

Delphi Multiple Application Electrical Centers (MAPECs)

Delphi's Multiple Application Electrical Center (MAPEC) is a modular electrical center available in several versions, enabling the flexibility of having different levels of electrical content with minimal impact on a vehicle's architecture. A MAPEC centralizes the energy distribution system into one location and reduces the need for fuses, relays, and electronic modules – or in some cases eliminates them entirely.

The MAPEC concept incorporates power switching and circuit protection for common vehicle content such as headlamps, horn, fuel pump, running lights, starter, etc. into a modular package that plugs into a harness-mounted power distribution block. The MAPEC architecture provides a standard function module that can be used across multiple vehicle platforms while providing additional packaging space in the junction block for circuit protection and load control of optional vehicle content.

Advanced MAPEC versions such as the 2.0 will include smart power solid state switching, which will replace fuses and relays while enabling advanced capabilities such as pulse width modulation (PWM) for variable speed control of cooling fan and HVAC blower motors as well as dimmable interior lighting. Solid state power switching increases the number of common content loads that can be incorporated into a MAPEC, providing the power and signal distribution system architect with increased flexibility while enhancing reliability and overall value.



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► Benefits

- Flexible power switching technology will enable cost-effective addition of more features and functions for the MAPEC 2.0, including
 - Pulse width modulation of loads to control speed and power delivery
 - Diagnostic feedback
 - Re-settable short circuit protection
- Packaging efficiencies
 - Design allows for modular packaging of core vehicle electronic functions
 - Allows the use of a pre-packaged module that contains common vehicle level content to be used across multiple platforms or applications
 - Vehicle-specific, optional content can be designed into the hard wired portion of the electrical center
- Reduces overall electrical/electronic architecture content and cost
 - Replaces multiple fuses and relays for all MAPEC versions
 - MAPEC 2.0
 - Will reduce circuits up to 30% when compared to using a standard hard wired electrical center that uses relays and fuses
 - Will reduce copper mass because of smaller gauge size and less cut leads
 - Will reduce electronic modules
- Additional packaging options can be added with no serviceability required
- High reliability
- Optimized EMI (electromagnetic interference) performance and inrush current control (MAPEC 2.0)
- Software-controlled current inrush will extend bulb life (MAPEC 2.0)

- Solid state will allow higher number of switching cycle capability compared to electromechanical relays (MAPEC 2.0)
- Solid state circuit protection enables protection level to be set specifically to the load and wire gauge from lower amps to higher amps
- Advanced thermal dissipation printed circuit board (PCB) design
- Full diagnostic system and easy software upgrades via reflashing through a vehicle diagnostic port
- Potential features may include USB, Bluetooth® connectivity, GSM and GPS wireless reception capabilities

▶ Typical Applications

The Delphi MAPECs are suited for use in a wide range of passenger and commercial vehicle electrical/electronic applications.

▶ Availability

The Delphi MAPEC 1.0 has been in production since 2008. The 1.5 and 2.0 versions are currently in development. Contact Delphi for more details.

▶ Performance Advantages

The Delphi MAPECs started as an innovative concept from Delphi engineers and offer cost-effective flexibility over a wide range of applications. Delphi's MAPECs were voted Outstanding Technology at the 2008 SAE® (Society of Automotive Engineers) Brazil Congress.



Harness-mounted power distribution block (left) and modular package (right)



Modular package is easily installed during the vehicle assembly process