



System Solution Guide - Preview

# Drone



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# Table of Contents

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## Overview

Application

03

## Market Information & Trend

The Evolution of Drone Technology

04

## System Implementation

The Diverse Applications of Drones

05

Drone Classifications

06

Autonomous Navigation Systems for Drones

07

Drone Sensing Systems

08

## Solution Overview

Block Diagram – Industrial Drone

09

Hyperlux SG – Global Shutter Image Sensor Family

10

Hyperlux LP - Image Sensor Family

11

Hyperlux LH - Image Sensor Family

13

CQD SWIR – Best Depth Sensing Technologies for Navigation Systems

14

Key Parameters Comparison of Hyperlux Image Sensor Families

15

Smart & Mobile Robotics

16

Battery Powered Tools and Chargers

17

## Recommended Products

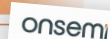
18

## Complementary Products

19



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1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



18



19



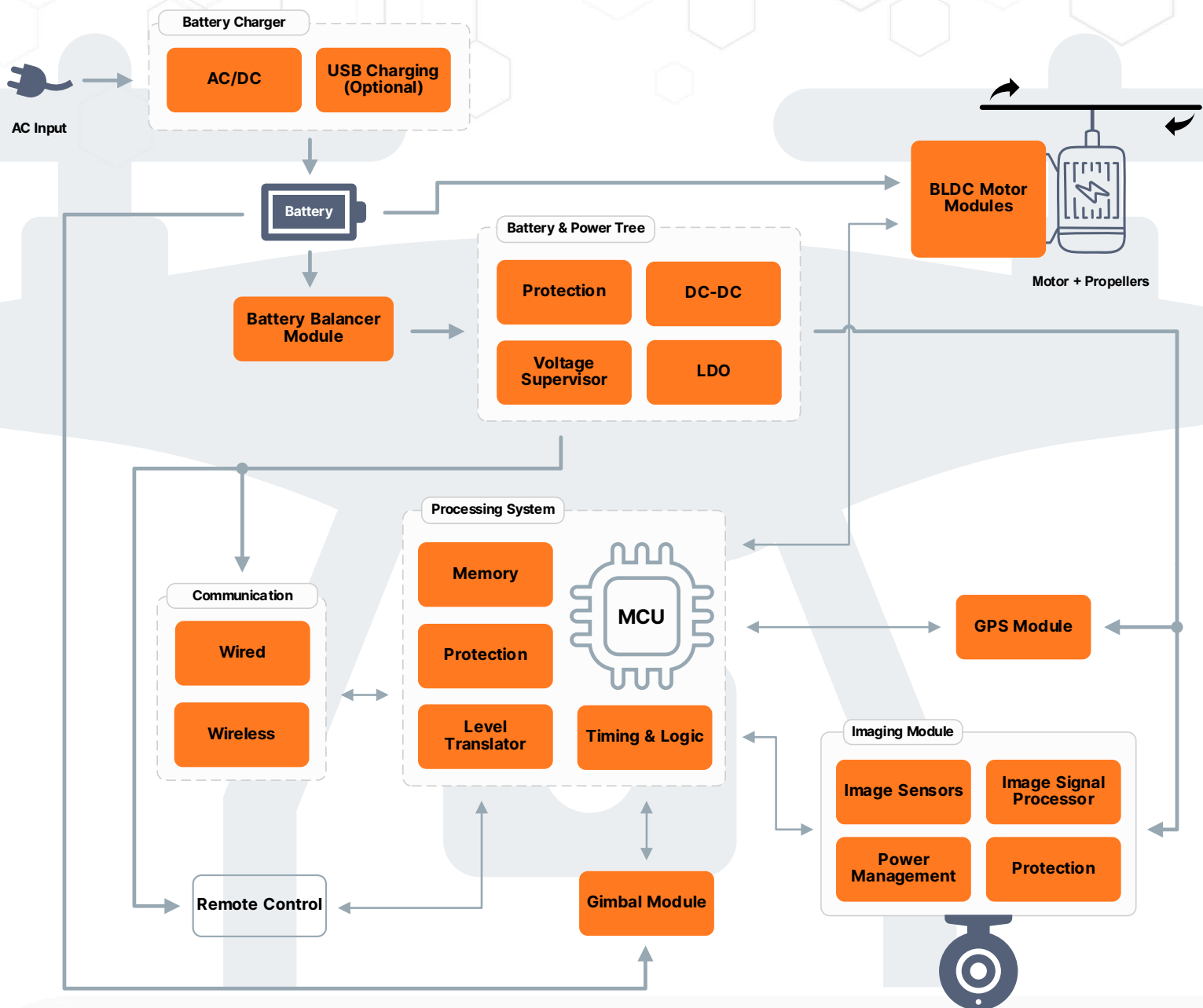
20

# Block Diagram - Machine Vision

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## Block Diagram - Drone

The block diagram below illustrates an industrial drone solution featuring recommended products from **onsemi**. This solution integrates multiple image sensing technologies, utilizing **onsemi's** Global and Rolling Shutter sensor families. Most of the functional block devices, including power management, communication, and many more, can be sourced from **onsemi's** comprehensive range of solutions.



Use our Interactive Block Diagrams Tool



Open IBD Tool

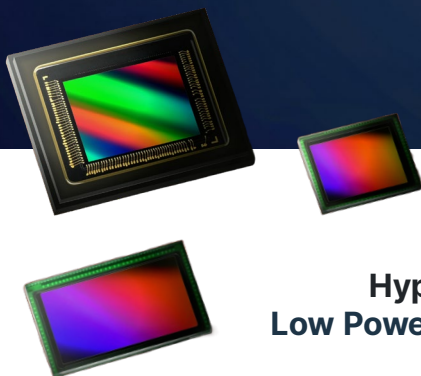
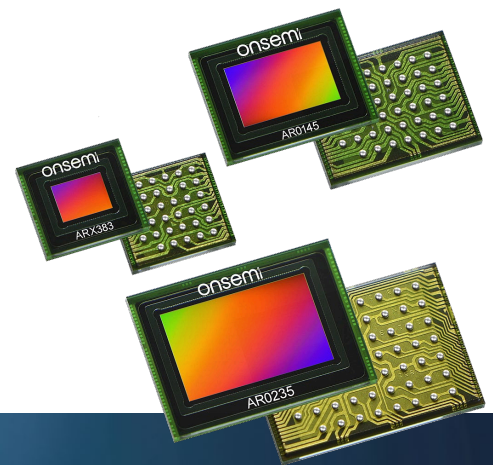


## Drone Sensing Systems

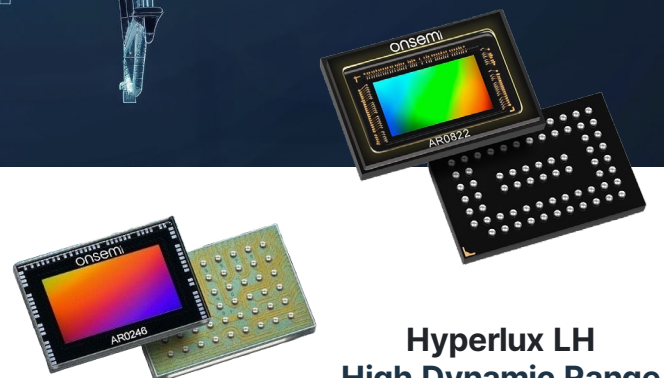
When selecting image sensors for drones, it's crucial to consider the specific conditions and requirements of your application. Typically, a system might use six to eight sensors, but up to twelve sensors are not uncommon. Global shutter sensors, which capture the entire image simultaneously, are ideal for moving objects as they prevent distortions and motion artifacts. This is particularly important for applications like mapping, surveying, and industrial inspections, where precision is crucial. By capturing the entire frame simultaneously, global shutters prevent distortions such as the "jello effect" and motion blur, which are common with rolling shutters.

- **Low power image sensors** are beneficial due to their low power consumption and the ability to be placed in multiple locations, providing a comprehensive view of the scene.
- **High Dynamic Range (HDR)** cameras are essential in drone technology for capturing detailed and accurate images in varying lighting conditions. They balance exposure in both bright and dark areas, ensuring no details are lost in challenging lighting conditions.
- **High Resolution:** 20-megapixel Hyperlux AR2020 will further enhance these capabilities, allowing for even more detailed and accurate inspections and surveys
- **Extended Vision:** Seeing Beyond the Visible with Swir

## Hyperlux SG Family Global Shutter Technology



**Hyperlux LP**  
Low Power Consumption



**Hyperlux LH**  
High Dynamic Range

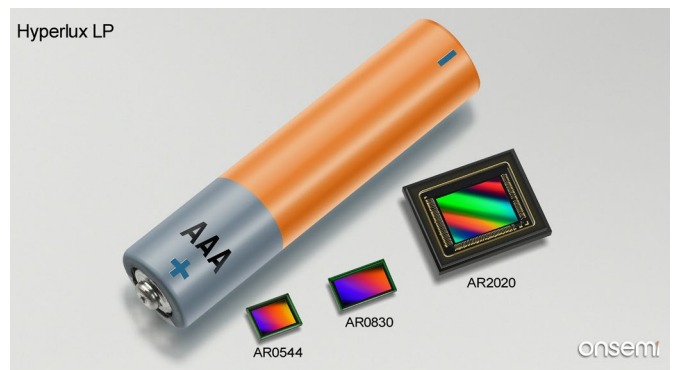
## Hyperlux SG – Global Shutter Image Sensor Family

The Hyperlux SG global shutter image sensor family from **onsemi** captures high-speed, distortion-free images, making it ideal for barcode scanning, machine vision, and robotics. Models like ARX383, AR0145, and AR0235 offer up to 120 fps, programmable regions of interest, auto-exposure, and low-power operation. These sensors are designed to deliver exceptional image quality even in challenging lighting conditions. Their compact form factor makes them suitable for a wide range of industrial applications.



## Hyperlux LP - Image Sensor Family

The **onsemi** Hyperlux LP image sensor family is designed for a range of applications, including the AR2020, AR0544, and AR0830. These sensors offer exceptionally low power consumption, ensuring devices run longer and more efficiently. With the innovative wake-on-motion feature, your device can stay in a low-power state until motion is detected, saving even more energy. Additionally, the sensors provide excellent performance in low-light and NIR wavelengths. Moreover, the Smart ROI (Region of Interest) in the AR2020 sensor allows for intelligent focus on specific areas, enhancing performance and precision.



## Hyperlux LH - Image Sensor Family

The onsemi Hyperlux LH image sensor family is designed for a range of applications, including the AR0822 and AR0246. These sensors achieve stunning 4K video quality with enhanced NIR and eHDR capabilities, ensuring exceptional image performance in various lighting conditions. With industry-leading 120dB ultra-high dynamic range (HDR), these sensors provide clear and accurate images even in challenging environments. The compact design of the Hyperlux LH sensors makes them ideal for integration into space-constrained systems, enhancing both performance and efficiency.

The sensors are designed with a 2.0  $\mu\text{m}$  pixel size, contributing to their high sensitivity and image clarity. Furthermore, these sensors are built for low power consumption, making them ideal for battery-operated devices and reducing overall energy costs in systems.








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