AUTOMOTIVE LIGHTING SYSTEMS

- CORNERING LIGHTS
- ADAPTIVE FRONTLIGHTING SYSTEM
- LED HEADLIGHTS
Conventional vehicle lighting is designed for straight roads, curve or side streets are not illuminated optimally when turning. Engineers therefore developed systems that move the headlights depending on the steering wheel position at first mechanically, later electrically as well. This system is known as "dynamic cornering lights." A further addition is an additional lateral facing light referred to as a static cornering light.

With the equipment set (A2.1.4.3) the following topics are covered:

- Additional systems / auxiliary units
- Legal regulations (ECE)
- Installation instructions
- Schematics, symbols, terminal designations
- Wires, connectors
- Electric and electronic components, assemblies and systems
- Electrical and electronic circuits, basic variables and signals
- Regulations for the testing of electrical / electronic systems
- Requirements for testing and setting of headlights
- Safety and accident prevention in dealing with electrical components
LED HEADLIGHTS

LEDs (Light Emitting Diodes) were first used as indicators at the rear of the vehicle. Now high intensity LEDs are also used in headlights for illumination. LEDs offer higher efficiency than halogen and xenon lamps, longer life time and above all, greater design flexibility of the vehicle front.

With this teaching equipment set (A.2.1.3.4) the following topics can be examined practically:

- LEDs as a lighting element
- Lighting functions (e.g. DRL)
- Special lighting functions (such as all-weather light)
- Headlight range adjustment
- LED lighting element according to ECE
- Legal regulations ECE
- Testing and adjustment of headlights
- Service orders and troubleshooting
- Reading circuit diagrams and diagnostic strategies
- Spectral analysis of LED light

ADAPTIVE FRONT-LIGHTING SYSTEM

The Adaptive Frontlighting System AFS is one of the most important lighting innovations. This system (A2.1.3.3) not only adjusts the direction of the light horizontally, but also to the vertical direction. Depending on the vehicle’s environment, the headlight range can vary between near (common low beam) and far (common high beam).

To comply to the ECE regulations various sensors and actuators are needed, such as a camera for the detection of towns or motorways. The adjustment of the headlight is carried out by a free-form drum, which continuously rotates in the light output and thus shadows the light more or less.

A variety of experiments on different topics can be covered with this system:

- Sliding adjustment of low to high beam
- Dynamic cornering light
- Static cornering light
- Detection of oncoming and preceding vehicles
- Switching between motorway, highway or city traffic light
- Adverse weather light circuit
- Halogen, Xenon and LED illuminants
- Spectral comparison of Halogen, Xenon and LED light

FURTHER INFORMATION ARE AVAILABLE ON THE REAR SIDE OR ON OUR WEBSITE UNDER WWW.LD-DIDACTIC.COM
A variety of experiments on different topics can be covered with this system:

- Sliding adjustment of low beam to high beam
- Dynamic cornering light
- Static cornering light
- Detection of oncoming and preceding vehicles
- Switching between motorway, highway or city traffic light
- Adverse weather light circuit
- Halogen, Xenon and LED light sources
- Spectral comparison of Halogen, Xenon and LED light

Available from September 2013

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>738 185</td>
<td>Control unit Adaptive Frontlighting System</td>
</tr>
<tr>
<td>738 186</td>
<td>Xenon Headlight left</td>
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<tr>
<td>738 187</td>
<td>Xenon Headlight right</td>
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LED HEADLIGHT

With the automotive headlamp with LED light equipment, the following topics can be covered:

- Light functions
- Extra light functions (i.e., all-weather light)
- Headlight level control
- Spectral analysis
- LED lighting element
- UC - ECE regulations
- Checking and adjusting headlights
- Reading schematics and diagnosis strategies

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<tr>
<td>738 189</td>
<td>LED Headlight</td>
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CORNERING LIGHT

Using the Driver Assistance System „Cornering Light“ the following topics can be examined:

- Comparison of rotation sensor (yaw rate sensor) and steering wheel angle sensor
- Activation by steering wheel movement even at a walking pace
- Diagnostic via CAN databus
- Signal transmission via low-speed and high-speed CAN bus
- SDVC signal for speed detection, alternatively to the CAN-bus signal
- Additional control of the LED Daytime running lights
- Dimming of the DRL during flashing by PWM control
- Calibration and adaptation of components
- Programmed directly by end users, for example, speed threshold or lighting time on the control unit

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<tr>
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<tr>
<td>738 113</td>
<td>Cornering Light</td>
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The TPS module is also available as a network-ready version (738 113N). With the Software LEYLAB.control teachers can actively control and monitor the student’s experiments in a networked laboratory.

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<tr>
<td>738 113N</td>
<td>Cornering Light Net</td>
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Additional product information are available on our website under the particular catalogue or item no.