



Voice is a natural user interface for next generation smart light bulbs. Adding always on audio commands to smart-bulbs is as easy as adding a microphone and a Blumind BM110 device. Voice, keyword and up to 10 commands can now be detected without a wireless/cloud connection.

## Always-on AI for (Smart) Light Bulbs

A voice-based user interface (UI) is an intuitive, low cost and easy to deploy feature in next generation light bulbs. Adding a low-cost analog microphone and BM110 to existing smart light bulbs allows for simple voice-based activation, dimming and changing of preset colors for example. No network connectivity or remote control is required. Local language customization is straight forward, as are field updates using the programmable BM110 solution. Key to adding this additional functionality and reducing power is the use of an all-analog signal processing path and analog AI neural network for the inferencing. By processing the audio with an all-analog AI signal path up to 99.9% of the always-on power can be saved using the Blumind highly efficient analog AI compute core and a low-cost analog microphone can be used.

Now you can ask you lightbulb to turn on and off, dim and brighten and change to green, red, blue, yellow, orange or purple just with your voice. Any set of up to 10 commands can be programmed and recognized.

## Lowest Power with Programmability

Blumind all-analog approach to deliver a smart light bulb solution achieves the highest total system value for clients. System level power, size, and cost are minimized to achieve the most efficient solution. Further, our unique architecture enables in-field updates to neural network parameters for new audio commands, as new algorithms develop in this fast-moving market area.

Blumind offers high integration ASSP devices and Chiplet/IP solutions. Contact us to learn more about all-analog AI for smart light bulbs.

## Blumind AMPL™ Technology

Blumind's AMPL technology is unique. The Blumind all-analog approach delivers the lowest power solution while the inherently parallel architecture delivers ultra-low latency for real time applications, all in a tiny footprint.

No high-speed clocks, ADCs, DACs, or specialty memory are used. AMPL technology is built in standard CMOS with a roadmap to advanced process node.

By exploiting advanced CMOS device physics Blumind creates single transistor neurons that are small and power efficient.

The AMPL architecture was built from the ground up to address the analog compute challenges of variations in process, temperature, voltage, and long-term drift and our results are impressive.

Standard PyTorch and TensorFlow software tools are used to create the parameters for the powerful AMPL neural network.

