INTRODUCTION

The Electronic Throttle Control System (EML) regulates the operation of the throttle valve(s). The scope of EML design on BMW engines provides:

- Throttle valve positioning for optimum starting
- Precise idle speed regulation without the use of an external idle control valve/circuit
- Progressive throttle opening curves matched to the driving program (with EGS/AGS interface)
- Cruise control operation without additional control modules and linkages
- Automatic synchronization of the throttles (airflow balancing) for two independent banks, throughout the entire engine speed range (M70, S70, M73 engines only)
- Intake air volume control for ASC/DSC (Automatic Slip Control/Directional Stability Control) systems
- Maximum road speed limiting
- Emergency “Failsafe” operation in the event of component failures

The EML control module is a link in the total scope of Engine Management Control. The EML is interfaced with other control modules to complete the management system, which includes:

- ECM(s) - Except E46 (EML integrated in MS42.0 ECM)
- EGS/AGS
- ABS/ASC

The main components of the EML system are:

- Accelerator pedal position sensor (PWG)
- Accelerator pedal position sensor (driver’s wish sensor - integrated in throttle housing, E46 MS42.0)
- Throttle valve assembly/assemblies with electronic control motor(s) - DK/MDK
- EML control module (MS42.0 ECM - E46)
EML SYSTEM OVERVIEW

Throttle valve control is managed electronically, using an electric motor(s), without the use of mechanical linkages or cables (except E46 - MDK).

The EML system uses a microprocessor to convert the input signal for the position of the accelerator pedal into output commands for control of the throttle valve. The position of the pedal is merely a request to the control module for throttle opening. The EML module processes this input request along with other pertinent operating parameters. The throttle valve is then moved to its proper position according to specific control unit programming.

The total scope of output control functions for the EML includes:
EML Control System Version Identification By Vehicle

BMW engine management systems have evolved through the model years. The evolution is due to continued technical refinement and emission level compliancy.

Same version systems may be different from vehicle-to-vehicle. This additionally increases the number of system variations as well.

<table>
<thead>
<tr>
<th>VERSIONS</th>
<th>MODEL</th>
<th>ENGINE</th>
<th>MODEL YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bosch 1.2</td>
<td>E32</td>
<td>M70</td>
<td>1988-1990</td>
</tr>
<tr>
<td>Bosch 1.7</td>
<td>E31</td>
<td>M70</td>
<td>1990-1994</td>
</tr>
<tr>
<td>Bosch 1.3</td>
<td>E32</td>
<td>M30</td>
<td>1991-1992</td>
</tr>
<tr>
<td>Bosch 1.3</td>
<td>E34</td>
<td>M30</td>
<td>1991-1993</td>
</tr>
<tr>
<td>Bosch 1.7</td>
<td>E32</td>
<td>M70</td>
<td>1991-1994</td>
</tr>
<tr>
<td>Bosch 1.7</td>
<td>E31</td>
<td>S70</td>
<td>1994-1995</td>
</tr>
<tr>
<td>Siemens III</td>
<td>E38</td>
<td>M73</td>
<td>1995-present</td>
</tr>
<tr>
<td>Siemens III</td>
<td>E31</td>
<td>M73</td>
<td>1995-1997</td>
</tr>
<tr>
<td>Siemens MS42.0</td>
<td>E46</td>
<td>M52TU</td>
<td>1999-present</td>
</tr>
</tbody>
</table>
SYSTEM OVERVIEW - I-P-O

BOSCH EML SYSTEM
-35 PIN = 6 CYL ENGINES
-55 PIN = 12 CYL ENGINES

Programming Features
- Throttle Motor Control
  Throttle Valve Optimum Position For Starting
- Idle Speed Control
- Throttle Valve Synchronization
- Cruise Control (FGR)
  Adjustment Of Throttle(s) During Decel To Reduce High Manifold Vacuum
- Engine Speed Limit
- Vehicle Speed Limit
- Drive Torque Reduction (ASC)
- Drag Torque Reduction (MSR)
- Safety Monitoring
- Fail Safe Functions
- Fault Monitoring With Memory
- Diagnostic Communication

* = The M 70 - V 12 engine utilizes two of these components or signals
SYSTEM OVERVIEW - I-P-O

Siemens EML III

-88 PINS

Throttle Motor Control
Throttle Valve Optimum Position
For Starting
Idle Speed Control
Throttle Valve Synchronization
Cruise Control (FGR)
Adjustment of Throttle(s) during
Decel to reduce
High Manifold Vacuum
Engine Speed Limit
Vehicle Speed Limit
Drive Torque Reduction (ASC)
Drag Torque Reduction (MSR)
Safety Monitoring
Fail Safe Functions
Fault Monitoring With Memory
Diagnostic Communication
OBD II Compliant