

# Guide Specifications

## Low Static Hydronic Ducted Fan Coils

### HVAC Guide Specifications

Size Range: 6,000 to 63,000 BTU/H, Nominal Cooling

5,400 to 97,000 BTU/H, Nominal Heating

Polar Air Models:

PDWA-V/P-Y-AECM

PDWA-V/P-X-AECM

#### **Part 1 — GENERAL INFORMATION**

##### **1.1 UNIT DESCRIPTION**

Concealed ceiling mounted, chilled or chilled and hot water coil, suitable for installation with duct. Appropriate for connection to air-to-water or water-to-water heat pumps, boilers, and chillers with water supply temperatures up to 180 °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 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 UL94VO. 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, AND 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**

Indoor, concealed ceiling mounted, horizontal, 2 or 4 pipe console fan coil unit complete with cooling coil or cooling and heating coils. Unit shall include EC fan motor with on-off 3 speeds or modulating speed, single point primary electrical power connection (unless provided with optional electric heater), NPT, integral controller, heating, cooling, and

entering coil air temperature sensors, transformer, capable of operating and capable of accommodating integrated, factory installed condensate pump. 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. Infra-red receiver display for remote control, valves, and electric heater shall be available as optional items.

##### **B: Unit Casing**

Casing shall be constructed of galvanized steel panels with couplings for ducting and resistant to rust, corrosion, chemical agents, solvents, aliphatic compounds and alcohols. The casing shall be provided with thermal and acoustical internal insulation and mounting holes.

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

Condensate drain pan shall be positive slope, constructed of steel with powder finish, coated with self-extinguishing closed cell expanded polyethylene with thermal properties. Stainless steel pan shall be available as an option.

##### **D: Coil**

1. Standard unit shall be equipped with a cooling coil for installation in a 2 pipe system.
2. Additional coil shall be provided for installation in a 4 pipe system.
3. Cooling coils shall be 3, 4 or 6 rows selected to meet project requirements.
4. Heating coils shall be 1 or 2 rows, independently circuited specifically designed for hot water application.
5. Coils shall be TP2 seamless copper tubes 3/8" outside diameter, mechanically expanded into corrugated hydrophilic coating aluminum fins for a permanent primary to secondary surface bond. Fin spacing shall be 12.7 fins per". Coil connectors shall be 3/4" male NPT.
6. Each coil shall be provided with factory installed manual air vent and water purge valve.

##### **E: Insulation**

3/16" thick NBR plastic foam. 3/8" or 9/16" as an option.

##### **F: Motors**

1. Fan coils shall be provided with high efficiency EC motors provided with thermal overload protection and sealed, permanently lubricated bearings. Motors shall be controlled via a factory installed electronic controller. Motors shall constant torque, permanent magnet, brushless DC motor with 3 speed or variable speed modulation functionality.
2. Fan motor shall be IP40 Class B.



### ***G: Fan Section***

The fan section shall include 1, 2, 3 or 4 galvanized steel centrifugal fans consisting of forward curved, double air inlet blades directly attached to the EC motor. Fans shall be statically and dynamically balanced.

### ***H: Control Options***

Controllers shall provide on-off or modulating fan control, integral condensate pump 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. S Type Controller (Modbus): Microprocessor controller shall control fan motor, water valves (ON/OFF or modulating), drain pump (optional), 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.
2. W control box: Microprocessor controller shall be suitable to use with standalone 24 VAC thermostat or 0-10 VDC signal from external source. Controller shall be capable of providing on-off or modulating 0-10 VDC signal for water control valve(s), optional drain pump control, zone control product operation and control of optional electric heater. Controller will provide simplified error diagnostics.

### ***I: Condensate Pump and Float Switch (Optional)***

Fan coil units shall be available with factory-installed condensate pumps and float switches controlled by onboard controllers.

### ***J: Filters***

Nylon Filters shall be 1/4" thick. ¼" MERV 8 3M HAF filter or 1" MERV 8 filter shall be offered as an option.

### ***K: Electrical Requirements***

Unit shall be available for 115V/1ph/60Hz (PDWA-Y-AECM) or 220V/1ph/60Hz (PDWA-X-AECM) power supply.

### ***L: Electric Heat (Optional)***

PTC type stainless steel electric heaters shall be provided with two (2) thermal protection switches, one manual fuse type and one automatic reset type. Heaters shall be suitable for factory or field installation and controlled via onboard controller.

### ***M: Disconnect Switch***

Factory installed disconnect switch shall be located outside the electric box of the unit 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.

### ***N: 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).

### ***O: Wall Mounted Wired Pad***

A wired wall pad for communication shall be available as an optional accessory for the 'S' controller.

### ***P: Infrared Remote Handset***

An infrared handset for remote communication shall be available as an optional accessory for the 'S' controller.

### ***Q: Thermostat***

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

## **Part 3 – MAINTENANCE**

Maintenance access shall be done by removal of cabinet 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  
May 13, 2020

#### OFFICES

##### EUROPE

Calle Río Júcar Nave 6,  
Pol. Ind. El Saladar,  
30564; Lorquí, Murcia  
contact@pghvac.com

[www.pghvac.com](http://www.pghvac.com) | [www.pghvac.us](http://www.pghvac.us)

##### HONG KONG

Office 6, 9<sup>th</sup> F, Block A.  
6 On Ping St,  
Shatin; Hong Kong

##### BOSTON

20 Walford Park Dr,  
Canton, MA  
02021; USA