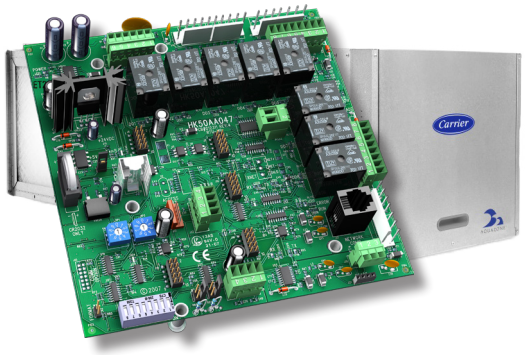
i-Vu® Building Automation System
WSHP Open
Integrated Water Source Heat Pump Control



Carrier's WSHP Open controller is an integrated component of a Carrier water source heat pump. The WSHP Open controller continuously monitors and regulates water source heat pump operation with reliability and precision. This advanced controller features a sophisticated, factory-engineered control program that provides optimum performance and energy efficiency. For added flexibility, the WSHP Open controller is capable of stand-alone operation, or, it can be integrated with any other building automation system utilizing the BACnet, Modbus®, LonWorks®, or N2 protocols.

Application Features

- Controls 2 stages of DX cooling to maintain space temperature setpoint
- Integrated 2-position or modulating waterside economizer for optimized mechanical cooling (ASHRAE® 90.1)
- Controls modulating or 2-position outside air damper to meet ASHRAE 62 ventilation requirements
- Built-in advanced control routines for zone level humidity control or zone level demand control ventilation (ASHRAE 62)
- Supports auxiliary modulating reheat, 2-position hot water/steam reheat, or electric heat
- Independent fan speed and compressor staging ensures quiet operation and maximizes latent heat removal for increased occupant comfort
- Modulating fan speed and compressor staging ensures safe unit operation

System Benefits

- Integrated Carrier airside linkage algorithm for plug-and-play integration with the Carrier WSHP System
- Fully plug-and-play with the Carrier i-Vu Building Automation System
- Supports demand limiting for maximum energy savings
- Compatible with i-Vu Tenant Billing for tracking tenants' after-hours energy usage

Hardware Features

- Compatible with Aquazone™ horizontal water source heat pumps and vertical water source heat pumps with Puron® refrigerant
- Integrates easily into any BAS using BACnet, Modbus, LonWorks*, or N2 protocols
- On-board hardware clock, remote occupancy input, and support for Carrier communicating/thermistor sensors provide stand-alone operation
- Easy startup and configuration with i-Vu User Interfaces

*Requires LON Option Card (LON-OC)

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Specifications

BACnet Support	Advanced Application Controller (B-AAC), as defined in BACnet 135-2012 Annex L Protocol rev. 9
Communication Ports	**Network Comm port:** EIA-485 port for BACnet MS/TP or ARCNET 156 kbps, Modbus RTU, or N2 communications (protocol and baud rate are DIP switch selectable) **Comm Option port:** For connecting a LON Option Card (p/n LON-OC) **Local Access port:** For system start-up and troubleshooting (115.2 kbps) **Rnet port:** For connecting Carrier communicating room sensors and Carrier's touchscreen user interface
Inputs	**4 analog inputs:** Dedicated to Relative Humidity, Indoor Air Quality, Supply Air Temperature, and Leaving Condenser Water Temperature. AI's have 10 bit A/D resolution. **4 binary inputs:** Stage 1 Compressor Status, Condensate Overflow, Fire/Smoke Detector, and Fan Status (optional)
Outputs	**2 analog outputs:** 1 dedicated to Outside Air Damper, and 1 configurable for either Auxiliary Reheat or Waterside Economizer. AO's have 10 bit D/A resolution. **8 binary outputs:** Supply Fan (low, medium, and high), Compressor Stage 1, Compressor Stage 2, Reversing Valve, Auxiliary Heat/2-position Waterside Economizer, and Dehumidification. Relay contacts rated at 3A max @ 24VAC, configured normally open
Real-Time Clock	Battery-backed real time clock keeps track of time in event of power failure
Battery	10-year Lithium CR2032 battery: min of 10,000 hours of trend data & time retention during power outages
Protection	Incoming power and network connections are protected by non-replaceable internal solid-state polyswitches that reset themselves when the condition that causes a fault returns to normal. The power, network, input, and output connections are also protected against voltage transient and surge events.
Status Indicators	LED status indicators for network communications,run status, error, power, and all digital outputs
Controller Addressing	Rotary dip switches set BACnet MS/TP or ARCNET, Modbus, or N2 address of controller
Listed By	**United States:** FCC compliant to Title CFR47, Part 15, Subpart B, Class A; UL Listed, File E143900; CCN PAZX, UL 916, Energy Management Equipment; **ANZ:** RCM Mark AS/NZS 61000-6-3; **Canada:** UL Listed File E143900, CCN PAZX7, CAN/CSA C22.2 No. 205 Signal Equip., Industry Canada Compliant ICES-003, Class A; **CE Mark** Compliant with 2014/30/EU, and RoHS Compliant: 2015/863/EU; **UKCA Mark** compliant with Electromagnetic Compatibility Regulations 2016 – Gov.UK and RoHS for Electrical and Electronic Equipment 2012
Environmental Operating Range	**Operating:** -40 to 158ºF (-40 to 70ºC) 10 to 95% RH,non-condensing **Storage:** -40 to 158ºF (-40 to 70ºC) 10 to 95% RH,non-condensing
Power Requirements	24VAC ± 10%, 50 to 60Hz, 20 VA power consumption Single Class 2 source only, 100 VA or less

For more information, contact your local Carrier Controls Expert.

Controls Expert Locator:
www.carrier.com/controls-experts