LED signal light units
Economical operation with LEDs

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Rail traffic today is characterized by higher speeds and train densities, a more extensive range of services and increased cost pressure. Signaling systems therefore have to meet greater requirements as well. Signaling equipment must become more flexible and reliable, but at the same time requires less maintenance. LED signal light units from Siemens can help railway operators to cut their operating costs dramatically.

Lamp failures used to be one of the most commonly encountered problems in outdoor railway installations. LED signal light units, however, require virtually no maintenance, have a long service life and offer high availability.

Applications
Compatible with classical systems
Signal light units with LEDs (light-emitting diodes) can be used in place of the classical optical systems. The process of replacement is fast and straightforward because both systems have the same interface to the signal circuit of the interlocking.

Benefits of the system
Cost-effective operation
Low life-cycle costs through maintenance-free signal light units
Very long service life in contrast to signal light units with a signal lamp
Periodic replacement of the signal lamp is no longer necessary, saving time and costs as a result

Light-emitting diodes are employed in circular signal light units and in supplementary indicators which display symbols. There are signal light units for the signal colors red, yellow, green, lunar white and blue.

Depending on the application, there are LED signal light units for mass transit and mainline operations and for tunnels.
A new generation of light sources

Structural details and mode of operation

LED 70 signal light unit
The LED 70 signal light unit is suitable for signaling in tunnels and for signaling involving reduced luminous ranges outside of tunnels. It is used primarily in connection with compact signals of type K140 made by Siemens or predecessor types. The structure of the LED 70 makes the unit compatible with the St 70 optical signal light unit with a signal lamp.

LED 136 signal light unit
The LED 136 signal light unit is suitable for signaling with wide luminous ranges (max. line speeds of up to 160 kph) outside of tunnels. It is used primarily in compact signals made by Siemens. It may also be used in connection with a single light unit. The structure of the LED 136 makes the unit compatible with the V 136 optical signal light unit with signal lamp.

LED 210 signal light unit
The LED 210 signal light unit is preferably used for signaling with wide luminous ranges by means of light dots having a nominal diameter of 210 mm. This signal light unit can be freely mounted on a background plate. For proper employment of the LED 210 signal light unit, no signal housing is required.

LED indication module for indicators
The LED indication module is used in multiple and single signal light units. Amongst other things, these indicators are used for the signaling of speed, direction, track change and departure information.

Structural details and mode of operation
The LED signal light units basically consist of a board for the light-emitting diodes (matrix board or LED bunch) and a driver board which forms the interface to the relevant interlocking. The two boards are connected to each other via a connector.

In the case of the LED 210 signal light unit, the driver board and the matrix board are combined in one module. In the case of the LED indication module, the LED bundle and the driver board are combined to form one LED indication module.

As the light-emitting diodes generate quasi-monochrome light, a system with color filters is not necessary. The railway-specific chromaticity coordinates are produced in various ways.

HLED 70 signal light unit
The HLED 70 signal light unit uses high-efficiency LEDs. An additional optical system causes the filament of a signal lamp to be geometrically simulated. This enables the optical systems known from the signal lamps to be further used.

References

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<thead>
<tr>
<th>Company</th>
<th>Country</th>
<th>Date</th>
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<tr>
<td>Deutsche Bahn AG (DB AG)</td>
<td>Berlin, Germany;</td>
<td>since 1999</td>
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<td>Kölner Verkehrs-Betriebe AG (KVB)</td>
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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.