

Product Line-up Guide

CLISBee-S Series High Speed CMOS Line Scan Cameras

XCM80 series
(2Tap & 4Tap, 80MHz-320MHz)
XCM60 series
(2Tap & 4Tap, 80MHz-240MHz)
XCM40 series
(2Tap & 4Tap, 80MHz-160MHz)
XCM20 series
(2Tap & 4Tap, 80MHz-320MHz)
XCM27MLC series
(RGB sequential color)



RAINBOW Series High Speed CCD COLOR Line Scan Cameras (3 Line and 3 CCD)

SUCL1024
SUCL2024
SUCL2030
N3CL2048DCL
N3CL2048D
NUCL14K/2K
NUCL17300



BUDGET Series B/W CCD Line Scan Cameras

NFC2KD
SUI51
SUI74
SUI74
e2048D
e5150D
e7450D



Line Scan Camera Line-up

| No. of PIXELS | Data Rate (MHz per pixel) | | | | | |
|---------------|--|--------------------------------|---------------|----------------|--------------------------|--------------------------|
| | 0 ~ 2.0 MHz | 2.1 ~ 4.0 MHz | 4.1 ~ 7.0 MHz | 7.1 ~ 10.0 MHz | 10.1 ~ 20.0 MHz | 20.1 ~ 30.0 MHz |
| 8K | | | | XCM8040SAT2 | XCM8040SA | XCM8060SA XCM8040SATB |
| 7K | | e7450D SUI74 | NUCL17300 | SUI74 | | |
| 6K | | | | | XCM6040SA XCM6040SAT2 | XCM6060SAT4 |
| 5K | e5150D | e5150D SUI51 | | | | |
| 4K | | | NUCL14k | XCM4040SAT2 | XCM4040SAT4 | |
| 2K | N3CL2048D N3CL2048DCL SUCL1024 NFC2KD e2048D | SUCL2030 SUCL2024 e2048D | NUCL12k | XCM2040SAT2 | XCM2040SAT4 XCM27MLC | XCM2080SAT4 |
| 1K | | | | XCM1040SAT2 | XCM1040SAT4 | |

CLISBee-S Series RAINBOW Series BUDGET Series

Applications

- Surface Inspection of:
 - PCB's (Printed Circuit boards)
 - Silicon wafers (surface / edge)
 - Solar Panels
 - Film / Sheets
 - Glass / Glass Substrates
 - Rubber
 - Metals
 - Food Products
- Measurement Applications
 - Sorting Applications
 - Positioning Applications
 - Chip Mounting
 - Pattern Matching

Authorised Agents



NIPPON ELECTRO-SENSORY DEVICES CORP.

Sales Contacts

West Japan Regional Sales Division
TEL:+81-6-6534-5300 FAX:+81-6-6534-6080
Nishi-Nippon Sales Office
TEL:+81-92-612-5577 FAX:+81-92-612-5578

East Japan Tokyo Sales Division
TEL:+81-3-5718-3181 FAX:+81-3-5718-0331

International International Sales Department
TEL:+81-80-4010-2684 FAX:+81-3-5718-0331

URL : <http://www.ned-sensor.co.jp>
E-mail : sales@ned-sensor.com

Line Scan Camera Catalogue

NED

Let's Try Everything!

NIPPON ELECTRO-SENSORY DEVICES CORP.(NED)

Since our establishment in 1975, NED has strived to produce cutting edge technology in the Line Scan Camera Industry, providing reliable Products and Solutions.

Company Profile

Corporate name Nippon Electro-Sensory Devices Corporation (NED)
Head Office 2-5-12, Itachibori, Nishi-ku, Osaka 550-0012, Japan
Date Established 10.Nov.75
Capitol 98,000,000 yen
Number of Employees About 80
Representative Soichiro Rikimi, President & CEO

Business Operations

Development, design, manufacturer and sales of:
Development and Production of High Speed Line Scan Cameras
Multipurpose controllers for line scan cameras & OEM grabber boards
Customized controllers for line scan cameras
Multipurpose controllers for image processing & OEM grabber boards
Dedicated systems for image processing
Other products for optronics and mechatronics applications
The design and production of customized inspection devices

Company History

Nov.75 NIPPON ELECS Devices Corp. formed with capitol of 35 million yen
Feb.85 First development of Line Scan Camera
Apr.85 Company capitol increased to 98 million yen
Apr.86 Established Tokyo Sales Office
Jun.91 Name of company changed to Nippon Electro-Sensory Devices Corporation (NED)
Jul.92 Established Nishi-Nippon Sales Office, in Hakata Kyushu
Jun.95 Development of 3CCD Colour Line Camera
Aug.96 Development of High Speed Frame Grabber Boards
Dec.96 Development of Wafer Inspection devices
Feb.02 Achieved ISO 9001 certification
May.05 In-house development of high speed CMOS line sensors
Sep.05 Osaka Head Office moved to Head Office building, Nishi-Ward, Osaka
Jan.06 Achieved ISO 1400 certification

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URL : <http://www.ned-sensor.co.jp>
E-mail : sales@ned-sensor.com



01-200910-3000

NIPPON ELECTRO-SENSORY DEVICES CORPORATION

CLISBee-S SERIES

Info

- The CLISBee-S Series is the 1st CMOS line scan camera using the latest CMOS Linear image sensor technology.
- We created a rich line-up of high quality Line Scan Cameras.
- These cameras have high sensitivity, low noise, and also have the latest intelligent functions simplifying the role of the grabber board.
- Using NED's in-house developed CMOS sensors, these cameras represent the next generation in FA Technology.

Features

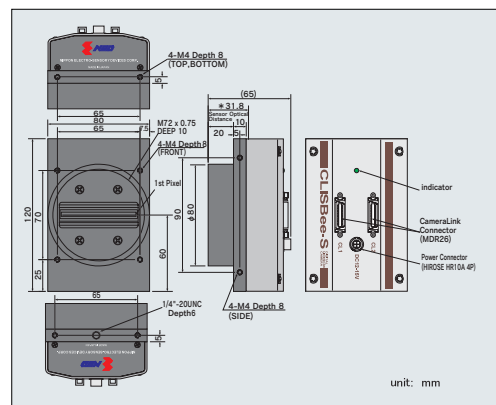
- Anti-Blooming and Exposure Control
- Flat Field Correction
- Wide dynamic range (more than 106dB)
- ULTRA High speed read outs (up to 320MHz)
- A wide range of Resolutions (from 1024 ~ 8192 pixels)
- On-chip AD conversion (10bit)
- Easily adjusted Gain/offset/video (8/10bit)
- Standard Camera Link output

| Model Name | XCM8040SAT9 | XCM8060SA | XCM8040SA | XCM8040SAT2 | XCM8060SAT4 | XCM8040SA | XCM8040SAT4 | XCM8040SAT2 | XCM4040SAT4 | XCM4040SAT2 | XCM2080SAT4 | XCM2080SAT2 | XCM1080SAT2 | XCM2040SAT4 | XCM2040SAT2 | XCM1040SAT2 |
|--|------------------------------|-------------------------|-------------------------|------------------------------|------------------------------|-------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| No. Of PIXELS | 8192 | 8192 | 8192 | 8192 | 6144 | 6144 | 6144 | 6144 | 4096 | 4096 | 2048 | 2048 | 1024 | 2048 | 2048 | 1024 |
| Pixel Size (μm) | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 7 x 7 | 14 x 14 | 14 x 14 | 14 x 14 | 14 x 14 | 14 x 14 | 14 x 14 |
| Device Length(mm) | 57.344 | 57.344 | 57.344 | 57.344 | 43.008 | 43.008 | 43.008 | 43.008 | 28.672 | 28.672 | 28.672 | 28.672 | 14.336 | 28.672 | 28.672 | 14.336 |
| Data Rate(MHz) | 320 | 320 | 160 | 80 | 240 | 160 | 80 | 40 | 160 | 80 | 320 | 160 | 80 | 80 | 80 | 80 |
| OUTPUT | 40MHz x 8 | 60MHz x 4 | 40MHz x 4 | 40MHz x 2 | 60MHz x 4 | 40MHz x 4 | 40MHz x 4 | 40MHz x 2 | 40MHz x 4 | 40MHz x 2 | 80MHz x 4 | 80MHz x 2 | 80MHz x 2 | 40MHz x 4 | 40MHz x 2 | 40MHz x 2 |
| No. of Taps | 8 | 4 | 4 | 2 | 4 | 4 | 4 | 2 | 4 | 2 | 4 | 2 | 2 | 4 | 2 | 2 |
| Minimum Scan period(μsec) | 26.8 | 35.73 | 53.6 | 107.2 | 26.8 | 40.2 | 40.2 | 80.4 | 26.8 | 53.6 | 8 | 14.7 | 8 | 16 | 29.4 | 16 |
| Maximum Scan Rate(kHz) | 37.31 | 27.99 | 18.65 | 9.33 | 37.31 | 24.88 | 24.88 | 12.43 | 37.31 | 18.66 | 125 | 62.5 | 34 | 62.5 | 34 | 62.5 |
| Video Output / Camera Link Configuration | Camera Link Full | Camera Link Medium | Camera Link Medium | Camera Link Base | Camera Link Medium | Camera Link Medium | Camera Link Medium | Camera Link Base | Camera Link Medium | Camera Link Base | Camera Link Medium | Camera Link Base | Camera Link Base | Camera Link Medium | Camera Link Base | Camera Link Base |
| Required Camera Link Cables | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Data Format | ODD / EVEN Format (Standard) | CLISBee Original Format | CLISBee Original Format | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | CLISBee Original Format | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) | ODD / EVEN Format (Standard) |
| Minimum Sensitivity(V/lx · sec) | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Flat Field Correction | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Exposure Control | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Test Pattern Output | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Scan Direction Change | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Lens Mount | M72x0.75 | M72x0.75 | M72x0.75 | M72x0.75 | Nikon F | Nikon F | Nikon F | Nikon F | Nikon F | Nikon F | Nikon F / C Mount | Nikon F / C Mount | Nikon F / C Mount | Nikon F / C Mount | Nikon F / C Mount | Nikon F / C Mount |
| Analogous Gain Adjustable range | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 | x1~x11.2 |
| Digital Gain Adjustable Scale | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 | x1~x2 |
| OFFSET Adjustable Range (8bit Digital) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) | -15~15DN (31step) |
| OFFSET Adjustable Range (10bit Digital) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) | -60~60DN (31step) |
| Operating temperature(°C) | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 |
| Without Condensation | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Camera Weight (g) | 600 | 600 | 600 | 600 | 730 | 730 | 730 | 730 | 420 | 420 | 420 | 420 | 420 | 420 | 420 | 420 |
| Dimensions W x H x D (mm) | 80 x 120 x 65 | 80 x 120 x 65 | 80 x 120 x 65 | 80 x 120 x 65 | 80 x 120 x 80 | 80 x 120 x 80 | 80 x 120 x 80 | 80 x 120 x 80 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 | 60 x 100 x 73.5 |
| Power Supply | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V | DC12~15V |
| Power Cable(Model Name) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) | HR10A(4PIN) |
| CE/FCC | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ | ○/○ |

8k Cameras



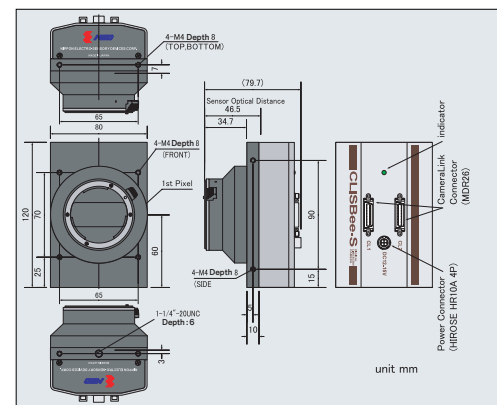
Dimensions



6k and 4k Cameras



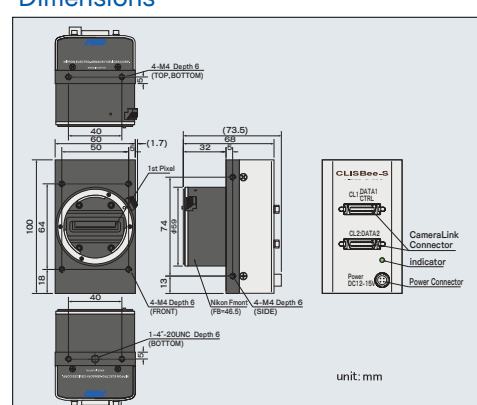
Dimensions



2k and 1k Cameras

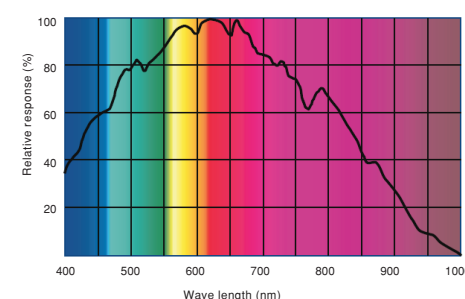


Dimensions

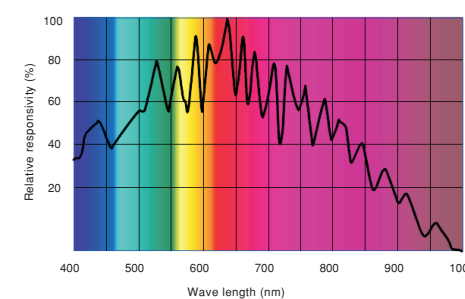


For 8k,6k and 4k Camera

Spectral response (Ta=25°C)



Spectral response (Ta=25°C)



RAINBOW Series

Info

- The RAINBOW Series has rich line-up of Color CCD cameras.
- These cameras incorporate high quality CCD Line Sensor technology to provide excellent color images, ideal for printing inspection applications.
- These cameras have high sensitivity and low noise, perfect for all FA solutions.

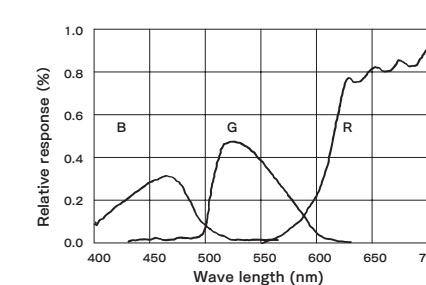
Features

- High speed read out (up to 70MHz RGB)
- A wide range of Resolutions (from 1049x3 ~ 7300x3 pixels)
- Standard Camera Link output *(1 LVDS Model)
- 24 bit and 30 bit models available
- 3CCD Models Available
- Remote control capability of Gain and Offset

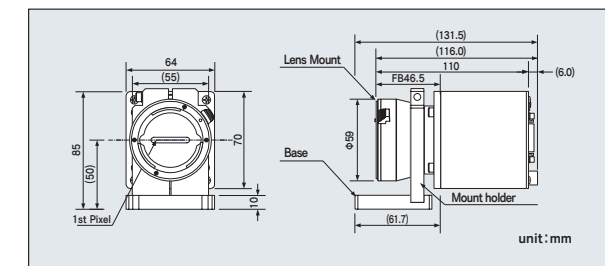
| Model Name | SUCL1024 | SUCL2024 | SUCL2030 | N3CL2048DCL | N3CL2048D | NUCLi4K | NUCLi7300 |
|------------------------------|--|--|--|--|--|--|--|
| Number of PIXELS | 1049 x 3 | 2098 x 3 | 2098 x 3 | 2048 x 3 | 2048 x 3 | 4096 x 3line | 7300 x 3 |
| Pixel Size (μm) | 28 x 14 | 14 x 14 | 14 x 14 | 14 x 14 | 14 x 14 | 9.325 x 9.325 | 10 x 10 |
| Device Length(mm) | 29.372 | 29.372 | 29.372 | 28.672 | 28.672 | 38.1952 | 73 |
| Drive Clock(MHz) | 30 (internal clock only) | 50 (internal clock) | 50 (external clock) | unavailable (internal clock only) | unavailable (internal clock only) | 70 (internal) | 60 (internal/external) |
| Sensitivity(V/(lx·s)) | (45~300) | (40~120) | (40~120) | 60~200 | 60~200 | 160 | 100 (100~225) |
| Saturation Exposure(lx·s) | 0.1 | 0.125 | 0.125 | 0.083 (at 60V/(lx·s)) | 0.083 (at 60V/(lx·s)) | 0.0312 | 0.05 |
| Data Rate(MHz) | 15 x 3 | 25 x 3 | 25 x 3 | 20 | 20 | 70 | 60 |
| Scan Rate(μs)/KHz | 75 / 13.15 | 92.4 / 10.8 | 92.4 / 10.8 | 106.1/9.4 | 106.1/9.4 | 70 / 14.2 | 130 / 7.6 |
| Video Output | Camera Link BASE 24bit Color Digital | Camera Link BASE 24bit RGB | Camera Link MEDIUM 30bit RGB | Camera Link BASE 24bit | Camera Link BASE LVDS 24bit t | Camera Link Base 8bit/3 Camera Link Medium 10bit/3 | Camera Link 8bit/1.2bit BASE |
| Power Supply Volta | DC12V ±5% | DC12V ±5% | DC12V ±5% | +15 (±5%) | +15 (±5%) | +12~15V (±5%) 20A | +12V (±5%) 2A |
| Current Consumption(A or mA) | 360mA | 0.5A | 0.5A | 450mA | 450mA | 0.9A | 0.9A |
| Operating Temperature(°C) | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 |
| External Dimensions(WxHxDmm) | 64x70x116 | 64x70x116 | 64x70x116 | 84 x 84 x 111 | 84 x 84 x 111 | 150.8 x 150.8 x 68 | 104x92x139 |
| Mount | NIKON F | NIKON F | NIKON F | NIKON F | NIKON F | NIKON F | PENTAX 6x7 |
| Camera Weight(g) | 470 | 470 | 470 | 910 | 910 | 1000 | 1000 |
| Cable Length(m) | Max. 10m | Max. 10m | Max. 10m | Max. 10m | Max. 10m | Max. 5m (3M14B26-SZLB-800-OLC) | Max. 10m (3M14B26-SZLB-A00-OLC) |
| Special Features | CE Mark Remote parameter control (gain/offset, etc.) | CE Mark Remote parameter control (gain/offset, etc.) | CE Mark Remote parameter control (gain/offset, etc.) | 3CCD Technology Perfect Color Registration | 3CCD Technology Perfect Color Registration | CE Mark Remote parameter control (gain/offset, etc.) RGB Delay Adjustable/FlatField Correction | CE Mark Remote parameter control (gain/offset, etc.) RGB Delay Adjustable/FlatField Correction |

SUCL1024

Spectral response

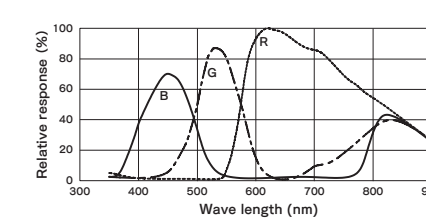


Dimensions

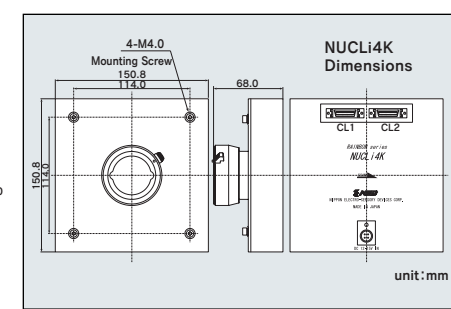


NUCLi4K

Spectral response

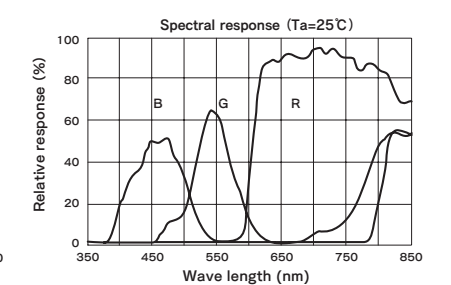


Dimensions



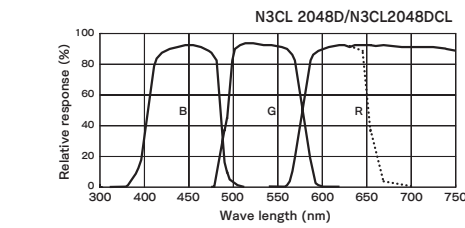
SUCL2024 & SUCL2030

Spectral response

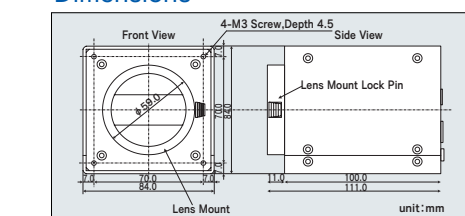


N3CL2048DCL & N3CL2048D

Spectral response

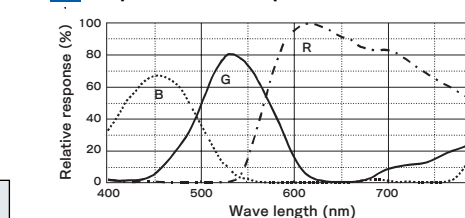


Dimensions

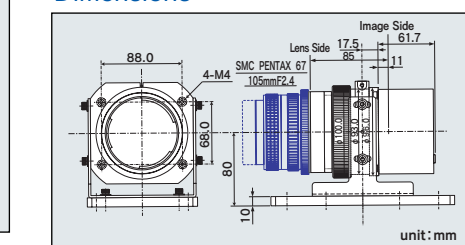


NUCLi7300

Spectral response



Dimensions



BUDGET Series

Info

- The BUGDET Series has a wide selection of low cost B/W CCD cameras with the Camera Link Interface.
- These cameras incorporate high speed CCD Line Sensor technology to provide high sensitivity and low noise that enable you to obtain stable even images.
- These cameras offer cost effective solutions for all your FA needs.

Features

- High speed read out (20 ~ 100MHz)
- A wide range of Resolutions (from 2048 ~ 7450 pixels)
- Standard Camera Link BASE output
- 8 bit, 10bit and 12 bit models available
- High Sensitivity and low Noise

| Model Name | NFC2KD | SUI51 | SUI74 | SUFi74 | e2048D | e5150D | e7450D |
|------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|
| Number of PIXELS | 2048 | 5150 | 7400 | 7400 | 2048 | 5150 | 7450 |
| Pixel Size (μm) | 14x14 | 7 x 7 | 4.7 x 4.7 | 4.7 x 4.7 | 7 x 7 | 7 x 7 | 4.7 x 4.7 |
| Device Length(mm) | 28.672 | 36.05 | 34.78 | 34.78 | 14.336 | 36.05 | 35.015 |
| Drive Clock(MHz) | N/A (Internal Clock type) | 40 or internal clock | 40 or internal clock | 50 (internal or external) | 50 (internal or external) | N/A (Internal Clock type) | N/A (Internal Clock type) |
| Sensitivity(V/(lx·s)) | 80 (80 to 720 is possible) | 120 (60 to 960 is possible) | 120 (60 to 960 is possible) | 67 (67 to 402 is possible) | 60, 120, 240 or 480 | 60, 120, 240 or 480 | 60, 120, 240 or 480 |
| Saturation Exposure(lx·s) | 0.0625 (at 80V/(lx·s)) | 0.0416 (at 120V/(lx·s)) | 0.0416 (at 120V/(lx·s)) | 0.074 | 0.074 | 0.063 (at 60V/(lx·s)) | 0.063 (at 60V/(lx·s)) |
| Data Rate(MHz) | 20 | 40 | 40 | 100 (50 MHz 2TAP) | 40 or 20 | 40 or 20 | 40 or 20 |
| Scan Rate(μs)/KHz | 110 / 9 | 133 (μs) | 133 (μs) | 191 (μs) | 60 / 16.6 | 133 / 7.51 | 192 / 5.2 |
| Video Output | Camera Link 8bit/1.0bit BASE | Camera Link 8bit/1.0bit/1.2bit BASE | Camera Link 8bit/1.0bit/1.2bit BASE | Camera Link 8bit/1.0bit/1.2bit BASE | TIA/EIA-644 10 bit Digital | TIA/EIA-644 10 bit Digital | TIA/EIA-644 10 bit Digital |
| Power Supply Voltage | +5V, +12V (±5%) | +12V ±5% | +12V ±5% | +12V ±5% | +12V ±5% | +12V ±5% | +12V ±5% |
| Current Consumption(A or mA) | 200mA(+5V), 250mA(+12V) | 600mA | 600mA | 600mA | 400 mA | 400 mA | 400 mA |
| Operating Temperature(°C) | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 | 0~40 |
| External Dimensions(WxHxDmm) | 71x59x143.8 | 64 x 70 x 114.5 | 64 x 70 x 114.5 | 64 x 70 x 114.5 | 75 x 70 x 91.1 | 71 x 70 x 91.1 | 71 x 70 x 91.1 |
| Mount | Nikon F Mount | Nikon F Mount | Nikon F Mount | Nikon F Mount | Nikon F Mount | Nikon F Mount | Nikon F Mount |
| Camera Weight(g) | 380 | 470 | 470 | 470 | 470 | 350 | 350 |
| Cable Length(m) | Max 10m (eg:3M14B26-SZLB-A00-OLC) | Max 10m (eg:3M14B26-SZLB-A00-OLC) | Max 10m (eg:3M14B26-SZLB-A00-OLC) | Max 10m (eg:3M14B26-SZLB-A00-OLC) | Max 10m (eg: | | |