BLUMIND

AI for Everyone, Everywhere

Application Brief

Adding AI to Industrial Sensors

Adding AI to 4-20mA Loop Powered Sensors

Making any loop powered factory sensor smart by integrating AI capabilities is a desirable but challenging proposition. Rapidly identifying, recording and flagging excursions and anomalies is highly desirable, but MCU based AI solutions consume too much power and most are physically too large. Blumind's AMPL™ all-analog AI delivers a low-latency, small, cost-effective, and ultra-low power solution with an integrated recording buffer (see side bar). Local AI processing of time series data (e.g., pressure and/or temperature) can be achieved in a tiny package, with less than 100uA being pulled from the current loop power budget. An ideal solution for AI in industrial loop powered sensors and with alarms, anomaly history and results communicated over the system HART back to central control station.

Integrated solution

Blumind holistic approach achieves the highest total system value for clients. We consider system level power, size, and cost to achieve the most efficient solution. For industrial sensors a 1.8V power supply and a SPI or I2C connection to the MCU is all that is needed for our all-analog AI approach to be integrated in the sensor.

Ease of Deployment

Blumind offers high integration ASSP devices and Chiplet/IP solutions for system-in-package integration options. Our products use standard software tool flows for our all-analog architecture without compromising accuracy of results. Contact us to find our more.

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 synapses that are small and power efficient.

The AMPL architecture was built from the ground up to address 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.