

Delphi HVAC Controls

Delphi HVAC (heating, ventilation and air conditioning) Controls allow for mechanical, electronic-manual, and automatic control of single or multi-zone climate systems in vehicles. Through a variety of actuation control mechanizations, the system helps provide precise control of the in-vehicle environment.

With instrument panel controls tailored to individual customer needs as well as style and function (touch/feel) preferences, Delphi's climate control systems also feature capabilities to support complete vehicle integration. Reduced wire count and a 5-15 percent reduced system mass are the hallmark of the pulse count actuation system that enables Delphi to provide some of the most accurate, efficient and reliable HVAC Controls available. Delphi's cost-effective processes yield an effective design for virtually any application, helping create a differentiating feature for the vehicle.

Delphi also offers system engineering support, including vehicle calibration capabilities and thermal analyses to help optimize the complete HVAC control system and ensure customer satisfaction.

► Benefits

- Pulse count actuation
 - Design and utilize industry leading custom IC (integrated circuit) device capable of driving increments of four pulse count actuators simultaneously
 - High position accuracy over a high number of cycles
 - Immunity to variation in motor current waveform due to motor parameter variation, manufacturing tolerances, dynamic load conditions, temperature and voltage extremes, brush bounce, or electromagnetic interference
 - Reduced electronic part count compared to feedback actuator control systems
 - On-chip short circuit protection and full diagnostic capability
 - Automatic stall detection and shutdown
- Multiple appearance options
 - Display technologies
 - Liquid crystal display (LCD)
 - Vacuum fluorescent display (VFD)
 - Light emitting diode (LED) displays
 - Painted/finished surfaces, resin science, lightpipe technologies for enhanced day or night visibility
- Energy efficient algorithms for the control of temperature, blower, and compressor performance leading to improved fuel economy in conventional and hybrid drive train applications
- Sensing technologies providing the customer with a variety of sensing technologies
 - Infrared (IR)
 - Solar
 - Aspirated or non-aspirated cabin temperature sensing
 - Proximity



- Manual and automatic multi-zone air controls
- Automatic multi-zone algorithm
- Multiple CCA (common component architecture) platforms that can be optimized for customer needs
- Complete CCA vehicle instrumentation platform

► Typical Applications

Delphi HVAC Controls are used in conjunction with a vehicle's climate system to provide mechanical, electronic-manual, and automatic control of single or multi-zone climate systems. Systems can be customized to meet individual requirements and are suited for a wide range of vehicles.

- Automobiles
- Commercial vehicles
- Trucks

► Performance Advantages

Engineering capability

- Integrated engineering of the entire climate system, including human-machine interface, HVAC modules, actuators, compressor control, sensors, blower motor, power modules, and multiple instrument panel center stack components
 - Full vehicle development capability
- Extensive appearance technology, helping coordinate the HVAC control design with the overall vehicle style
- Resources located globally for fast response and support
- Utilization of PWM (pulse-width modulation) blower control technology with reduced power consumption for increased fuel economy, enhanced functionality and lower system costs

Manufacturing expertise

- Oldest, most experienced lean and flexible manufacturer of automotive automatic climate control systems, with best practices and lessons-learned applied to all designs
 - Industry leading manufacturer of molded, finished plastic with painted and lasered surfaces
- Ubiquitous engineering and manufacturing footprint enabling the ability to meet customer needs and expectations globally
- Complete in-house environmental and EMC (electromagnetic compatibility) testing capability
- High-volume production enables opportunity to leverage sub-components
- Vertical integration helps yield lower product cost while providing full technical capabilities

