GENERAL DESCRIPTION
The Bosch Smartglasses Light Drive provides a complete, ready-to-use solution for smaller, lighter, more stylish smartglasses. The solution is also compatible with curved and corrective lenses – a significant market considering that worldwide six out of ten people use corrective lenses every day. This all-in-one smartglasses system delivers a highly intuitive user experience as a convenient display extension, providing an alternative to smartphone or smartwatch screen checking.

Bosch Sensortec’s solution is a turnkey light drive system for smartglasses, ready for integration. The light drive is composed of a technology stack of optical, computing, and sensor components. Bosch has core competencies in the subsystems of this technology stack. The optical systems include microelectromechanical system (MEMS) mirrors with ASIC controller that precisely direct a low-power beam of light to the user’s eye. This beam of light travels from the light drive, through the pathway of scanning micro-mirrors, across a finely tuned transparent holographic element (HOE) embedded in the glasses lens, finally painting real-time imagery directly onto the user’s retina. The visualized content is invisible to the outside world, entirely private to the user.

Sensing solutions developed by Bosch provide developers with the tools to connect the user with the world. Orientation, barometric pressure, and absolute heading sensors form the basis for environmental awareness in smartglasses. Wireless communications, e.g., low energy Bluetooth®, complete this energetically efficient system for a comfortable all-day sensing and display solution built into glasses.

CLEAR BENEFITS
- Visually transparent: first all-day visual comfort for prescription glasses wearers – 6 in 10 people globally.
- Small size and low weight, for easy integration: < 10 grams, 30% less depth than other options.
- Compatible with the curved lenses of prescription glasses.
- Maximum privacy: no externally visible imagery and camera.
- Delivers high quality, bright images, even in direct sunlight.
- Turnkey light drive display solution, for rapid integration.
- Produced as a sole source end-to-end solution, in-house by Bosch Sensortec.
**Smartglasses Light Drive**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light source/ colour resolution</td>
<td>RGB lasers, 24 bit full colour</td>
</tr>
<tr>
<td>Field of View (FoV)</td>
<td>15°</td>
</tr>
<tr>
<td>Resolution</td>
<td>150 line pairs</td>
</tr>
<tr>
<td>Frame rate</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Optical output power</td>
<td>&lt; 15 µW</td>
</tr>
<tr>
<td>Major sensors</td>
<td>BHI260, BMM150, BMP388</td>
</tr>
<tr>
<td>Connectivity</td>
<td>BLE</td>
</tr>
<tr>
<td>Weight of module</td>
<td>&lt; 10 g</td>
</tr>
<tr>
<td>Operating time</td>
<td>14 h with 350 mAh battery</td>
</tr>
<tr>
<td>Eye safety</td>
<td>Laser class 1 acc. to DIN-EN 60825-1</td>
</tr>
<tr>
<td>Dimensions (L/H/W)</td>
<td>45-75 mm x 5-10 mm x 8 mm (depending on customer integration)</td>
</tr>
</tbody>
</table>

Unless otherwise specified, all values are typical values @ Tc=25 °C.

**TARGET APPLICATIONS**

- **Navigation**: Just Drive. No distraction with transparent, hands free, real-time, heads-up navigation.
- **Notifications and messaging**: Free your hands and your mind, put down the phone. Stay focused, stay connected.
- **Notes for life**: Everyday note-based information like to-do and shopping checklists, recipes, or construction manuals are exceptionally convenient for hands-free working.

**THREE PRODUCT TIERS FOR MASS PRODUCTION**

**Tier 1** For fastest time to market, Bosch Sensortec provides a Tier 1 turnkey light drive solution – designed and built in-house to ensure consistent high quality, reliability, and performance, while optimizing response time to changes in market and customer needs. Holographic lens support is included in Tier 1.

**Tier 2** includes the complete light drive plus PCB as a standalone product, BML500P, which the customer integrates into their frame and holographic solution.

**Tier 3** includes the MOEMS scanner (micro-optical MEMS element) as a standalone module. The customer provides all aspects of the PCB plus the holographic solution.

**Integration assistance** from Bosch is available in the form of software and services for technical integration that complement the ramp-up to mass production.

**Bosch Sensortec** is one of the world’s leading providers of innovative MEMS sensors and actuator solutions that improve people’s individual lifestyle and well-being.

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**CUSTOMERS**

- Customer with standard consumer knowledge
- Customer with optical systems knowledge, e.g. HOE
- Customer with deep light drive system knowledge and significant optical expertise

**Bosch Solution for Smart / AR Glasses**

- **Hardware**: BML05x, BML500P, BML500P + holographic concept
- **Software**: UI toolchain, Calibration & alignment tools, Command & content driver
- **Services**: Design-in holographic element, Calibration-setup prod. line, System training

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