	13
Mechanical installation	14
Hydraulic connections	16
Electrcial connections and motor wiring	17
Start up check list	19
Notes	21



Better air since 1963

Biniclima is a company with extensive international operations, four manufacturing facilities in Italy, Austria and India and more than 34,000 m² of production and offices. Biniclima specialise in the manufacturing and worldwide distribution of air handling units and fan coil units.

Biniclima has a well distributed network of sales and service across Europe, Asia, Middle East and Northern Africa. Our partners in various countries assume a surface covering responsibility for marketing, local servicing and optimal assistance.

The #1 partner for fan coil units

Biniclima offers a wide range of standardised and customised terminal units for residential and commercial buildings: hotels, offices, schools, stores and hospitals to name a few.

From simple, cost effective products for comfort applications, to specialised equipment such as double skin fan coils for marine or medical applications. Biniclima can provide you the right terminal units to meet your exact needs. Specialised products can be designed for individual projects with components such as EC motors or UVC lamps. All Biniclima terminals can be equipped with factory mounted controls.



Ducted fan coil units

Biniclima have an extensive range of ducted fan coil units that provide an optimal solution for shopping centres, schools and universities, hotels, apartments and offices for summer cooling and winter heating.

The units are single and double skin casing, with optional filters and frames, three speed AC fan and 0-10V EC fan solutions for optimal air distribution, complete with a high efficiency heat exchanger, drain pans and a wide range of controllers and value train inclusions for additional pricing to suit your project requirements.

Product warranty

The Biniclima ducted fan coil units, chilled and hot water units are supplied with a parts warranty for either 12 months from start-up or 16 months from invoice date, whichever is to occur first.

A parts and labour warranty can be obtained at the time of purchasing the units. Please contact your local Oceania Solutions Group representative for further details.



Technical data CN

Technical Data					Cooling		Conditions			Heating		Sound
Unit	Model	Pipes	Fan Speeds	Flow (l/s)	Total (kW)	Sensible (kW)	Air On (DB °C)	Air On (WB °C)	Air Off (DB °C)	Total (kW)	Static Pa	Lp (dBa)
CN	02-3R	2T	3	110	2.73	1.92	27	19.5	12.2	-	50	33.7
CN	03-3R	2T	3	156	3.96	2.69	27	19.5	12.2	-	50	34.9
CN	05-3R	2T	3	227	5.46	3.75	27	19.5	12.8	-	50	40.2



Operating limits

- MAX water side pressure 16 Bar (1,6 MPa)
- Entering water temperature MIN 3°C - MAX 80°C
- Air inlet temperature MIN 5°C - MAX 43°C
- Power supply 220-240V/1Ph/50-60Hz

Water connections

- Standard are on RIGHT hand side (front view).

General Information

The flexibility of the performances, the effective control of the environmental comfort, the autonomy of operation of every single unit are the main advantages. They represent the most modern terminal units with typical features, placing themselves in an avant-garde and prestigious position.

CN units are specifically designed to satisfy high cooling capacity application requirement. They represent one of the most cost effective solutions to provide a comfortable environment for both commercial and residential applications.

Their quiet operation, compact dimensions and particularly low height, make units ideal for ceiling concealed installation even in buildings with narrow ceiling spaces. Units are standard supplied with soundproofed suction plenum and air filter. Centrifugal fans, with forward curved blades, are statically and dynamically balanced and driven by singlephase motors with three speeds. They are characterized by elegant design, advanced structure, high efficiency, low noise, calibration and low maintenance. They are widely used in houses, shopping malls, hospitals and office etc.

Ducted horizontal units

Designed for installations where there is no wall space, in order to be recessed on the ceiling. Also in this case it is possible to have ducted air supply. The control of the unit is wall mounted.

Coil

Water coil with \varnothing 9.5 mm (3/8 ") copper pipe with staggered rows, high efficiency hydrophilic aluminum fins. Standard 3R Fins pitch 2.5 mm 8 Tubes H = 200 mm complete with robust female threaded header DN 3/4 "and manual drainvent. Hydraulic connections are standard on the right, looking at the front of the units. Pressure: 16 Bar (1.6 MPa) operation, 33 Bar (3.3 MPa) test. Temperature: hot water max 80 °C minimum cold water + 3°C.

Drain pan

Drain pan in galvanized sheet metal, internally painted and completely insulated with 7 mm closed cell fireproof material. R 3/4" threaded condensate discharge.

Fan deck

Fan deck double suction centrifugal fans with blower and impeller in galvanized metal sheet.

Motor

Single-phase 4-pole motor with permanently inserted capacitor, 3-speed, self-lubricating bearings, IP20 protection, class B, 1150 RPM, with internal thermal protection, 220-240V \pm 10% and 50-60Hz \pm 2 Hz.

Air filter

Washable acrylic mesh Class EU1-G1-M1 thickness 10 mm fixed with clips on return.

Casing

completely made of galvanized sheet, removable panels 5 mm insulated, closed cells, fan group section and coils section 4 mm open cells, the various components are easily removable because they are fixed with screws.

Terminal

Terminal covered with 5 Mamuth clamps 2,5 mm² + earth screw with 3 motor speed wired Max (yellow) Med (Brown) Min (Orange) and Neutral (blue).

Optional Accessories



Elec-digital thermostats



Actuators 0-10v and on/off



2-3 way Chilled water valves and bypass



Water sensor / hot water temperature limit stat

Important notes

Warning: the manufacturer and supplier are not responsible for the incorrect installation of hydraulic and electrical connections.

Please carefully read this manual before installing and operating the HW series fan coil unit. It is recommended this manual is kept readily available and referred to for additional information about the unit, operation and maintenance.

- The unit must be installed following the local standard, safety codes and guidelines. Please contact the seller, installer or a qualified specialists.
- Follow the instructions below or incorrect and improper use during installation can cause the loss of the warranty or parts guarantee.
- Maintenance must only be performed by qualified specialists.
- Unplug or disconnect the power supply before maintenance or accessing the internal parts of the unit.
- Do not install or use a damaged device.
- In case of malfunction, switch off the unit, unplug the power supply and return to the seller or qualified specialists.
- Dispose of the packaging material following the local environmental regulations.

Unit acceptance, handling and storage.

- At the time of the delivery, please verify the correspondence between the order and the delivery docket.
- Verify the packaging spaces protected from bad weather with a temperature between -10°C and 55°C.
- The handling and installation of the unit must be performed with the highest attention to prevent any damage of fragile parts; these operations can be facilitated with the help of the following manual.



Recent project:
Ballina State
High School
New South Wales



Installation, operation and maintenance manual

Identification and receiving of the appliance

Every unit is identified with a label that is inside the unit on the electric control side. The label shows the manufacturer's data, the unit type and the serial number of the unit. Check every unit before accepting it. Be sure the packaging is not damaged or bended or broken. In case of a damaged package, open it immediately and check the contents before accepting it; check the chassis and the panels of the fan coil, the heat exchanging coil, the condensate drain pan, the filter, the proper fan rotation, all the eventual accessories. Do not refuse the shipping: please write all the damages on the shipping document and take pictures of the damages.

General warnings

This manual is part of the unit and must always be with the appliance. After removing the appliance from the packaging, be sure that there are no damages and the appliance corresponds to your order. In case of great damage: write a description of the damages on the carrier's copy of the shipping documents, take pictures of the damages, send immediately a letter to the carrier, and send a copy to your dealer and/or to the manufacturer, specifying model and serial number.

General indications

An electric connection 220-240V/1/50-60Hz and an hydraulic connection to the water chiller/boiler are necessary to allow proper working of the appliance. The unit has been designed for installation in rooms where people live, and for heating and/or cooling of such rooms; the unit must be used only for that purpose. Each unit is checked and tested in the factory, and is delivered to the customer only if properly working. All repair/maintenance operations must be carried out by qualified specialists. Failure to observe the rules contained in this manual, or any unauthorized modification / tamper of the appliance can cause dangerous situations and will immediately invalidate the warranty of the appliance. The manufacturer is not responsible in case of damages caused by:

- unauthorized changes or modifications to the appliance
- improper installation or improper use

Mandatory safety rules during installation

The fan coil must not be installed: outdoor, in a too humid environment, in explosive or corrosive environment, in a very dusty environment. A bipolar safety switch must be installed, to disconnect the appliance from the electric power supply; the switch must: be properly sized, be easily accessible and close to the appliance, have a minimum 3mm distance between its contacts. The appliance must be properly connected to an electric earth. Do not place flammable / dusty goods close to the appliance. Do not remove the labels from the inside of the appliance.

Mandatory safety rules during use, maintenance, repair

It is dangerous: to touch the fan coil with wet parts of the body and bare feet; to modify or tamper the settings of the safety devices; to spray water or flammable liquids/gas onto the fan coil; to introduce foreign objects or hands through the air intake and discharge grills; to introduce foreign objects or hands into the fans. Do not bend, pull, detach the electric wires out-coming the fan coil, even if it is disconnected from the power supply.

Before any maintenance / repair:

- disconnect electrical power source and secure in disconnected position
- close the water valves
- wait until the water is at the same temperature of the room
- wear safety gloves
- in case of replacement of components use only original spare parts supplied by the manufacturer

Before any maintenance be sure that: the unit is disconnected from the electric power source; the water valves are closed; the water temperature is not dangerous (too hot or too cold). Children or disable people must not use the fan coil without assistance. If the fan coil is installed in very cold climates, and a long un-operative period is forecasted, the hydraulic circuit must be completely emptied, in order to avoid risk of ice inside the tubes; ice will cause big damages. If a damper for external air is installed, the cold air can cause ice inside the tubes of the coil, and ice will break the tubes. If necessary, some glycol must be mixed with the water of the hydraulic circuit. The coils are tested up to 4000 kPa (40 bar). In case the air filter has to be cleaned or changed be sure it is fitted again in the appliance before re-starting the unit.

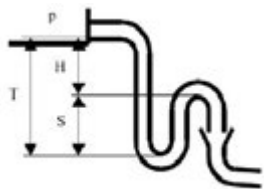


Recent project:
Gold Coast
Private Hospital
Queensland

Drain pan discharge

Create a drain trap; create a minimum slope 50 mm/m; do not create counterslopes; do not flatten or kink the pipe; check the connection by pouring water into the drain pan. Check the circuit: give hydrostatic pressure, air vent the coil of the unit, be sure that no dripping occurs. Do not check the circuit just before a holiday: big troubles may occur if qualified control personnel is not on duty.

- It is indispensable to install a siphon on the drain line to prevent the fan sucking obnoxious odours or bacteria from the drain system, creating ideal condition inside the fan coil unit for the proliferation of pathogenic germs and micro-organisms, also favouring the diffusion of Legionella Pneumophila responsible for Legionnaires' disease.
- A drain connection without a siphon, or with an incorrectly installed siphon, allows air to be sucked into the unit, the condensate cannot drain and is carried over into the next section of the unit and the condensate will spill out of the unit, flooding the surrounding area, when the fan is shut down.
- The siphon must not be hermetically connected to the drain line to permit air locks to be broken.
- A siphon in positive pressure must never be connected to another in negative pressure.
- The drain line downstream of the siphon must have sufficient slope to carry away the condensate and its diameter should be at least the same as the unit drain connection.
- The drain piping can be in various materials: steel, copper, PVC.
- If the drain line is improperly supported it may deform, create air locks and prevent proper drainage of the condensate.
- It is good practice to insulate the siphon and drain line to prevent the formation of condensate on the outside of the piping. In winter antifreeze should be added to the water in the siphon.
- Beware of evaporation of the water in the siphon during shut down periods. The maintenance personnel should ensure that the siphons are always full.
- The siphon should be equipped with an inspection plug in an easily accessed position.
- The condensate drain pan should be cleaned periodically to avoid stagnant condensate, formation of algae and scale.



Drain in positive pressure

$$T = 2 p \ S = T / 2 \ H = T - S$$

Example

$$P = 400 \text{ Pa} = 40 \text{ mmwc}$$

$$T = 80 \text{ mm} - S = 40 \text{ mm} - H = 40 \text{ mm}$$

Drain in negative pressure

$$T = - 2 p \ S = T / 2 \ H = T - S$$

Example

$$P = - 250 \text{ Pa} = - 25 \text{ mmwc}$$

$$T = 50 \text{ mm} - S = 25 \text{ mm} - H = 25 \text{ mm}$$

Electrical connections

Before installing the fan coil, read carefully the warnings and the safety rules. Electrical connections must be made only by qualified personnel, and must accomplish the local electrical and safety codes and ordinances. A bipolar safety switch must be installed, to disconnect the appliance from the electric power supply; the switch must: be properly sized, be easily accessible and close to the appliance have a minimum 3 mm distance between its contacts. All electrical connections are to be made in accordance with local electrical and safety codes and ordinances. The fan coil must be properly earthed; make earth connection prior to any other electrical connection. For wiring and installation, refer to the wiring diagram of the fan coil, that are fitted on each unit and shown in this manual. Accessories that are not described in this manual require separate power supply; all power supplies must be properly protected with switches and fuses.

Be sure the voltage is inside the allowed limits: see Operating Limits and Technical Characteristics. Be sure the electrical circuit upstream the appliance is properly sized to carry the current that is necessary to operate the fan coil (see Technical Characteristics) and all the other devices already installed or forecasted. Minimum cross section of the wires 1,5 mm². Wires to the auxiliary circuits (switches, controls, interlocks, etc.) must have 1,5 mm² minimum cross section. Choice proper cross section of the wires: current must be limited to 5 A/mm²; voltage drop between not-operating and operating unit must be limited to 3%.

Motor wiring

The fan coil has a terminal block that is mounted on the internal side panel on the opposite side to the hydraulic connections. The terminal block is ready to be connected to the fan speed selector switch or to the thermostats. Both the fan speed selector switch and the thermostats are supplied as accessories, and their connection to the unit is shown in the installation instructions supplied with them. After the wires have been inserted in the terminal block, tighten the screws on each terminal, to assure a good electric contact. Failure to accomplish this requirement may cause serious danger and possibility of fire.

Start-up

After the installation or maintenance, make the following checks before starting the unit:

- | | |
|--|---|
| Fan rotates freely | Filter is free of construction debris |
| Piping connections completed | Drain lines with proper slope, without counter-slope and restrictions |
| Power supply voltage inside the operating limits | Adequate cross section of electrical wires |
| Condensate drain pan free of construction debris | Air return flow is free of obstacles and obstructions |
| Air vent completed | Condensate drain water evacuates properly |
| Duct connections completed (ducted units only) | Electrical connections completed and tightened |
| Drain lines clean and operating | Air delivery flow is free of obstacles and obstructions |
| Water pressure inside operating limits | Adequate cross section of water pipes |

Minimum space for maintenance

For maintenance operations on installed units it is suggested to keep a minimum space of 50 cm on each side of the unit to better move and operate.

Filter

The function of the air filter is to remove foreign matter such as dirt, soot, pollen, and other impurities from the air passing through it. Said impurities may enter into the fan coil and damage it. The filter should be replaced once a year; the filter should be replaced more frequently if the fan coil is used in a very dirty or dusty environment. Between one replacement and the next one, the filter has to be kept clean. A dirty filter does not filter the air passing through it, and: impairs the operating efficiency of the unit by restricting the air flow over the coil; encourages the growth of bacteria that may be dangerous to the health. To clean the filter, please operate as follows: remove the filter from its operating position, clean the filter using a vacuum cleaner, if the filter is too dirty and it's impossible to clean it, the filter must be replaced with a new one. Filter is kept in position by clips (see photo), rotate the clips to extract the filter.



For vertical units and horizontal units without filter frame simply rotate the clips and extract the filter, for units with filter frame rotate the clips and extract the filter which will slide down. After cleaning the filter place it back in its operating position.

Condensate drain pan

The condensate drain pan must be checked before the beginning of the cooling season. The condensate drain pan and the discharge hole may clog with scale; remove scale with proper chemical products. The condensate drain pan may collect dirt that falls from that coil and, in case of vertical installation, may contain foreign materials that fall into the fan coil passing through the air delivery grill. Dirt and scale that are cumulated in that drain pan may impair the evacuation of condensate water, so causing water coming out from the unit. To clean the condensate drain pan, operate as follows: remove the drain pan from its operating position, clean the drain pan with fresh water, wipe the drain pan carefully, place the drain pan back in its operating position.

Heat exchanging coil

If the air filter is properly cleaned, the coil does not need any maintenance. Use a vacuum cleaner in case that coil need to be cleaned. If the coil is very dirty, brush between fins with a stiff nylon brush.

Be very careful, to avoid any damage to the fins of the coil if the coil remains dirty, or makes a bad smell, ask a specialized technician for proper cleaning and maintenance.

Fan and fan motor

Maintenance of the fan and the fan motor must be carried out only by specially trained people. No attempt should be made to lubricate these permanently lubricated motors: the motor may be clogged by sludge.

At least once a year the following operations must be carried out: remove dust and dirt from the inside of the scroll; be sure the fan is properly fixed to the motor and is well balanced. The fan motors do not require any maintenance, as they are permanently lubricated.

Electrical connections

At least one a year, be sure the screws of the terminals are well tightened.

The motor does not rotate at all, or does not rotate properly

Electrical connections are wrong, are not according to the wiring diagrams

The fan speed selector switch (if installed) is in a wrong position

The seasonal changeover switch (if installed) is in a wrong position

The setting of the thermostat (if installed) is wrong

The fan coil does not cool / heat properly

No water coming to the fan coil

The filter is dirty / clogged

The heat exchanging coil is dirty / clogged

There is some air into the water circuit

The fan does not rotate at all, or does not rotate properly

Water comes out from the unit

No electrical power coming to the fan coil

There are some leakages from the hydraulic connections

The condensate drain pan is dirty, or the discharge hole is clogged

The condensate piping has a wrong slope, or the slope is not enough

The condensate piping is clogged

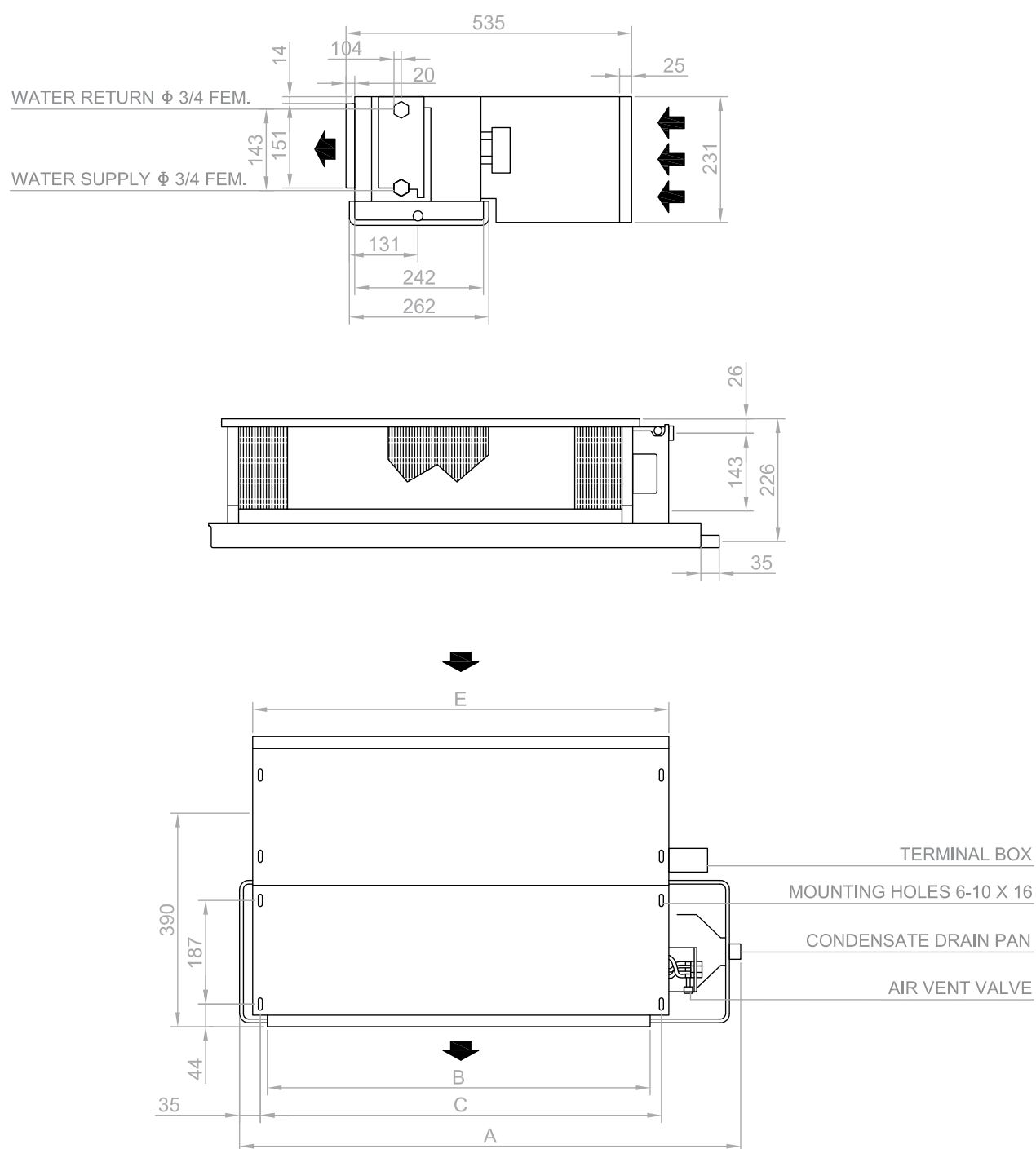
Waste disposal

Packaging, consumables, replaced parts must be disposed according to the local safety laws and environmental protection laws.

Technical data shown in this booklet are not binding. Manufacturer shall have the right to introduce at any time whatever modifications deemed necessary to improve the product.



Dimensional data CN

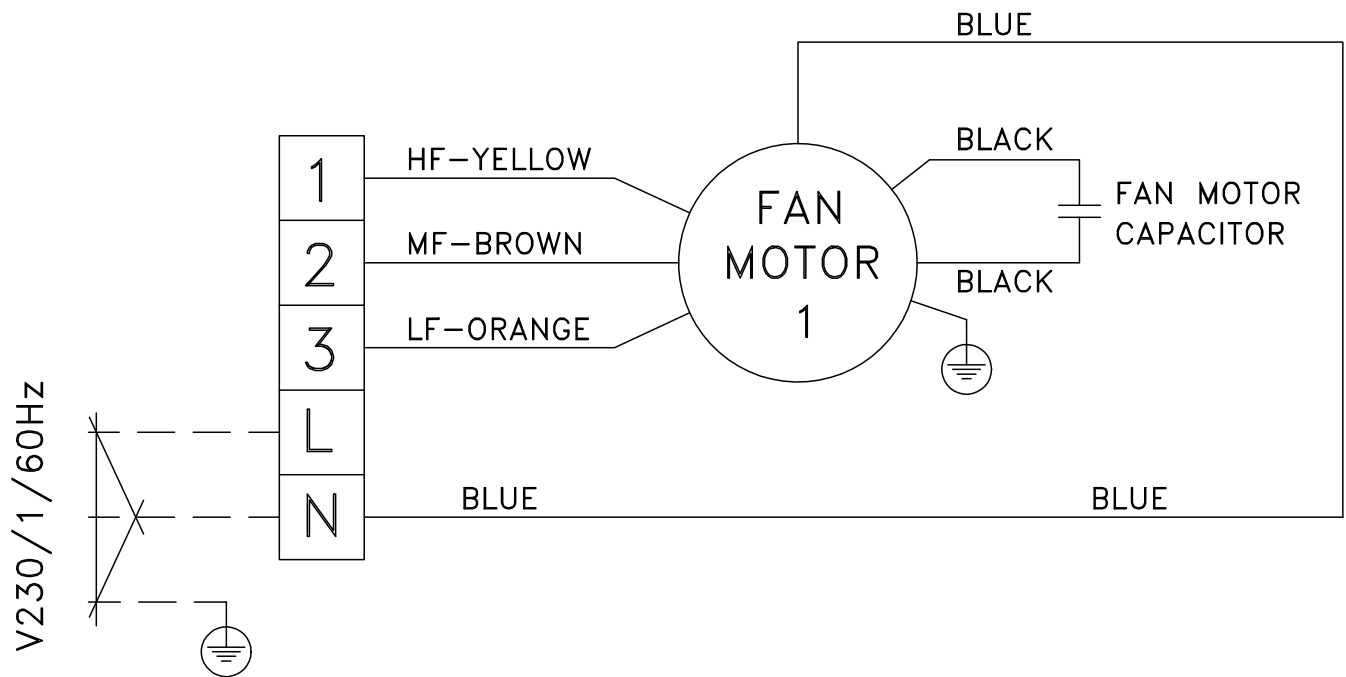


Notes:

1. All dimensions are in mm;
2. Right hand coil connection shown

	A	B	C	D	E	F
CN-02	675	452	487	490	520	470
CN-03	815	592	627	630	660	610
CN-05	995	772	807	810	840	790

Wiring diagram CN



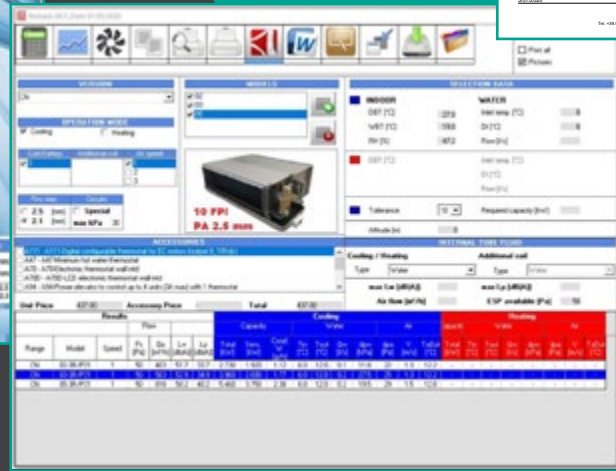
Dimensions: 150mm x 100mm

Notes:

HF: High fan speed
MF: Medium fan speed
LF: Low fan speed
----- Installation wiring

Did you know?

Biniclima have an extensive range of interactive Eurovent certified software available to support you with all of your air handling units and fan coil unit needs.

[illegible]

Notes

Recent projects

Westfield
Coomera
Queensland

James Cook
University
Queensland

Canterbury
Leagues Club
New South Wales

Gold Coast Private
Hospital
Queensland

Bendigo Animal
Hospital
Victoria

Kirwan
High School
Queensland

ENGINEERED
HVAC SOLUTIONS



oceania
SOLUTIONS GROUP

For more information on our latest projects, visit www.oceania-group.com

PO Box 429
Cannon Hill QLD 4170
info@oceania-group.com

www.oceania-group.com

Click to follow
our socials

