LATEST PRODUCTS 03

HAMAMATSU
PHOTON IS OUR BUSINESS

BIANNUAL CATALOG | November, 2025

MoxiePlex® Multi-spectral imaging system | C16919-01

Multiply insights. Maximize results.

FTIR Engine (FT-NIR Spectrometer) | C16511-01

High-speed, compact near infrared spectrometer

THz PMT & Module | R17201-01, H17362

High-speed, room-temperature THz detectors

PHOTON IS OUR BUSINESS

Dear Readers,

Welcome to the latest edition of Hamamatsu's Latest Products. In this biannual release, we've curated a selection of key products, ranging from light and radiation sources to optical sensors, components, and complete systems.

This edition also highlights our **Pilot Line approach**, designed to help researchers and engineers transition from prototype to scalable production with tailored photonics solutions.

In addition, don't miss our **Behind the Science** series—insightful stories from the research world where Hamamatsu technologies have enabled groundbreaking discoveries. From particle physics to astrophysics, these projects show how precision light detection supports science at its most ambitious.

We hope you enjoy exploring the innovations and ideas driving your next breakthrough.

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CAMERAS

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LIFE SCIENCE & MEDICAL SYSTEMS

FAILURE ANALYSIS SYSTEMS

Discover our full product range, visit our website:

www.hamamatsu.com

OPTICAL SENSORS

THz PMT & Module

R17201-01, H17362

World's first high-speed THz detector with metasurface technology

Hamamatsu Photonics has pioneered the mass production of the world's first terahertz (THz) wave detection modules, marking a breakthrough in THz sensing technology. Through integration of advanced metasurface technology with our proven photomultiplier tube (PMT) platforms, these modules achieve efficient THz wave manipulation and enhanced detection. Designed to operate at room temperature, they deliver high-speed response and exceptional sensitivity - ideal for demanding applications.

UPDATE

This is a new product to our lineup.

APPLICATION EXAMPLES

- Gas measurement
- Water vapor measurement
- Semiconductor inspection

FEATURES

- High-speed response
- Micro-change measurement
- Wide effective area

Learn more

Learn more

OPTICAL SENSORS

THz Image Intensifier (THz I.I.)

C17198

Real time monitoring of THz beam with metasurface technology

The C17198 is a high-speed terahertz (THz) imaging device that utilizes advanced metasurface technology for efficient THz wave-to-electron conversion, enabling direct sensitivity in the THz frequency range. Designed as a compact and practical THz beam visualizer for laboratory environments, it allows observation of otherwise invisible THz beam shape and focal point. With a frame rate of up to 1000 fps, the C17198 captures ultrafast THz phenomena that conventional THz cameras struggle to resolve.

UPDATE

This is a new product to our lineup.

APPLICATION EXAMPLES

- Real-time THz wave beam monitor
- THz transmission imaging

FEATURES

- Sensitive for wide frequency band
- Real-time imaging
- High-speed response
- Simple operation

Learn more

OPTICAL SENSORS

InGaAs Image Sensor

G16823/-24/-25

High-performance NIR sensing in a compact package

The G1682X Series offers a compact, high-performance range of InGaAs linear image sensors optimized for multichannel spectrophotometry. Engineered for precision and reliability, these sensors feature selectable conversion efficiency and can operate uncooled for low dark current through zero bias operation. Designed to meet evolving application demands, the G1682X Series delivers robust, uncompromising performance for near-infrared analysis in a cost-effective and compact package.

APPLICATION EXAMPLES

- Near-infrared multichannel spectrophotometry
- Process analysis device
- Portable analytical instruments

FEATURES

- Single video line
- Two conversion efficiency types
- Low dark current
- Low power consumption
- Drive voltage: 3.3 V
- Spectral response range
  G16823-128DB/-256DG: 0.9 µm to 1.7 µm
  G16824-256DG: 0.9 µm to 1.9 µm
  G16825-256DG: 0.9 µm to 2.1 µm

UPDATE

This product is smaller and operates uncooled compared to previous products. This is due to being able to achieve lower dark current by operating at almost zero bias.

Learn more

LIFE SCIENCE & MEDICAL SYSTEMS

Imaging Plate Reader Module

C15082

High-precision imaging in a small foot-print

The C15082 is an ultra-compact imaging plate reader module designed for computed radiography (CR). Integrating a laser scan engine, MPPC assembly, and driver circuit in a small housing, it offers high resolution, fast reading speed, and a high signal-to-noise ratio. This module supports various IP sizes and outputs 16-bit image data via a parallel bus, making it ideal for high-precision imaging applications.

FEATURES

- High resolution
- High-speed reading: 3.6 s (standard mode)
- High S/N ratio
- Ultra-compact: 75 mm × 60 mm × 34 mm

UPDATE

This is a new product to our lineup.

APPLICATION EXAMPLES

- CR Scanners
- Dental imaging plate scanner

Learn more

Spectroscopic Modules

C17552/-53/-54

Compact MEMS-FPI spectroscopic modules for USB-based absorbance measurement

These compact spectroscopic modules feature a built-in light source, control circuit, and MEMS-FPI (Fabry-Perot Interferometer) tunable filter that can vary its transmission wavelength by changing the applied voltage. These modules measure spectrum and absorbance through USB connection to a PC. Supplied evaluation software enables data acquisition, graphing, and configuration with the option for users to create their own measurement software programs.

UPDATE

These products are lighter than previous product with an extended spectral response range.

APPLICATION EXAMPLES

- Moisture detection
- Food inspection
- Farm product inspection
- Plastic screening
- Fabric identification

FEATURES

- Compact, thin case
- Installed MEMS-FPI spectrum sensor and light source
- External power supply not necessary: USB 2.0 bus powered
- Transmission wavelength shift due to the corrected ambient temperature change
- Spectral response range
  C17552: 1350 nm to 1650 nm
  C17553: 1550 nm to 1920 nm
  C17554: 1750 nm to 2150 nm

Learn more

Si APD

S17353 Series

High-sensitivity silicon APDs for broad-spectrum, low-light detection

The S17353 series silicon APD sensors deliver exceptional sensitivity and low noise performance across a broad spectral range, from short wavelengths up to 800 nm. Engineered for precision in low-light environments, these advanced sensors are an essential component in modern analytical instruments, enhancing accuracy and reliability in critical measurement applications.

UPDATE

These are new products to our lineup.

APPLICATION EXAMPLES

- Low-light level measurement
- Analytical instruments

FEATURES

- High sensitivity and low noise performance from short wavelengths
- Enhanced gain and photosensitivity
- Six distinct models offering different photosensitive area sizes, packages and dark current types

Learn more

OPTICAL SENSORS

FTIR Engine

C16511-01

Compact FT-NIR spectrometer for high-speed inline process monitoring

The C16511-01 is a compact, high-speed Fourier Transform Near Infrared (FT-NIR) spectrometer designed for inline process monitoring. Featuring a Michelson interferometer, InGaAs photodiode, and VCSEL laser for precise wavelength measurement, it supports real-time data acquisition and analysis through ethernet connectivity. With a spectral range of 1100 nm to 2500 nm, it can achieve 275 frames per second with high signal-to-noise ratio, making it ideal for industrial applications like food, pharmaceutical, and material inspection.

FEATURES

- Spectrum response ranging from 1100 nm to 2500 nm generating up to 275 spectra per second
- Compact design
- Seamless connectivity with an ethernet interface
- Fully compatible with Windows and Linux operating systems

APPLICATION EXAMPLES

- Process analytical technology
- Material sorting and inspection
- Farm product and food product inspection and sorting
- Pharmaceuticals
- Plastic sorting

UPDATE

This is a new product to our lineup.

Learn more

OPTICAL SENSORS

Mini-Spectrometers

C16449MA-01/-02

Compact and thin, built-in high-sensitivity CMOS image sensor

The mini-spectrometer C16449MA-01/-02 is a compact polychromator integrating optics, image sensor, and driver circuit in a slim housing. Spectrum data is acquired via optical fiber and transferred through USB. With its high-sensitivity CMOS sensor, the C16449MA-01/-02 offers excellent sensitivity and low power consumption.

APPLICATION EXAMPLES

- Film thickness measurements
- LIBS (Laser-Induced Breakdown Spectroscopy)
- Color measurement
- Gas analysis

FEATURES

- Wide spectral response range
- High resolution
- High-sensitivity CMOS image sensor built in
- External power supply not necessary

UPDATE

The mini-spectrometer WS series employs a reflective grating as its spectral element. This enables increased flexible customization of the spectral response range and resolution compared to previous products. Customer requests can also be accommodated.

Learn more

OPTICAL SENSORS

InGaAs PIN Photodiode

G17190/-91/-92/-93

Compact InGaAs photodiode with ceramic packaging and easy integration

The G1719X InGaAs Photodiode series are near-infrared sensors offering high sensitivity and low dark current, comparable to conventional metal packages. Featuring a surface-mounted ceramic design compatible with lead-free reflow soldering, they are available in four distinct sensitivity wavelength ranges and three varying photosensitive area sizes. The G1719X series are tailored to meet the diverse needs of researchers and engineers across multiple industries.

UPDATE

This series offer the same level of low dark current as previous metal package types. Four different spectral response ranges and three different photosensitive area sizes are available in the same shape.

APPLICATION EXAMPLES

- Gas measurement
- Temperature measurement
- Laser measurement system

FEATURES

- High sensitivity
- Low dark current
- Compact design
- Compact surface mount type ceramic package
- Compatible with lead-free solder reflow

Learn more

CAMERAS

ORCA®-Quest IQ

C15550-23UP

The next evolution in qCMOS® camera technology

The ORCA-Quest IQ inherits the series' core features—low noise, high resolution, and high quantum efficiency. The new feature of Camera Link output allows the camera to support advanced applications such as quantum technology, adaptive optics, and super-resolution microscopy. These applications require a control system through a Camera Link interface for image acquisition, processing, and high-speed feedback to peripheral devices.

UPDATE

ORCA-Quest 2 support with ARTIQ.

APPLICATION EXAMPLES

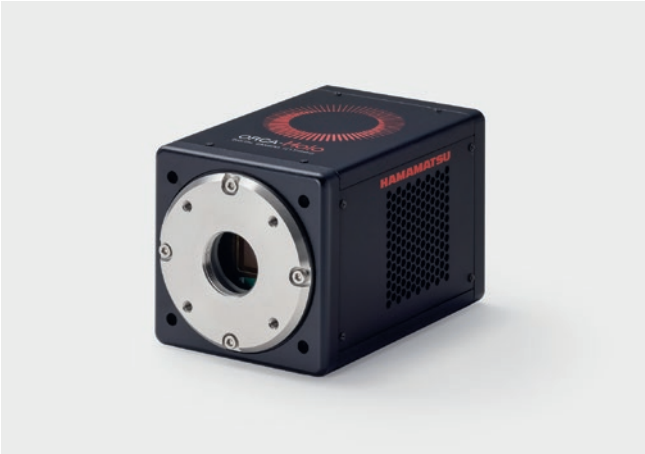
- Quantum technology
- Adaptive optics
- Super-resolution microscopy

FEATURES

- Low readout noise
- High resolution
- High QE
- Supports Camera Link output

Learn more

CAMERAS



ORCA®-Halo sCMOS Camera

C17440-20U

A new benchmark for back-illuminated sCMOS imaging

The ORCA-Halo C17440-20U is a high-performance back-illuminated sCMOS camera featuring 3000×3000 resolution, 3.76 µm pixel size, and 86% peak quantum efficiency. It combines low readout noise and a wide field of view with Hamamatsu's patented "Lightsheet Readout Mode," enhancing microscopy imaging. Designed for seamless integration, it supports USB 3.1 connectivity, multiple trigger modes, and flexible cooling—making it ideal for academic researchers and OEMs worldwide.

FEATURES

- High-quantum efficiency
- Low-readout noise
- High-resolution & wide field of view
- Forced-air and water cooling functions, low dark current
- Equipped with Patented Lightsheet Readout Mode

UPDATE

This is a new product to our lineup.

APPLICATION EXAMPLE

- Florescence imaging

Learn more

LIFE SCIENCE & MEDICAL SYSTEMS

MoxiePlex® Multi-Spectral Imaging System

C16919-01

A multiplex fluorescent platform designed to make spatial biology simple, targeted, and illuminating.

The MoxiePlex system accelerates multiplex immunofluorescence research by enabling up to nine imaging channels across the entire tissue section. Its 16-bit output ensures high-resolution imaging, which is critical for precise image analysis. Equipped with a cutting-edge camera featuring high quantum efficiency across a broad 400 nm to 900 nm wavelength range, the system supports a wider array of fluorescent reagents and enhanced biomarker detection capabilities.

APPLICATION EXAMPLE

- Fluorescence multiplex analysis for spatial biology

FEATURES

- Acquire high-resolution images with up to 9 channels
- Automated sample recognition and exposure time calculation

UPDATE

This is a new product to our lineup.

Learn more

TD Imaging

C10506-07-06, C15765-01

Precision defect detection for complex semiconductor architectures

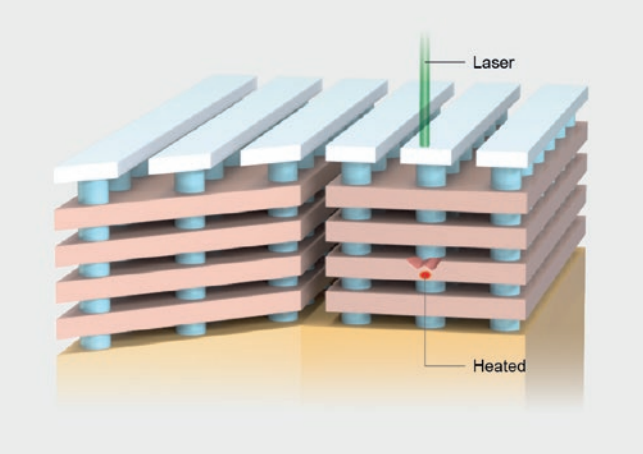
TD imaging is an advanced technology developed to detect defects in semiconductors with complex architectures, including those featuring internal metal layers. By integrating TD Imaging into the failure analysis workflow, manufacturers can significantly improve both the precision and success rate of identifying defect root causes in cutting-edge semiconductor devices, which are increasingly miniaturized and structurally sophisticated.

UPDATE

These are new products in our lineup.

APPLICATION EXAMPLE

- Non-destructive semiconductor failure analysis (Electrical failure analysis)



FEATURES

- Patented Laser scan technology
- Selecting the optimal wavelength
- Higher sensitivity compared to LIT

Learn more

IMPRESSUM

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Introducing ‘Behind the Science’, a series of short stories revealing the key technology, known as photonics, behind some of the most exciting high-energy physics experiments, which strive to uncover the mysteries of our universe.

Our stories relate to some of the most fascinating research infrastructures across Europe. Each of these works tirelessly to reveal the true nature of neutrinos, research dark matter, and explain how our universe came into being.

Hamamatsu Photonics is proud to have participated in these projects' design by providing highly sophisticated optical detectors and sensors. Every piece of technology has been carefully selected to withstand some of the most demanding environments, whether thousands of meters underground or even under the sea. Each step we take in improving our solutions is a step closer to uncovering the truth behind our universe.

In our latest stories, you can learn about some of the technological challenges and solutions behind the scenes of the **Cherenkov Telescope Array (CTA)**, a game-changer in astrophysics.

You can also delve into the Depths of Discovery with **KM3NeT** and explore the extraordinary world beneath the Mediterranean Sea. Uncover some of the technology and challenges behind this mysterious experimental setup, striving to uncover the secrets of our universe.

To learn more

Hamamatsu's Pilot Line

From photonic module **concept to market ready** products

A partner to help you transform your innovation from concept to mass production

A one-stop-shop solution for photonics product development

A consolidated expertise joining Hamamatsu Photonics and PhotonHub Europe

Any questions?

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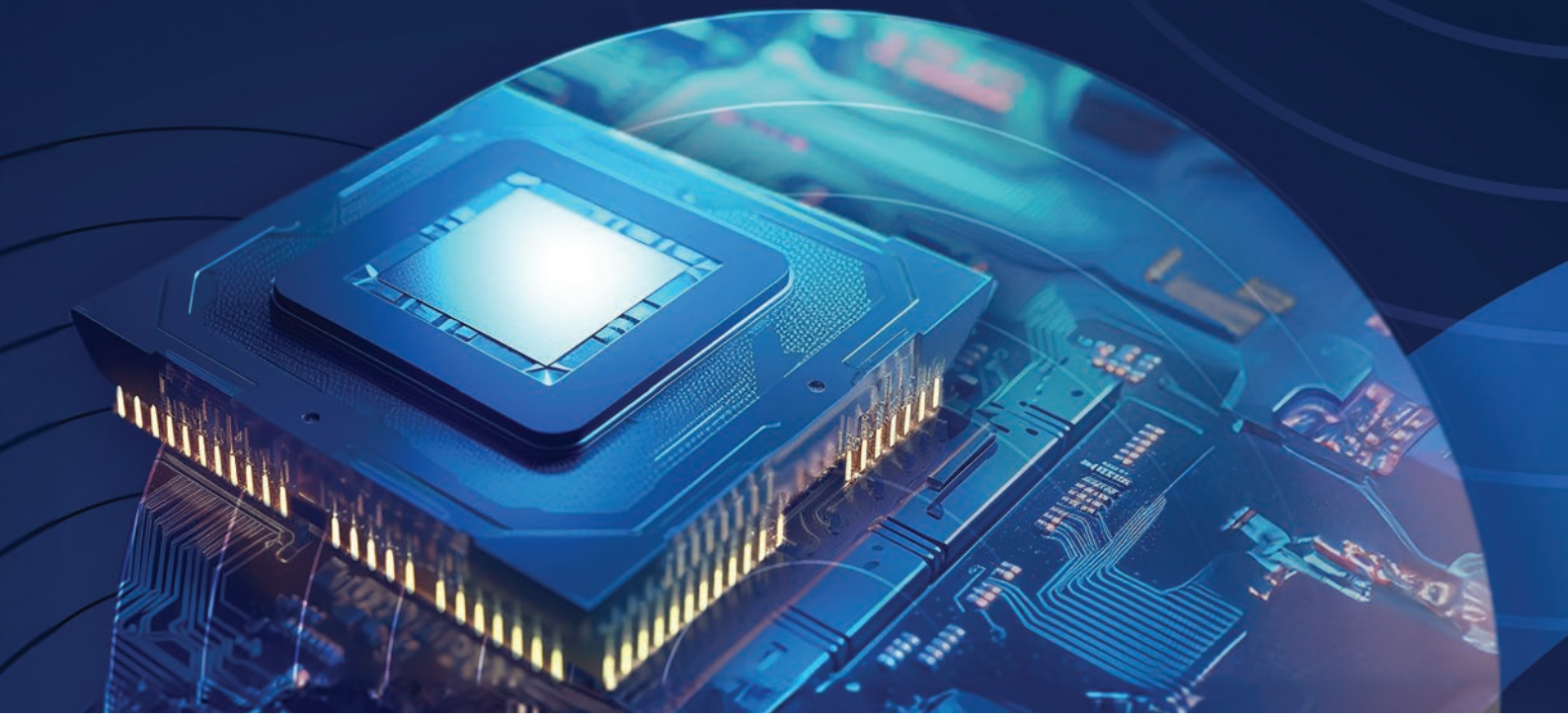

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PhotonHub Europe

PHOTON IS OUR BUSINESS ALL OVER THE WORLD

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