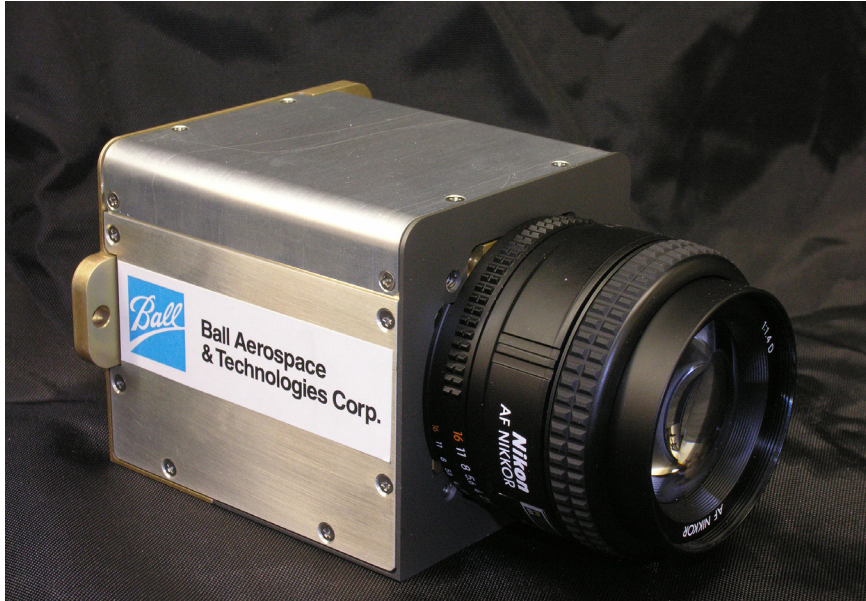


# NOCTE CMOS CAMERAS



GO BEYOND WITH BALL.®

Due to advances in Complementary Metal Oxide Semiconductor technology, our Nocte series of high-definition (HD) video cameras offer next-gen, low-noise, low-light imaging without image intensifiers. Available in a variety of formats, they provide high-resolution visible and near-infrared imaging under day and low-light conditions. Resolution is superior compared to intensified and Electron Multiplying Charge Coupled Device cameras.

# OVERVIEW

Ball Nocte cameras are designed specifically for military ground, airborne, and naval environments. An integral thermoelectric cooler (TEC) on the sensor enables full performance at high operating temperatures encountered in military systems.

Traditional low-light cameras utilize an intensifier or an EMCCD. When bright lights are in a nighttime environment, intensifier blooming – the blinding glare surrounding a light source against a dark background, or EMCCD column or row streaking – can obscure important details. CMOS-based Nocte cameras do not exhibit these effects.

Nocte cameras are available in monochrome and color formats, with various frame sizes up to full frame at 5.5 megapixels. Rolling, global, and custom readout modes are available to support static and fast-moving platforms. Frame rate is selectable for given frame size and readout mode, with the camera supporting both analog and digital video formats. Custom packages and formats are available to support specific applications or platforms.

The full product life cycle is supported by Ball 's established depot facilities and organization. Long-term support and availability are backed by four decades of experience on fielded military platforms.

# SPECIFICATIONS

## SENSOR

CMOS Detector	2560 x 2160 pixels, monochrome or color
Pixel Pitch	6.5 um with microlenses
Image Format	16.64 um with microlenses
Shutter	Rolling or global (snapshot)
Spectral Response	400 to 1100 nm, 650 nm peak
Read Noise	<2e- rolling shutter, <11e- low-noise global shutter, <30e- global shutter

## CAMERA

Usable Light Level	Full daylight to starlight
Sensitivity Controls	Automatic or manual gain, and electronic shutter
Auto Iris	External iris control
Dynamic Range	>140 dB Inter-scene, >80 dB Intra-scene
Synchronization	Internal free-run or external frame sync
Image Control	Histogram equalization, horizontal and vertical sharpening, 2-point non-uniformity correction exposure time, exposure offset, windowed exposure, gain control, extended interaction, decimation
In-system Programmable	External JTAG interface
Frame Rate	2048 x 2048 at 60 Hz progressive (rolling or global shutter), custom frame rates and frame sizes available
Video Output Options	<ul style="list-style-type: none"><li>• Digital Camera Link (progressive color/12-bit monochrome)</li><li>• Digital 3G-SDI (interlace/progressive)</li><li>• Analog RS-343 (monochrome)</li><li>• Analog component color (YPrPb or VGA)</li></ul>
Communication	RS-422 command and status, asynchronous serial
Input Voltage	10 to 32 VDC
Power	17 W (TEC off), 25 W with TEC

## MECHANICAL

Configuration	Standard and custom packages available
Lens Mounting	C-mount, F-mount, and custom mounting available
Mass	Configuration specific
Interface Connectors	25-pin micro-miniature D, Camera Link™, and 4-pin power

## ENVIRONMENTAL

Temperature	Operating: -40 to +71 °C; Storage: -55 to +85 °C
Altitude	Up to 50,000 feet
Vibration and Shock	Ruggedized for military environment

*\*Contact Ball Aerospace for custom CMOS camera applications. Specifications are subject to change without notice.*

