SCIENTIFIC FULL-FRAME CCD CAMERAS
for UV, VIS, NIR Imaging and Spectroscopy

DATA SHEET:

GE 1024 1024 series

GE 1024 256 series

GE 2048 512 series

SPECTRAL RANGES:

Ultraviolet (UV)

Visible (VIS)

Near-infrared (NIR)

GE 1024 1024 series	GE 1024 256 series	GE 2048 512 series
1024 x 1024 pixels	1024 x 256 pixels	2048 x 512 pixels
13.3mm x 13.3mm image area	26.6mm x 6.7mm image area	27.6mm x 6.9mm image area
13µm x 13µm pixel size	26µm x 26µm pixel size	13.5µm x 13.5µm pixel size

Based on a unique platform concept greateyes offers a portfolio of about 20 scientific cameras for imaging and spectroscopy in the UV, VIS and NIR range. The deep cooled, high performance CCD detectors are the most compact available. They combine highly sensitive sensors with ultra low noise electronics for optimal detection of weak signals. Select among different pixel formats, several sensor technologies and various sensor coatings to find the best solution for your imaging or spectroscopic application.

The full frame CCD sensors are integrated in hermetically sealed vacuum chambers with multi stage peltier elements and single optical windows. The cameras provide a rich set of functionalities including flexible binning operation, various trigger- and synchronisation modes, software adjustable base line as well as temperature monitoring of the sensor and the heat radiation system.

Key features

Compact size	Flexible binning modes	Quantum efficiency up to 98%
Full well capacity up to 700.000 e⁻	Adjustable base level	Deep cooling to min. -60°C
Read noise: min. 2.4 e⁻	Display of sensor and camera temp.	16 bit dynamic range
Portfolio of about 20 different models	Patented single window design	greateyes Vision software included
SDK & Labview and EPICS drivers	Ext. trigger, shutter, sync signals	Water and forced air cooling

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SPECIFICATIONS

Model specifications

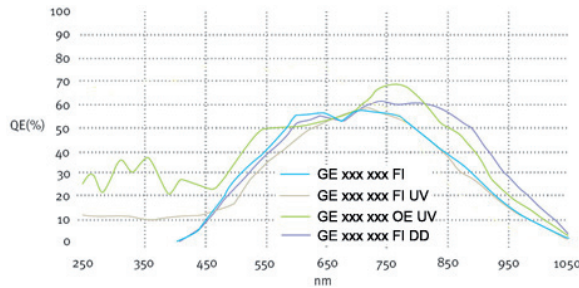|	GE 1024 1024 series	GE 1024 256 series	GE 2048 512 series
Pixel format	1024 x1024	1024 x 256	2048 x 512
Image area	13.3mm x 13.3mm	26.6mm x 6.7mm	27.6mm x 6.9mm
Pixel size	13µm x 13µm	26µm x 26µm	13.5µm x 13.5µm
Full well capacity	100.000 e⁻ 120.000 e⁻ (for DD models)	500.000 e⁻ 700.000 e⁻ (for DD models)	100.000 e⁻
Register well capacity	150.000 e⁻	1.000.000 e⁻	150.000 e⁻
Dark current @ -80°C	0.0003 e⁻/pixel/sec 0.017 e⁻/pixel/sec (for DD)	0.0005 e⁻/pixel/sec 0.08 e⁻/pixel/sec (for DD)	0.0003 e⁻/pixel/sec
Sensitivity	max. 0.8 counts/e⁻	max. 0.8 counts/e⁻	max. 0.8 counts/e⁻
Max. dynamic range	50.000:1	125.000:1	33.333:1
CCD sensor type	Front-illuminated (FI), back-illuminated (BI), deep depletion fringe suppression (DD), open-electrode (OE)		
Sensor coating	Antireflective UV (UV1, UV2, UV3), broadband (BR), midband (MID), multiband (MU2) or near-infrared (NIR) coating		

Common specifications

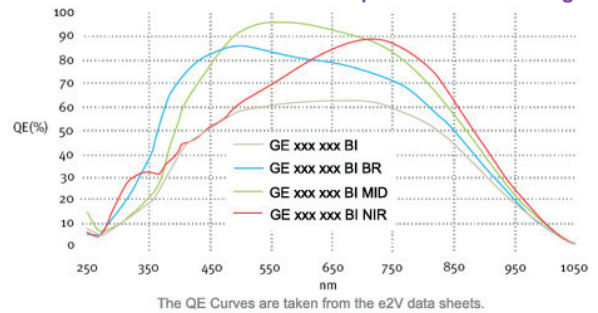|		
Pixel readout frequency	250 kHz - 3.0 Mhz	10 Mhz
AD converter resolution	16 bit	14 bit
Read noise at 500kHz	minimum: 2.4 e⁻ rms, typical: 4 e⁻ rms	
Linearity	better than 99%	
Vertical shift speed	software selectable 5 µs - 100 µs/row	
Window material	MgF$_2$ or UVFS for UV sensitive models, otherwise BK7	
Distance flange - focal plane	10.6mm	
CCD sensor cooling	min. -60°C to 20°C, forced air or water cooling	
Temperature monitoring	CCD sensor and peltier hot side	
Data link	USB 2.0, Gigabit-Ethernet	
Software	greateyes Vision software for Windows XP / Vista / 7	
SDK and drivers	DLL for Windows XP / Vista / 7; LabVIEW, EPICS, Linux driver	
TTL interface signals	Sync out, shutter out, external trigger in	
Operating conditions	temperature: 0°C to 30°C ambient, relative humidity <70% (non condensing)	
Power supply	110-240 VAC, 50Hz-60Hz, max. 1A	
Certification	CE	
Dimensions / weight	6.2cm (2.44") x 10.0cm (3.94") x 12.6cm (4.96") (W x H x L) / 900g	

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STEP 1: Choose camera model by order code

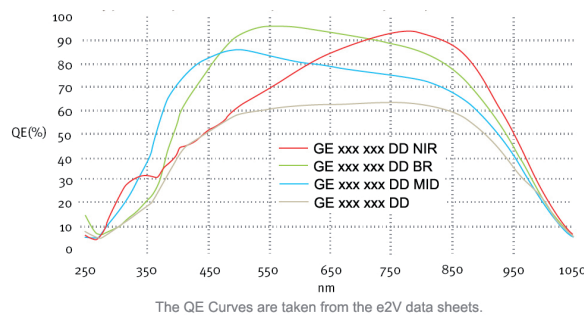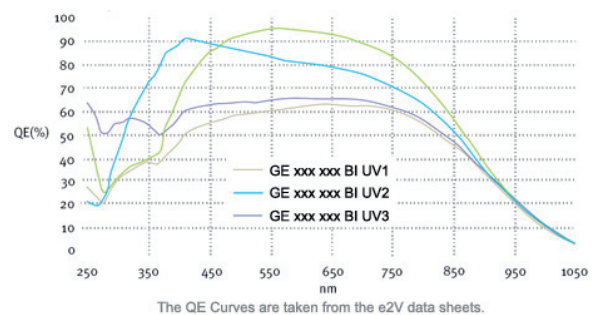|	GE 1024 1024 series	GE 1024 256 series	GE 2048 512 series
Enhanced UV sensitivity	GE 1024 1024 BI UV3	GE 1024 256 OE UV GE 1024 256 BI UV1 GE 1024 256 BI UV2 GE 1024 256 BI UV3	GE 2048 512 BI UV1 GE 2048 512 BI UV2 GE 2048 512 BI UV3
Enhanced VIS sensitivity	GE 1024 1024 FI GE 1024 1024 BI BR GE 1024 1024 BI MID	GE 1024 256 FI GE 1024 256 BI BR GE 1024 256 BI MID	GE 2048 512 FI GE 2048 512 BI MID
Enhanced NIR sensitivity	GE 1024 1024 DD NIR GE 1024 1024 DD MU2	GE 1024 256 DD NIR GE 1024 256 DD MU2	

Basic front-illuminated CCD sensors

The QE Curves are taken from the e2V data sheets.

Back-illuminated CCD sensors optimized for VIS range

The QE Curves are taken from the e2V data sheets.

Deep-depletion, NIMO CCD sensors for NIR range

The QE Curves are taken from the e2V data sheets.

Enhanced back-illuminated CCD sensors for UV range

The QE Curves are taken from the e2V data sheets.

STEP 2: Select accessories and software by order code

Order code	Description
A) Accessories for imaging purposes	
GE-CM01	C-Mount lens adapter
GE-M42	M42 lens adapter with integrated filter holder for 50mm round or square filters
GE-M42S	M42 lens adapter with integrated filter holder and bistable elecronic shutter
GE-DR01	Electronic shutter driver
	Please ask for specific objectives based on your requirements.
B) Accessories for enhanced cooling performance	
GE-CR01	Compact recirculator for enhanced cooling performance
C) Software development kit (SDK) and drivers	
GE-SDK01	SDK for Windows and Linux compatible with C/C++, Delphi, Labview
GE-LAB01	Labview driver
GE-EP	EPICS driver
GE-LX01	Linux driver

STEP 3: For customisation of the camera please tell us about your requirements.

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TECHNICAL DRAWINGS

COOLING AIR IN

M3 MOUNTING THREADS

30

36,4   75

PIXEL (1,1)

READ OUT REGISTER

GE 1024 256 xxx / GE 2048 512 xxx

COOLING WATER CONNECTORS

52

ø4,2
MOUNTING HOLES

USB

Trigger
Power
Shutter
Sync

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A

90

100

10,4

126,4

62

GE 1024 1024 xxx

COOLING AIR OUT

0,8

61,2

32,6   19

PIXEL (1,1)

READOUT REGISTER
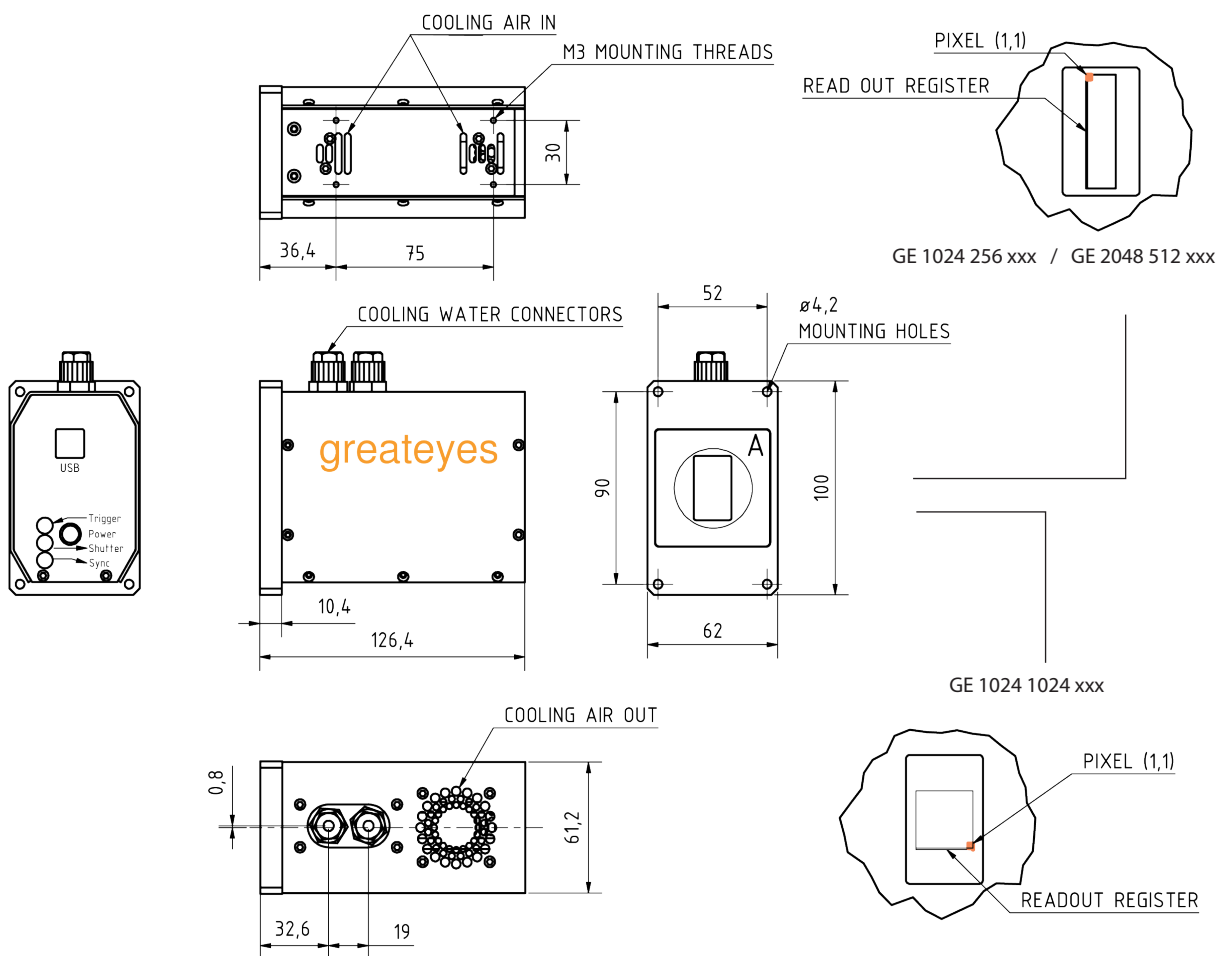
Items delivered together with each camera

GE-VI01	greateyes Vision software suite for Windows
GE-StoB2m	2m SMB to BNC connection cable
GE-USB5m	5m USB 2.0 cable type A to type B
GE-POW01	camera power supply with cabling
GE-ManCam	camera instruction manual on CD

CONTACT INFORMATION

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