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Power Supply and Bus Systems

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Power Supply and Bus Systems

Model: E85

Production: Start of Production MY 2003

Objectives:

After completion of this module you should be able to:

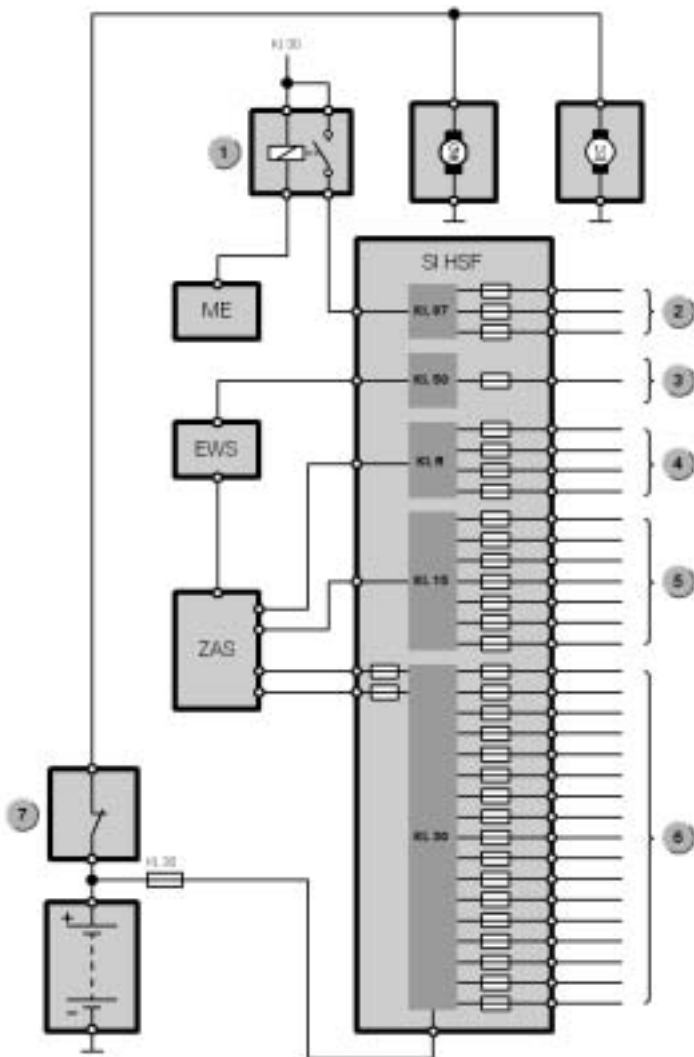
- Locate the Main power supply cable and fuses.
- Understand the construction of the B+ battery cable.
- Know the Bus System Layout.

Purpose of the System

Power Supply

The purpose of the Power Supply System is to safely deliver the required voltage and amperage to vehicle systems. The power supply system includes vehicle ground points and fuses. The power supply system includes the following components:

- Battery
- Monitored Battery B+ Cable (New System)
- Fuse Box
- Fuses
- Ground Points
- Alternator
- Jumper Cable Point



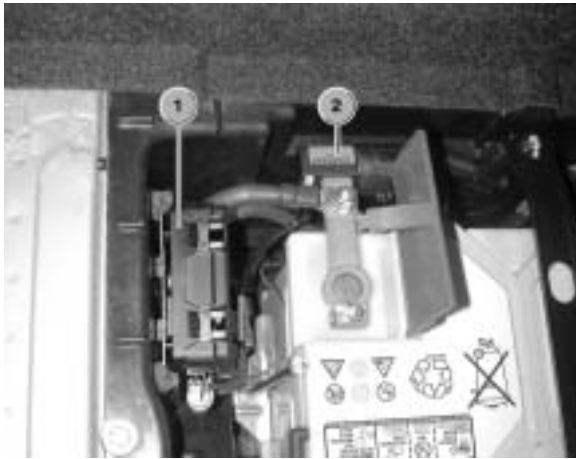
Power Supply Block Diagram

- | | |
|--------|----------------------------|
| 1. | Main Relay |
| 2. | KL30 |
| 3. | KL15 |
| 4. | KL18 |
| 5. | KL50 |
| 6. | KL87 |
| 7. | BST |
| G | Alternator |
| M | Starter Motor |
| ZAS | Ignition Switch |
| DME | Engine Control Module |
| EWS | |
| SI HSF | Fusebox (Behind Glove Box) |

System Components

Battery

The Battery is located in the luggage compartment right hand side. Battery power is split with one leg routed through a 250 amp fuse to the main fuse box behind the glove box. The other circuit is sent through the BST and to the new monitored B+ cable that supplies power to the starter and alternator.

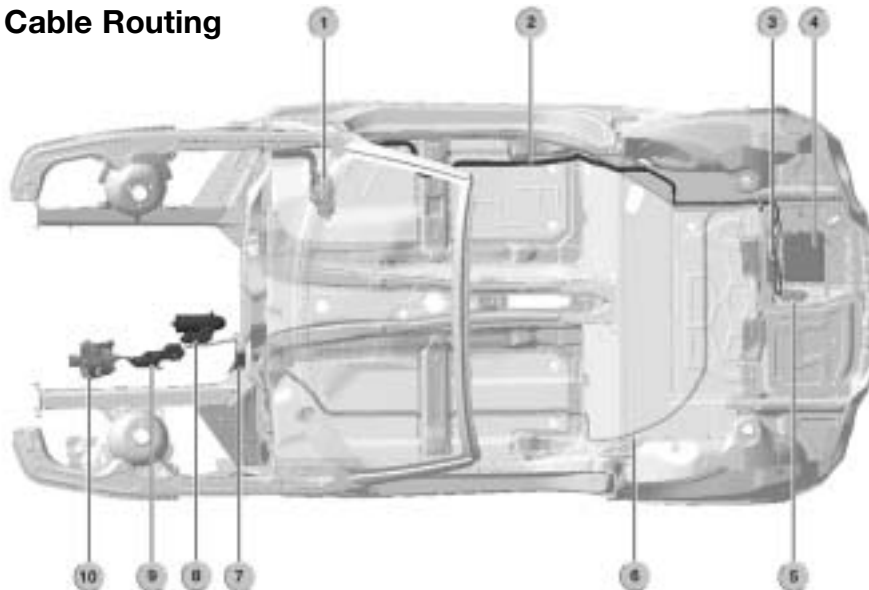


Battery located in Luggage Compartment

1. Rear Fuse Box With 250 Amp fuse.
2. Monitored B+ Cable With BST.

Depending on equipment on the vehicle either a 50AH, 70AH or 80AH battery is installed.

Battery Cable Routing

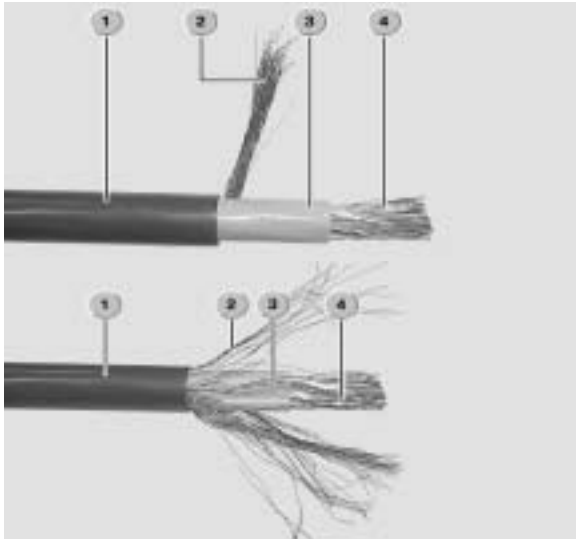


Battery Cable Routing

1. Passenger Compartment Fuse Box
2. B+ Cable to Passenger Compartment Fuse Box
3. Rear Fuse Box
4. Battery
5. BST
6. Monitored B+ Cable
7. Jumper Terminal Under Hood
8. Starter
9. B+ Cable Connector
10. Generator

Monitored B+ Cable

The Monitored B+ Cable is a multi strand aluminum cable with a cross section of 80mm². The aluminum cable is sheathed with an insulating layer and surrounded by a detecting shielded cable. An outer insulating sheath covers the entire assembly.



Monitoring Battery Cable Construction

1. Outer Insulation
2. Detecting Shield
3. Inner Insulation
4. Multi-Strand Aluminum Cable



Monitor Connections

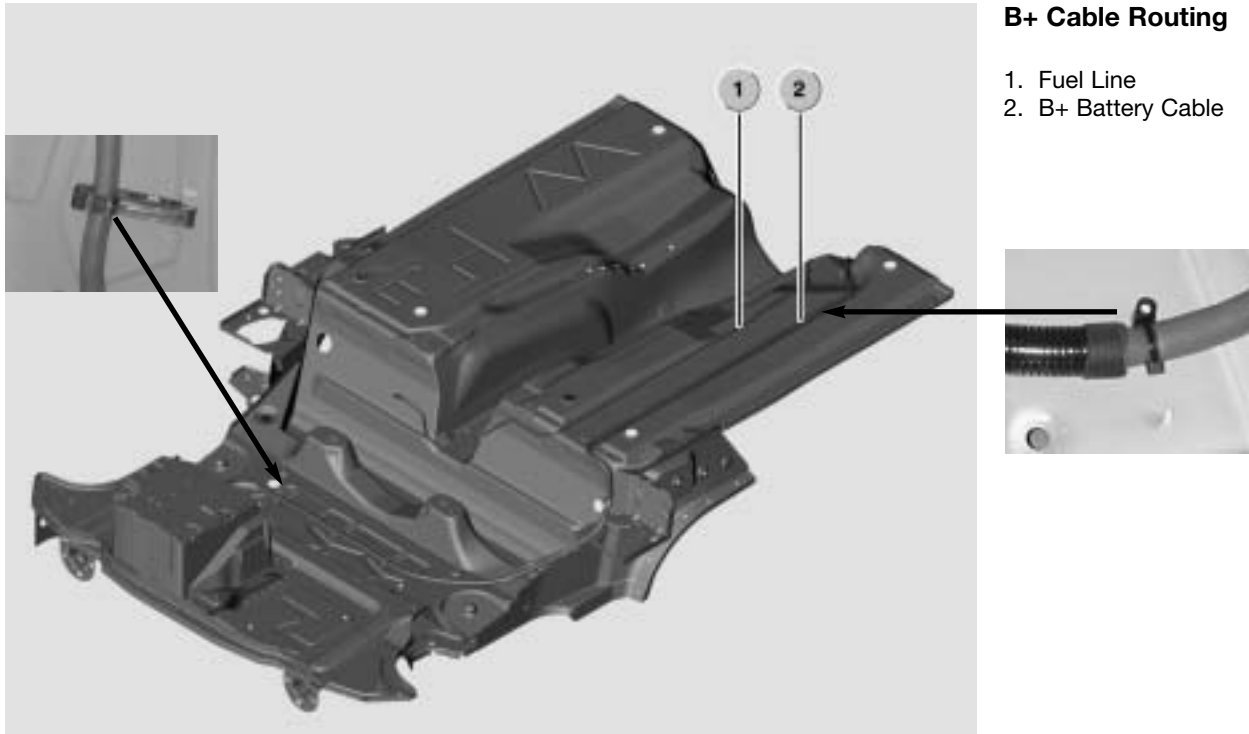
1. Connections for B+ Cable Monitoring
2. Monitored B+ Battery Cable



Monitor Connections

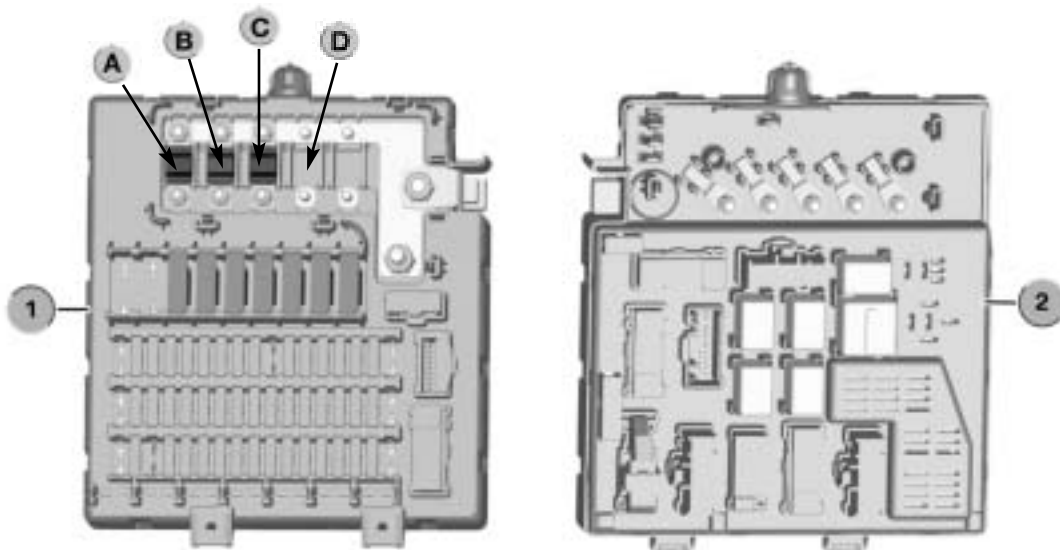
1. Connections for B+ Cable Monitoring
2. Monitored B+ Battery Cable

The Monitored B+ cable is routed underneath the vehicle from the battery box along the floor pan to the engine compartment jumper cable point. The B+ cable is attached to the underside of the body with two different style clips. The cable is protected with plastic shielding. (Description of cable monitoring is found in Safety Systems.)



Fuse Box and Fuses

The Fuse Box is located behind the glove box and accessible by removing the glove box door and underdash panel. The fuse box contains blade type fuse and special fuses for higher amperage consumers. Relays are located on both the front and back sides of the fuse box.

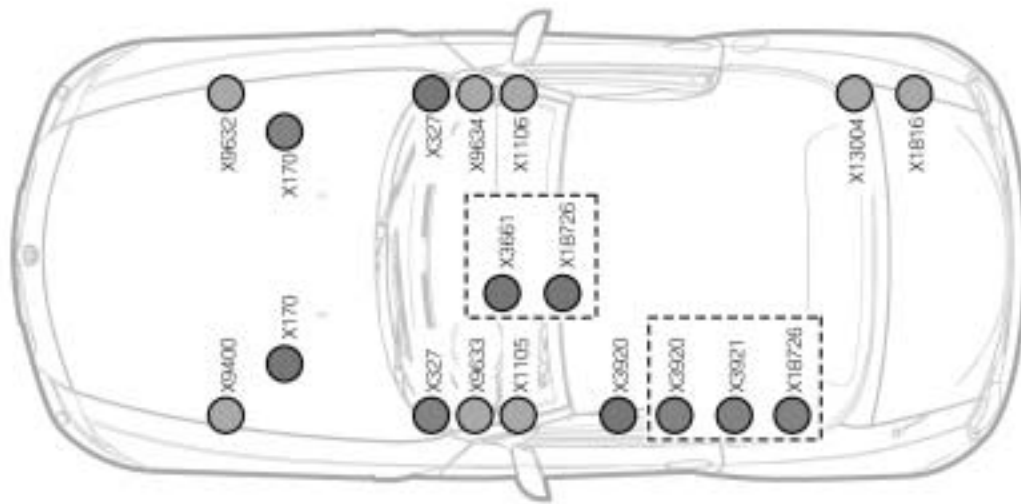





Passenger Compartment Fuse Box

1. Fuse Box Front View
2. Fuse Box Rear View

- A. Electric Engine Cooling Fan
- B. Not Used
- C. DME
- D. EPS

Ground Points



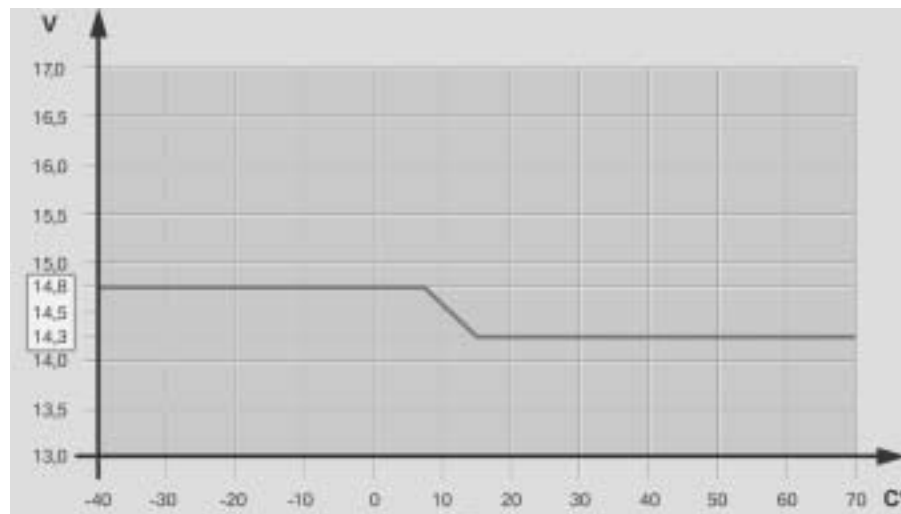
-  Ground points in Left and Right Hand Drive Vehicles
-  Ground points in Left Hand Drive Vehicles
-  Ground points in Right Hand Drive Vehicles

Alternator

Depending on country and equipment the vehicle is equipped with different output alternators.

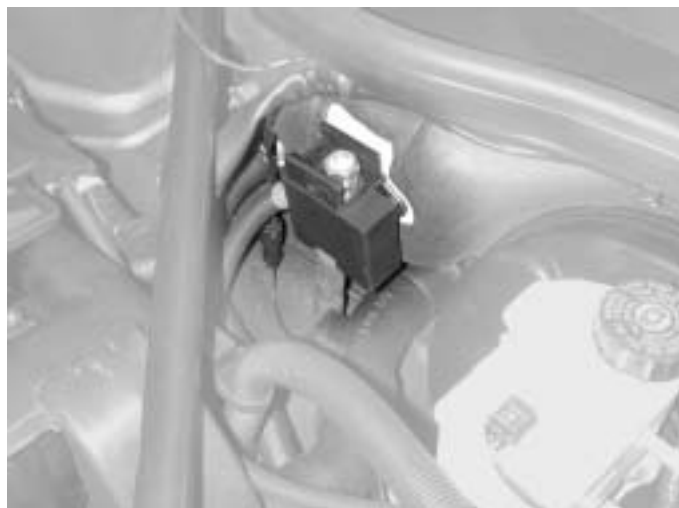
Battery charging voltage varies according to ambient temperature. At lower temperatures, the battery is less susceptible to boiling over and can be charged at higher voltages. At high temperature the charging voltage is reduced to prevent loss of the battery electrolyte through evaporation.

The DME controls the output rate of the alternator.



Jumper Cable Point

The Jumper Cable Point is located in the engine compartment on the left side at the fire-wall. The jumper cable point is the junction for the Monitored B+ cable and the alternator and starter.



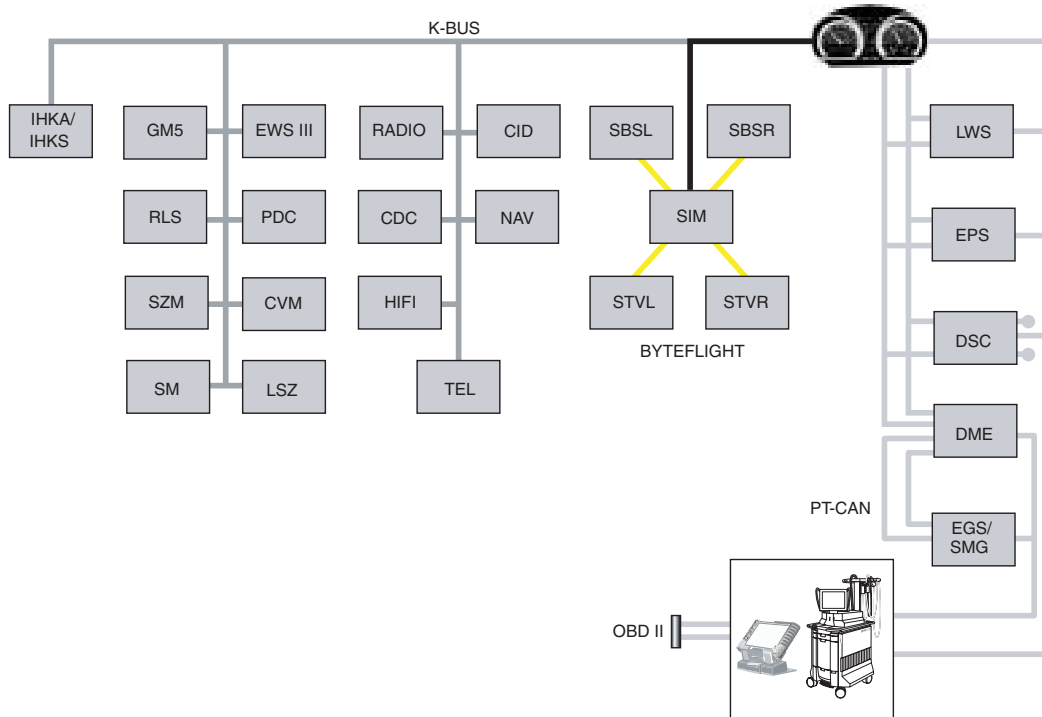
Jumper Cable Point



Cable Routing on Firewall

Bus Systems

The bus system of the E85 is based on the K-Bus, PT CAN and the D-Bus of the E46. The byteflight optical based system is based on the E65.



K- Bus

IHKA	Automatic Climate Control
IHKS	Manual Air Conditioning
IHS	Heating System
GM5	General Module
RLS	Rain/Light Sensor
SZM	Console Switch Block
SM	Seat Memory
EWSIII	EWS
PDC	Park Distance Control
CVM	Convertible Top Module
LSZ	Light Control Module
Radio	Radio
CDC	CD Changer
HiFi	Optional Audio System
CID	Central Information Display
NAV	Navigation System
VM	Video Module
TEL	Telephone Control Unit

byteflight

SIM	Safety and Information Module
SBSL	Satellite B-pillar left
SBSR	Satellite B-pillar right
STVL	Satellite Door Left
STVR	Satellite Door Right

PT CAN

LWS	Steering Angle Sensor
EPS	Electric Power Steering
DSC	Dynamic Stability Control
DME	Digital Motor Electronics
EGS	Automatic Transmission Control
SMG	Sequential Manual Transmission Control

D-Bus

IKE	Instrument Cluster Electronics
LWS	Steering Angle Sensor
EPS	Electric Power Steering
DSC	Dynamic Stability Control

OBD II

DME	Digital Motor Electronics
EGS	Automatic Transmission Control
SMG	Sequential Manual Transmission Control

Review Questions

1. What new about the B+ cable? _____

2. Where in the vehicle is the fuse for the EPS located and what is the amperage rating?

3. What is the advantage of the increased charging voltage of the battery?

4. How is the voltage supply cable to the fuse box protected in case of a short to ground?

5. The module SBSL is located on which Bus system?

