

# Guide Specifications

## Hydronic Cassette

### HVAC Guide Specifications

Size Range: **1.21 to 14.8 kW, Nominal Cooling**  
**1.25 to 14.84 kW, Nominal Heating**

Polar Air Models: PCGH-3R-V/P-I, PCGH-3R-V/P, PCGH-3R-V/P-I-EC, PCGH-3R-V/P-EC

#### **Part 1- GENERAL INFORMATION**

##### **1.1 Unit Description**

Indoor, ceiling mounted installation, chilled or hot water fan coil. Appropriate for connection to air-to-water or water-to-water heat pumps, boilers, and chillers with water supply temperatures up to 80 °C.

##### **1.2 Quality Assurance**

Unit shall be certified by Eurovent. Each coil shall be factory tested for leakage by water pressure test at 3.5 MPa for 3 minutes. Completed unit coil shall be air tested for leakage at 0.8 MPa for 3 minutes. The maximum working pressure is 2.0 MPa. Fan coils shall meet compliance requirements of ISO9001, and CE. All claims of capacity and sound performance shall be verified by an internationally recognized third-party testing agency.

##### **1.3 Delivery, Storage, & Handling**

Unit shall be stored and handled per manufacturer's instructions.

#### **Part 2 — PRODUCTS EQUIPMENT AND CONFIGURATION**

##### **A: General**

Ceiling Type Hydronic Cassette Fan Coil available in 2 or 4 pipe shall be equipped with AC or EC fan motor with on-off 3 speeds or modulating speed, threaded female water connection, stepping motors, fine-mesh nylon filter with ABS frame, LED display and mounting brackets. 2 Control methods will be available as I type complete control with an IR handset or wired wall pad and W type flexi control with an external thermostat. Valve & Electric heater application shall be available as an option.

##### **B: Unit Cabinet**

Cabinet shall be constructed of 1.0 mm galvanized sheet steel. Cabinet shall have filter rack and cleanable filter. Adjacent room cooling or heating and fresh air intake is to be provided by ducting at the side of cabinet.

##### **C: Drain Pan**

Drain pan shall be constructed of 2.0 mm flame resistance ABS plastic.

##### **D: Air Delivery Grilles**

Supply and return air grilles shall be white color RAL9010 ABS. Supply air grilles are angle adjustable.

##### **E: Front Panel**

Front Panel shall be RAL 9010 white color and made of fire-retardant ABS plastic rated UL94 V1 for lightweight and corrosion resistant operation.

##### **F: Coil**

1. Standard unit shall be equipped with a coil for installation in a 2-pipe system. Additional coil shall be provided for installation in a 4-pipe system.

2. Cooling coil is 3-row, independently circuited coil specifically designed for chilled water application. Heating coil is single row, independently circuited coil specifically designed for hot water application.

3. Coils shall be seamless copper tubes with 7 mm outside diameter, mechanically expanded into corrugated hydrophilic coated aluminum fins for a permanent primary to secondary surface bond.

4. Each coil shall have a manual air vent valve and a manual water purge valve directly accessible under the air intake panel.

5. Coil connectors shall be 19 mm (3/4") threaded female type.

##### **G: Insulation**

Insulation is 3.0 mm NBR plastic foam for inner casing and 3.0mm XPE for outer casing.

##### **H: Motors**

1. AC motor shall be PSC, permanently lubricated type with internal thermal overload protection.

2. High efficiency EC motor shall be enclosed with thermal overload protection, sealed for life lubricated bearings and include driver control Printed Circuit Board, constant torque, permanent magnet, brushless DC motor with 3 speeds and variable speed modulation setting that allow for precise air balancing.

3. Fan motor shall be IP40 Class B.

##### **I: Fan Section**

Fan shall be a backward curved centrifugal, direct drive blower type dynamically balanced. Impellers shall be made of fire retardant ABS plastic for lightweight and corrosion resistant operation. Air outlet louvers shall be made from fire retardant ABS plastic and to prevent condensation from forming. Angles of opening of louvers shall be automatically adjustable and driven by stepping motors.

### ***J: Controls***

Controls shall be 230V, and shall be easily operated by the user from a wall mounted thermostat, full function hand held remote control, or wall mounted pendant full function controller.

### ***i: Control Options***

The plug and play control box shall include a custom designed microprocessor providing on-off or modulating fan control and auxiliary electric heater control.

1. FULL CONTROL OPTION (I/S Type): Microprocessor controller shall control fan motor, water valves (ON/OFF or modulating valve, drain pump, and electric heater (optional). Controller shall be capable of changing temperature settings, fan speed and other control functions using either infrared wireless handset or programmable wired wall mounted full function pendant controller with serial networking for addressable or global primary to secondary unit control. Controller shall provide coil freeze and over heat protection using factory installed sensors, occupancy or economy mode contacts, auto restart, and error diagnostics. Controls shall include coil sensor(s) and a room sensor to allow fans to operate when coil is chilled (during cooling mode) and heated (during heating mode). It allows BMS control, Master-Slave control, VVW and VAV control.

2. FLEXIBLE CONTROL OPTION (W Type): Microprocessor controller shall be suitable to use with a standalone 220~240 VAC thermostat or 0-10 VDC signal from external source. Controller shall provide simplified error diagnostics, drain pump control and optional electric heater control. Controller shall include coil sensor(s).

### ***K: Condensate Pump and Float Switch***

A float control shall be with the condensate pump to detect the presence of condensate. The pump shall be fixed inside the casing and shall be able to be accessed after removing the front panel and internal drain pan.

### ***L: Filters***

Nylon filters shall be 7 mm thick. 10 mm 3M HAF G4 filters shall be offered as an option.

### ***M: Electrical Requirements***

Unit shall operate on 220~240V/1Ph/50~60Hz power supply.

### ***N: Electric Heater (Optional)***

Stainless Steel Tube Electric heaters shall be provided with 2 Thermal protection switches; one manual fuse switch and one automatic reset switch, fitted to the

electric heat circuit to protect against overheating.

### ***O: Fresh Air ducting***

The fresh air system shall allow for up to 15% of unit airflow as fresh air intake with a maximum of 2 connections per unit and shall have a maximum air flow of 100 m3/h per connection.

### ***P: Branch Ducting***

Branch duct air flow shall be supplied from unit at 10% to 25% of the unit air flow at unit setting speed, depending on the length of the branch duct and the operation of the air discharge outlet.

### ***Q: Ducting Flanges***

Ducting flanges shall be available to allow connection of fresh air intake ducting (external diameter 105 mm) or branch ducting (external diameter 100 mm).

### ***R: Low and High temperature protection available with 'I' plug and play Microprocessor controller***

The freezing and over heat protection sensors shall prevent freezing of the coil assembly and plastic distortion from overheating.

### ***S: Low temperature protection available with 'W' plug and play Microprocessor controller***

The freezing protection sensors on the coil shall prevent freezing of the coil assembly.

### ***T: Infrared Remote Handset/Wall Mounted Wired Pad***

An infrared handset or a wired wall pad for communication shall be available as an optional accessory for the 'I/S' controller.

### ***U: Thermostat***

A thermostat shall be available as an optional accessory for the "W" controller.

### ***V: Safety Ratings and Performance Verification***

Fan Coil Unit shall be Eurovent Listed. Performance shall be confirmed by accepted third party (Eurovent for performance and sound).

## **Part 3 - MAINTENANCE:**

Maintenance access shall be via the front panel for all unit components.

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