PHANTOM HIGH-SPEED CAMERAS FOR

AUTOMOTIVE IMAGING

Includes tips for getting started

https://www.phantomhighspeed.com/applications/sector/automotive

T3610

The Phantom T3610 is a compact and lightweight camera, 50% lighter than its closest equivalents, offering ultrahigh-speed frame rates and performance. Utilizing back side illuminated (BSI) sensor technology, it maximizes sensitivity for sub-microsecond exposure times, crucial in high-velocity testing. At its full 1-megapixel resolution, the T3610 captures over 38,000 fps, maintaining a throughput of 38 Gpx/second. Its top frame rate reaches 875,000 fps in both standard and binned modes, with the latter increasing vertical resolution by combining sensor pixels. The camera, suitable for applications like combustion, airbag testing and materials analysis, features a custom BSI sensor for shooting in low-light environments. Premium features include Extreme Dynamic Range (EDR) for flash mitigation, programmable I/O for interfacing with DAQ systems and measurement sensors, and remote standalone operation with on-camera controls and CineMag support.

Miro N5

The Phantom Miro N5, which is the most compact camera measuring just 1 inch cubed, is ideal for fitting into confined spaces. Comprising two separate components connected by a CXP cable, the cost-effective head is easily replaceable in the field, while the robust base safeguards captured images. Specifically designed for destructive testing, the camera excels at capturing crucial images by utilizing its separate head and base structure. The CXP protocol facilitates swift image transfer to the durable base, ensuring no critical data is lost. With a 3-meter cable, the large base can reach small and challenging locations. The N5 base is available in standalone or Miro JBox 2.0 versions, featuring a 240GB non-removable CineFlash and battery. The memory's partitioning capability, up to 63 times, supports continuous recording, making the Miro N5 an excellent choice for machine troubleshooting.

VEO 440S

Tailored for diverse applications, the Phantom VEO 440S is a robust 4-megapixel high-speed camera offering versatile workflow capabilities. Its compact and durable design ensures resilience in extreme temperatures and harsh shocks or vibrations, with two available body styles suitable for laboratory or remote settings. Delivering high-quality 4-megapixel images, the VEO 440S is well-suited for off-board safety testing. Notable features include CFast 2.0 media, 12V battery input, on-camera controls, and interchangeable lens mounts supporting Nikon, PL, C, and Canon EF (with electronic control) lenses. Enhanced with locking connectors and additional data management features, the camera proves valuable in both remote and production workflows.

Miro C321/ C321J

The Phantom Miro C321J and C321 cameras are designed for high-quality HD imaging in on-board auto crash testing. With a 3GPX/sec throughput and a maximum frame rate of 1480 fps, these small and rugged cameras offer flexibility within established Phantom imaging solutions. Tested to withstand shocks up to 170G and vibrations of 24 Grms, they feature an internal backup battery and Flash for capturing critical test images. The sensors, with tightly packed 10-micron pixels, ensure great light sensitivity, delivering clear and detailed shots rapidly. Ideal for repeat setups or experiments, these cameras contribute to improved speed and image quality in auto test floors and laboratories.

SDK is available for all Phantom cameras, includes drivers for MatLab, LabView and Python

ICON KEY

HIGH FRAME RATES · RESOLUTION · IMAGE · BSI SENSOR ARCHITECTURE

PRICE · SIZE · LIGHTWEIGHT · MEMORY · CONNECTIVITY

KEY ATTRIBUTES FOR HIGH-SPEED IMAGING

FINDING THE RIGHT HIGH-SPEED CAMERA

Preferred Workflow:

Consider the workflow for crash tests and choose a system that aligns with your needs.

Number and Networking of Cameras:

- Determine the maximum number of cameras required on-board and off-board.
- Address how cameras will be networked, synchronized, and controlled during testing.

Image Backup and Storage:

- Plan for the safe backup, storage, and sharing of images generated during tests.

Lighting Conditions:

- Evaluate the facility's lighting conditions and assess whether a more light-sensitive camera would be beneficial.

TESTING

Component Testing

- Testing various components in the automotive industry demands tailored approaches based on specific requirements.

Airbag Testing

- Airbag testing poses challenges due to the rapid events and the intense brightness of the airbag.

Combustion Testing

- Ultrahigh-speed camera models and specialized supplemental lighting are typically necessary for combustion testing due to the need for very high frame rates.

COMPLETE FAMILY OF CRASH TEST SOLUTIONS

Delivering superior Phantom image quality in both on-board and off-board setups

Flexible

- All automotive cameras can be managed through the J-Box 2.0 or stand-alone
- Add more camera views by daisy-chaining J-Boxes
- Modular to accomodate vitually any testing process
- Full variety of resolutions available for automotive crash testing

Easy To Use

- Quick connections with a single, rugged cable
- Robust image enhancement tools
- Easy in-position focus with HD-SDI monitor accessibility
- One software platform for easy training

ONLINE RESOURCES

How to Pick a High Speed Camera:
https://www.phantomhighspeed.com/products/toolsandaccessories/comparecameras

Case Studies:
www.phantomhighspeed.com/casestudy

Speed Calculator:
www.phantomhighspeed.com/speedcalc

Rental Information:
https://www.phantomhighspeed.com/contactus/phantom-rentals/rentals

APPLICATIONS

Digital Image Correlation (DIC)
www.phantomhighspeed.com/applications/how/digital-image-correlation

Automotive Crash Test Imaging
www.phantomhighspeed.com/casestudies/casestudylist/2020/april/autotestwp

DIC Tire Stress and Strain Testing Case Study
www.phantomhighspeed.com/casestudies/casestudylist/2020/april/dictires

Optimizing Workflow Case Study
www.phantomhighspeed.com/casestudies/casestudylist/2018/february/workflowwp

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