

# Guide Specifications

## Ceiling Type Hydronic Cassette Fan Coils HVAC Guide Specifications

Size Range: **3,000 to 32,000 BTU/H, Nominal Cooling**  
**5,000 to 50,000 BTU/H, Nominal Heating**

Polar Air Models: PCG(H)-V/P-X/Y-AECM

### 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 176 °F.

#### **1.2 Quality Assurance**

Unit shall be certified by ETL. Each coil shall be factory tested for leakage by water pressure test at 500 psi for 3 minutes. Completed unit coil shall be air tested for leakage at 116 psi for 3 minutes. The maximum working pressure is 300 psi. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation. Insulation shall be rated to UL94 VO. All equipment wiring shall comply with NEC requirements. Fan coils shall meet compliance requirements of ETL, 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.

#### **1.4 Warranty (See Appendix A).**

### Part 2 — PRODUCTS EQUIPMENT AND CONFIGURATION

#### **A: General**

Ceiling Type Hydronic Cassette Fan Coil available in 2 or 4 pipe shall be equipped with EC fan motor with on-off 3 speeds or modulating speed, NPT water connection, stepping motors, fine-mesh nylon filter with ABS frame, LED display and mounting brackets. 2 Control methods will be available as S type full unit control or W type flexi unit control with 24Vac/12Vac transformer for external thermostat. Valve & Electric heater application shall be available as an option.

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

Cabinet shall be constructed of 1/16" 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**

Internal drain pan shall be constructed of 1/16" galvanized sheet steel. External drain pan shall be constructed of 1/16" 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: Fascia**

Fascia 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 2 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 3/8" 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 3/4" male-NPT.

#### **G: Insulation**

Insulation is 3/16" NBR plastic foam.

#### **H: Motors**

1. 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.
2. 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 rated UL94 VO 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 24V, 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. Controls shall include coil temperature sensors which will allow fans to operate when coil is chilled (during cooling mode) and heated (during heating mode) and provide alarm configurations.

1. The 'S' plug and play Microprocessor shall be a complete function integrated control, compatible with infra-red remote handset controller, programmable wired pendant control, with serial networking for addressable or global primary to secondary unit control, MODBUS BMS functionality, modulating valve with 24V transformer or on/off valve control, drain pump control, occupancy or economy mode contacts, auto restart, and error diagnostics displayed on the fascia.

2. The 'W' plug and play Microprocessor controller shall be a flexible function control for external thermostat applications with control of drain pump, louvers, limited diagnostics display on fascia, 24V transformer for supplying power to thermostat or modulating valves, and zone control product operations. It shall provide an alarm interlock relay for unit failure notification with normally open or normally closed contacts available for field connection.

**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 1/4" thick. MERV 8 filters shall be offered as an option.

**M: Electrical Requirements**

Unit shall operate on 115V/1ph/60Hz (PCGH-Y-AECM) or 220V/1ph/60Hz (PCGH-X-AECM) 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 60 CFM 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 4 1/8") or branch ducting (external diameter 3 15/16").

**R: Low and High temperature protection available with 'S' 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: Disconnect Switch**

The disconnect switch shall be located inside the unit underneath the return air grill and shall be sized for the full load ampere of the unit to enable the unit to be disconnected from the power supply prior to any maintenance.

**U: 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 'S' controller.

**V: Thermostat**

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

**W: Safety Ratings and Performance Verification**

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

**Part 3 - MAINTENANCE:**

Maintenance access shall be via the fascia for all unit components.

# Appendix A

## POLAR GLOBAL LIMITED WARRANTY

Polar Global products are warranted against failure due to defect in materials or workmanship under normal use and maintenance for a period of one year from date of installation.

Polar Global warrants Polar Global products to be free from defects in materials and workmanship under normal use and maintenance as follows:

For a period of twelve (12) months from the date of original installation or for a period of eighteen (18) months from the date of shipment from the factory, whichever comes first. This warranty is offered for Polar Global products sold and installed in the U.S. and Canada.

All parts claimed to be defective must be returned to Polar Global U.S. office within 60 days of the date of failure of the part. Freight to be prepaid. If Polar determines the part to be defective and the part failure to be within the limits of this warranty, and the part has been replaced or repaired. Polar Global U.S., Polar Global will provide a replacement part to an authorized contractor or service company, ex-stock Polar Global U.S. office, freight prepaid.

Exclusions:

1. Shipping or handling damage.
2. Damage and/or repairs required due to faulty installation or inappropriate application.
3. Electrical damage caused by voltage fluctuations of +-5% of rated voltage or any other electrical service related issue.
4. Damage due to abrasion or corrosion.
5. Improper operation, alterations not approved by Polar Global, or abuse of parts or equipment.
6. Parts or components not provided by Polar Air regardless of the cause of failure.
7. Misuse, negligence, accidents, or incorrect system design.
8. Products installed or operated other than as approved by Polar Air.
9. Damage due to mold, mildew, fungus, or bacteria.
10. Costs to replace or repair system components damaged as a result of defective parts covered under this warranty.
11. Labor or other costs required to replace or repair defective parts covered under this warranty.
12. Shipping or transportation costs from place of installation to Polar Air U.S.A.

This warranty is absolute and in lieu of any and all other warranties expressed or implied. Remedies stated in this warranty are exclusive and shall establish the only liabilities of Polar Air.

Polar Global  
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