

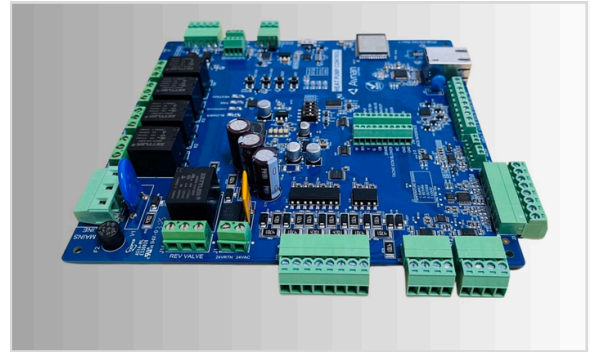


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HEAT PUMP CONTROL & DIAGNOSTIC PLATFORM

Avnan's Heat Pump Control is an intelligent control platform designed to optimize the performance of various heat pump types (air-source, geothermal, water-source) in residential and light commercial applications. The heat pump controller combines real-time diagnostics, advanced predictive algorithms, seamless connectivity and a built-in troubleshooting guide to ensure heat pumps run more efficiently for the end user and the service technician.

It combines an advanced control board with a mobile diagnostics app to optimize performance, enable quick troubleshooting, and simplify OEM integration.



APPLICATION

Avnan's heat pump controller enhances HVAC performance and service efficiency. The embedded solution supports multiple HVAC configurations, integrates BACnet for BMS compatibility, and works with most standard thermostats

ADVANCED CONTROL BOARD

Avnan's Diagnostic Heat Pump Controller pairs with smart thermostats, uses real-time sensor and user inputs to control airflow and system operation, and is engineered for OEM flexibility with built-in interfaces and protections for modern heat pumps.

Inputs: Thermostat, temperature and pressure sensors, float/condensate, occupancy, and IAQ.

Outputs: ECM/PSC fan, compressor, reversing valve, electronic expansion valve, contactors, and auxiliary actuators.

Control stack: Real-time control loops with BACnet MS/TP

MOBILE APP DIAGNOSTICS

The App gives field technicians real-time system insight without opening panels or attaching gauges:

- Live data views for sensor values, system status, and operating mode; error history and component-level details.
- Guided troubleshooting that identifies likely root causes.
- Secure Bluetooth (BLE) pairing for local diagnostics; role-based views and cloud data management options



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HEAT PUMP CONTROLLER PLATFORM

FEATURES & BENEFITS

The heat pump controller combines real-time diagnostics, advanced predictive algorithms, seamless connectivity and a built-in troubleshooting guide to ensure heat pumps run more efficiently for the end user and the service technician.

- Universal hardware: Flexible main control board for ASHP and WSHP with a versatile digital core sized for the full BACnet protocol stack.
- Advanced firmware: Predictive control, extensive data logging/analytics, and an onboard troubleshooting guide that pinpoints faults, and walks users through resolution, with the ability to store and retrieve the last 50 historical fault codes.
- Rich I/O & communications: Native support for Ethernet, Wi-Fi, and Wireless Connectivity; BACnet for BMS integration; BLE for a mobile app.
- Comprehensive Real-Time Monitoring & Control: Interfaces with temperature, pressure readings, IAQ, and protection devices; drives valves, solenoids, and ECM fan speed; translates thermostat outputs into the control logic.
- Diagnostics analyze sensor data to detect and notify on refrigerant leaks, compressor malfunctions, electrical issues and provide actionable recommendations.
- Mobile app (Google Play-ready): Role-based views for homeowners and technicians, robust Bluetooth pairing, cloud-integrated data management, and comprehensive documentation.

BENEFITS

- Energy savings & comfort: Predictive algorithms optimize staging and airflow for lower operating costs and tighter temperature/humidity control.
- Faster service, less downtime: Guided diagnostics reduce time and repeat visits.
- Scalable, Customizable & Flexible: Modular architecture and open protocols simplify integration with existing BMS and evolving sensor/actuator options.

ABOUT AVNAN

Avnan is an award-winning electronic product design and manufacturing company specializing in customer HVAC control design and global manufacturing of printed circuit board assemblies, wire harnesses and other custom components. With 30 years in business and locations throughout North America and Asia, Avnan offers flexible solutions that make it easy for OEMs to produce high-quality products cost-effectively.



Scan this QR code to watch our video and download the block diagram

