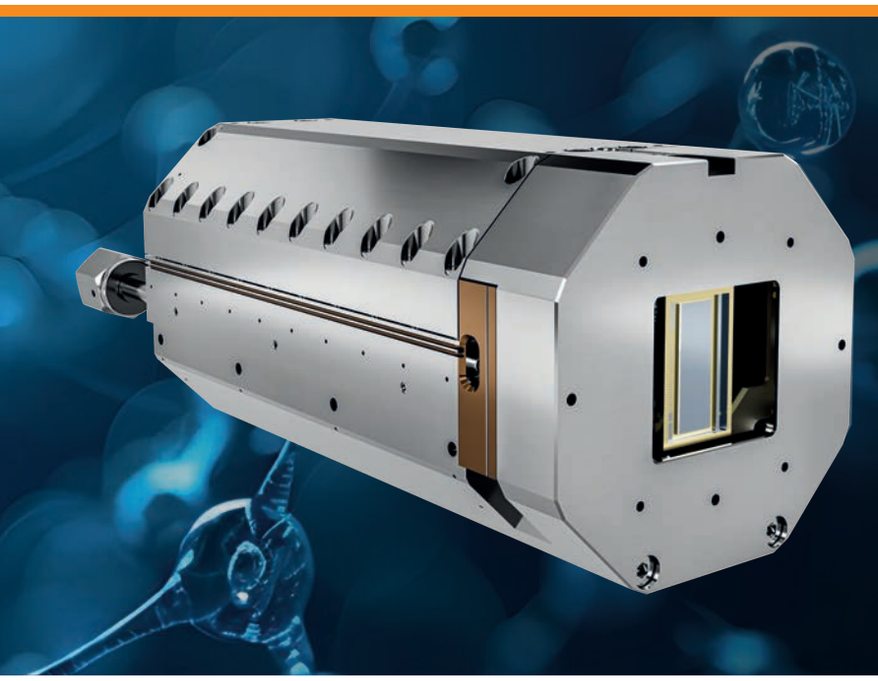
greateyes
EXPAND YOUR VISION

HIGH PERFORMANCE
SPECTROSCOPY CAMERAS



LOTTEs

KEY SPECIFICATIONS

UHV Compatibility through Compact Encapsulated Design

High Quantum Efficiency

Ultra Deep Cooling to -100°C

18-bit Dynamic Range

Multi-MHz Readout

Full-Frame Deep Cooling In-vacuum CCD Camera for Spectroscopy Applications

HIGH RESOLUTION
UP TO
16.8
MEGAPIXEL
HIGH RESOLUTION

VUV
EUV
SXR
HXR

LOTTE in-vacuum CCD camera is the latest innovation from greateyes. **LOTTE** can be submerged, operated and positioned freely inside a vacuum chamber.

Utilising scientific-grade back-illuminated CCD sensors for the detection of EUV, VUV, and X-ray signals, **LOTTE** is equipped with a novel and advanced cooling concept enabling detector temperatures as low as -100°C. It is furthermore driven by the most powerful and versatile true 18-bit electronic platform available for in-vacuum use. This guarantees ultra low noise performance.

One key feature that differentiates **LOTTE** from its nearest rivals is an innovative encapsulated stainless-steel housing, assuring extremely low outgassing at all times.

The special design and unprecedented performance make the **LOTTE** a unique companion for demanding low-light scientific research applications. Additional handy features are further improving the user experience and adding true value.

TYPICAL APPLICATIONS

Soft X-ray Spectroscopy

Plasma Emission Spectroscopy

High Harmonic Generation Spectroscopy

NEXAFS Spectroscopy

Resonant Inelastic X-ray Scattering

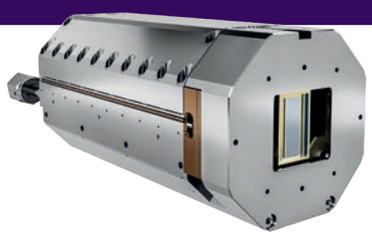
www.greateyes.de

PRECISOMETER
Official representative of Greateyes

info@precisometer.com
precisometer.com/greateyes

LOTTEs





Wearing the crown for lowest outgassing rate

Queen Sophia Charlotte - nicknamed 'LOTTE' - laid the foundation stone of Berlin's most famous palace 'Schloss Charlottenburg'

FEATURES & BENEFITS

Ultra deep TE cooling down to -100°C
lowest dark current for better detection limit

GigE data interface
local or remote network operation – your choice!

Fast readout speeds up to 5 MHz
fast frame rates paired with low-noise electronics

UHV Compatibility
encapsulated design delivers the lowest outgassing rate

High QE up to 98%
very sensitive sensors for low light applications

Flexible software options
camera software and SDKs available

COMMON SPECIFICATIONS

Pixel readout frequency	50/100/250/500 kHz, 1 MHz, 3 MHz (5 MHz for visualisation mode; up to 20 MHz by multi-output)
AD converter resolution	18-bit
Linearity	Better than 99%
CCD epitaxial thickness	15 µm standard, 40 µm for deep depletion (DD) models
Feedthrough flange	CF DN100 flange with D-sub electrical feedthrough connectors and 6 mm liquid feedthrough tubes (airside: G 1/4 fitting female; vacuum side: VCR 1/4 fitting female)
Vacuum compatibility	10^{-9} mbar (UHV capability)
Bakeout temperature	Max. +80°C
Flange - focal place	6 mm (can be customised)
CCD sensor cooling	-100°C to 20°C (liquid cooling only)
Temperature monitoring	Two thermistors at CCD sensor and thermoelectric cooler (hot side)
Data link	Gigabit Ethernet
Software	greateyes Vision software for Windows 11
SDK and drivers	DLL for Windows; LabVIEW, EPICS, Linux, Python, Tango driver (optional)
TTL interface signals	Exposure out, shutter out, 2 external trigger in
Power supply	80-264 VAC (typ. 115/230), 47-63 Hz (typ. 50/60), max. 1.1 A (230 V) / 1.9 A (115 V)
Certification	CE
Dimensions (W x H x L)	rc version: 98 mm x 90 mm x 235 mm; sc version: 90 mm x 127 mm x 189 mm
Weight	rc version: 4.4 kg; sc version: 4.6 kg

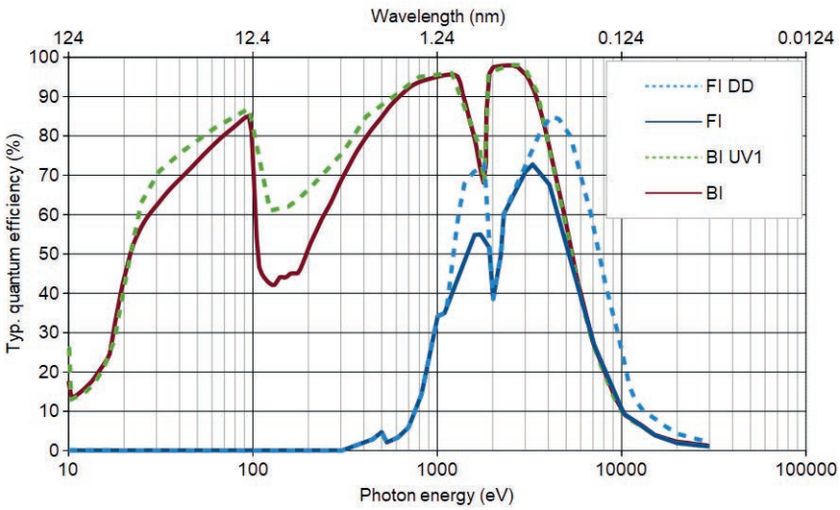
Included with your camera

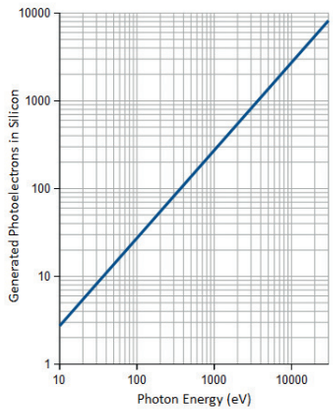
GE-InFI02	CF DN100 flange with electical and liquid feedthroughs		
GE-VacP01	2x in-vacuum hoses for cooling	GE-GigE10m	10 m Ethernet cable
GE-VacCab	2x in-vacuum PTFE D-sub cables	GE-StoB2m	2 m SMB to BNC connection cable x2
GE-VI01	greateyes Vision software suite for Windows	GE-POW01	Camera power supply with cabling
GE-SDK01	SDK for Windows (C/C++ based)	GE-ManCam	Camera instruction manual

greateyes
EXPAND YOUR VISION

LOTTEs

HIGH PERFORMANCE SPECTROSCOPY CAMERAS





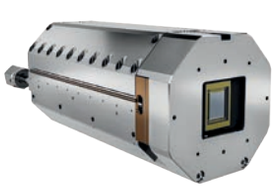
The mean energy of a photon to generate an electron-hole pair in silicon is 3.66 eV.

STEP 1: Choose your camera model

LOTTEs Series	LOTTEs 1k128	LOTTEs 1k256	LOTTEs 2k512
Sensor code	**FI**	**FI** **FI DD** **BI UV1**	**FI** **BI** **BI UV1**
Usable pixels (columns x rows)	1024 x 127	1024 x 255	2048 x 515
Active image area	26.6 mm x 3.3 mm	26.6 mm x 6.7 mm	27.6 mm x 6.9 mm
Pixel size	26 µm x 26 µm	26 µm x 26 µm	13.5 µm x 13.5 µm
Full well capacity	500 ke$^-$	500 ke$^-$ / 700 ke$^-$ (DD)	100 ke$^-$
Register well capacity	1 000 ke$^-$	1 000 ke$^-$ / 1 400 ke$^-$ (DD)	400 ke$^-$
Typical read noise (e$^-$)		**FI** **BI** **DD**	
@ 50 kHz	4.4	4.2 6.0 5.4	3.5
@ 1 MHz	11.0	12.0 13.1 12.3	6.8
@ 3 MHz	25.0	25.0 26.0 25.0	10.7
Typical Dark Current @ -100°C	0.0004 e$^-$/pixels/s	0.0004 / 0.005 e$^-$/pixels/s (DD)	0.00025 e$^-$/pixels/s
Gain:			
Standard Mode	0.4 counts/e$^-$	0.4 counts/e$^-$	1 counts/e$^-$
High Capacity Mode	-	-	0.34 counts/e$^-$
CCD sensor type	Front-illuminated (FI), Back-illuminated (BI), Deep depletion (DD), Enhanced back-illuminated (BI UV1)		
Blemish specifications	Grade 0 or Grade 1 (standard) as specified by sensor manufacturer. For more information please see: www.greateyes.de/en/glossar.html		

STEP 2: Choose your camera design

'rc' version



Compact in diameter, camera body fits into a 6 inch tube

Electrical and water connectors on the rear side

Order Code:
LOTTE-s 2k512 BI UV1 - rc

'sc' version



Camera length only 189 mm

Electrical and water connectors on the bottom side

Order Code:
LOTTE-s 1k256 FI DD - sc

www.greateyes.de

PRECISOMETER
Official representative of Greateyes
info@precisometer.com
precisometer.com/greateyes

LOTTEs

Gigabit Ethernet spec · EPICS · Linux · python powered

STEP 3: Choose your accessories and software

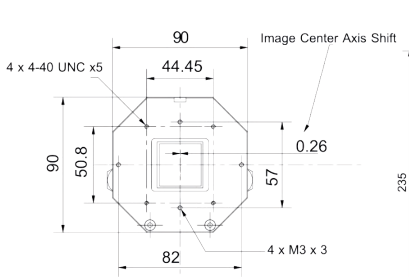
Order Code	Description
Accessories for Imaging Purposes	
LO-SR35	35 mm in-vacuum shutter, including shutter driver module
Accessories for Cooling Performance *(LOTTE series can only be cooled by liquid cooling)*	
GE-CR01	Compact liquid cooling, circulating the coolant at room temperature for deep camera cooling
GE-CR02	Recirculating water chiller, PID control with temp. from -5°C to 30°C for ultra-deep camera cooling
GE-VacP01	2x in-vacuum hoses, formed bellow 1/4", VCR male/female, 305 mm (standard accessory)
GE-VacP02	2x in-vacuum hoses, formed bellow 1/4", VCR male/female, 1200 mm (upon request)
Software Development Kit (SDK) and Drivers	
GE-LX01	SDK for Linux (C/C++ based)
GE-PYT01	Python driver
GE-LAB01	LabVIEW driver
GE-EP	EPICS driver
GE-TAN	Tango driver

STEP 4: Flexible customisation service

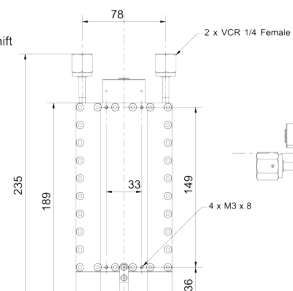
With direct and fast response, we provide various customisations and OEM services. For example, other sensor types, the alteration of sensor position/tilt, the modification of camera housing or cooling system, etc. Let us know what **LOTTE** you require.

TECHNICAL DRAWINGS*

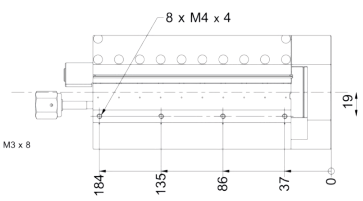
* Only valid for LOTTEs 2k2k cameras. For other drawings, please send us an enquiry.



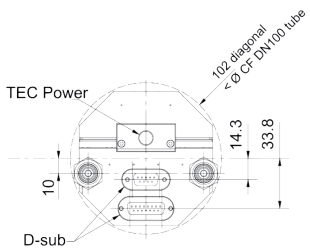
FRONT VIEW



BOTTOM VIEW



SIDE VIEW



REAR VIEW

greateyes
EXPAND YOUR VISION

greateyes GmbH
Ludwig-Boltzmann-Straße 3
12489 Berlin, Germany

T: +49 (0)30 221 844 700
E: info@greateyes.de

Part of Tibidabo Scientific Industries

Made in Berlin.
Making discoveries worldwide.

Follow us on LinkedIn

Find out more on our website

www.greateyes.de

DS-LOTTEs / Rev08 / Sep2026

PRECISOMETER
Official representative of Greateyes
Product selection, configuration & integration support

Office & enquiries
Precisometer B.V.
Eisingastraat 9
2201 DJ Noordwijk, Netherlands

Talk to Precisometer
info@precisometer.com
precisometer.com/greateyes

Explore products & discuss your experiment