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
NUCLi4K2K
NUCLi7300

BUDGET Series
B/W CCD Line Scan Cameras

NFC2KD
SUi51
SUi74
SUF174
e2048D
e5150D
e7450D

Line Scan Camera Line-up

No. of PIXELS	Data Rate (MHz per pixel)					
	0～20 MHz	21～40 MHz	41～70 MHz	71～100 MHz	101～200 MHz	201 < MHz
8K				XCM8040SAT2	XCM8040SA	XCM8060SA XCM8040SATB
7K		e7450D SUi74	NUCLi7300	SUF174		
6K				XCM6040SAT2	XCM6040SA XCM6040SAT4	XCM6060SAT4
5K	e5150D	e5150D SUi51				
4K			NUCLi4k	XCM4040SAT2	XCM4040SAT4	
2K	N3CL2048D N3CL2048DCL SUCL1024 NFC2KD e2048D	SUCL2030 SUCL2024 e2048D	NUCLi2k	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

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:+81-92-612-5577FAX:+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

Authorised Agents

01-200910-3000

Line Scan Camera Catalogue

Let's Try Everything!

NIPPON ELECTRO-SENSORY DEVICES CORPORATION

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:**

Devolument 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

Sales Contacts

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

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.

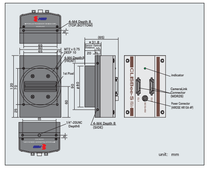
Features

- Anti-Blooming and Exposure Control
- Flat Field Correction
- Wide dynamic range (more than106dB)
- ULTRA High speed read outs (up to 320MHz)
- A wide range of Resolutions (from 1024～8192 pixels)
- On-chip AD conversion (10bit)
- Easilly adjusted Gain/offset/video (8/10bit)
- Standard Camera Link output

Model Name	XCM8040SAT8	XCM8080SA	XCM8040SA	XCM8040SAT2	XCM8080SAT4	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	240	160	80	240	160	80	160	160	80	320	160	160	160	80	80
OUTPUT	40MHzx8	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	68	125	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	1	2	2	2	1	2	1	2	1	1	2	1	1
Data Format	ODD / EVEN Format (Standard)	CLISBee Original Format	CLISBee Original Format	CLISBee Original Format	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	70	70	50	50	50	50	50	50
Flat Field Correction	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Exposure Control	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Test Pattern Output	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Scan Direction Change	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Lens Mount	M72 x 0.75	M72 x 0.75	M72 x 0.75	M72 x 0.75	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
Analogue Gain Adjustable range	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step	x1～x11.2 21step
Digital Gain Adjustable Scale	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step	x1～x2 512step
OFFSET Adjustable Range (8bit Digital)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)	-15～152N (31step)
OFFSET Adjustable Range (10bit Digital)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)	-60～602N (31step)
Operating temperature(℃) ※Without Condensation	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
Cameras Weight (g)	600	600	600	600	730	730	730	730	730	730	420※	420※	420※	420※	420※	420※
Dimentions 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	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
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	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○	○/○
											C-Mount types=-345	C-Mount types=-345	C-Mount types=-345	C-Mount types=-345	C-Mount types=-345	C-Mount types=-345

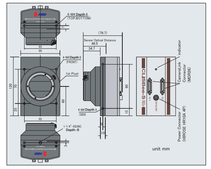
8k Cameras

Dimensions



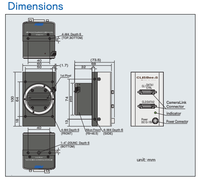
6k and 4k Cameras

Dimensions



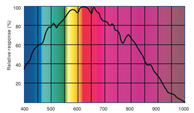
2k and 1k Cameras

Dimensions

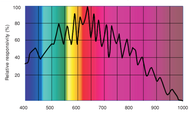


For 8k,6k and 4k Camera

Spectral response(Ta=25℃)



Spectral response(Ta=25℃)



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.

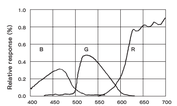
Features

- 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

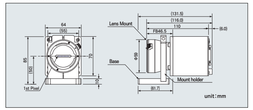
Model Name	SUCL1024	SUCL2024	SUCL2030	N3CL2048DCL	N3CL2048D	NUCLi4K	NUCLi7300
Number of PIXELS	1049 × 3	2098 × 3	2098 × 3	2048×3	2048×3	4096×3line	7300×3
Pixel Size(μm)	28 × 14	14 × 14	14 × 14	14 × 14	14 × 14	9.325×9.325	10 ×10
Device Length(mm)	29.372	29.372	29.372	28.672	28.672	38.1952	73
Drive Clock(MHz)	30 (internal clock only)	50 (internal clock)	50 (external clock)	unavailable (internal clock only)	unavailable (internal clock only)	70 (internal)	60 (internal or external)
Sensitivity(V/(lx・s))	(45～300)	(40～120)	(40～120)	60～200	60～200	160	100 (100～285)
Saturation Exposure(lx・s)	0.1	0.125	0.125	0.083 (at60V/(lx・s))	0.083 (at60V/(lx・s))	0.0312	0.05
Data Rate(MHz)	15 × 3	25 x 3	25 x 3	20	20	70	60
Scan Rate(μs)(KHz)	76 /13.15	82.4 / 10.8	82.4 / 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	LVDS 24b i t	Camera Link Base 8bit×3 Camera Link Medium 10bit×3	Camera Link 8bit or 10bit×3
Power Supply Volts	DC12V ±5%	DC12V ±5%	DC12V ±5%	±15 (±5%)	±15 (±5%)	+12～15V (±5%) 2.0A	+12V(±5%) 2A
Current Consumption(Aor mA)	360mA	0.5A	0.5A	450mA	450mA	0.9A	0.9A
Operating Temperature(℃)	0～40	0～40	0～40	0～40	0～40	0～40	0～40
External Dimensions(W×H×Dmm)	64×70×116	64×70×116	64×70×116	84 × 84 × 111	84 × 84 × 111	150.8 × 150.8 × 68	104×92×139
Mount	NIKON F	NIKON F	NIKON F	NIKON F	NIKON F	NIKON F	PENTAX 6×7
Camera Weight(g)	470	470	470	910	910	1200	1000
Cable Length(m)	Max.10m	Max.10m	Max.10m	Max.10m	Max.10m	Max.5m (3M:14B26-SZLB-A0D-OLC)	Max. 10 (3M:14B26-SZLB-A0D-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 AdjustableFlatField Correction	CE Mark Remote parameter control (gain,offset etc.)RGB Delay AdjustableFlatField Correction

SUCL1024

Spectral response

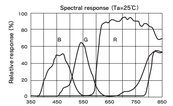


Dimensions



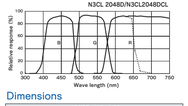
SUCL2024 & SUCL2030

Spectral response

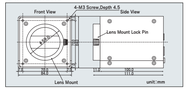


N3CL2048DCL & N3CL2048D

Spectral response

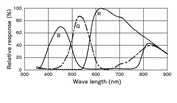


Dimensions

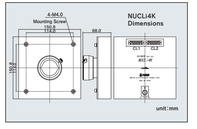


NUCLi4K

Spectral response

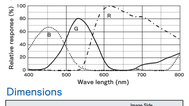


Dimensions

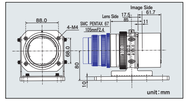


NUCLi7300

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.

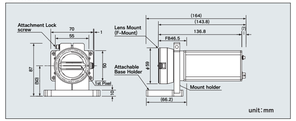
Features

- 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)	14×14	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	34.76	14.3336	14.336	36.05	35.015
Drive Clock(MHZ)	N/A (Internal Clock type)	40 or internal clock			N/A (Internal Clock type)		
Sensitivity(V/(lx・s))	80 (80 to 720 is possible)	120 (60 to 960 is possible)	120 (60 to 800 is possible)	160	67 (67 to 402 is possible)	80	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	0.063 (at 60V/(lx・s))		
Data Rate(MHZ)	20	40			100 (50 MHz DTAP)	40 or 20	
Scan Rate(μs)(KHz)	110 / 9	133(μs)	191 (μs)	80 / 12.5	60 / 16.6	133 / 7.51	192 / 5.2
Video Output	Camera Link 8bit/10bit BASE	Camera Link 8bit/10bit/12bit BASE			Camera Link 8bit 2 TAP BASE	TIA/EIA-644 10 bit Digital	
Power Supply Voltage	+5V, +12V (±5%)	+12V ±5%			+12V ±5%	+15V ±5%	
Current Consumption(A or mA)	200mA(+5V), 250mA(+12V)	600mA	600mA		400 mA		
Operating Temperature(℃)	0～40	0～40			0～40		
External Dimensions (W×H×Dmm)	71x59x143.8	64 x 70 x 114.5			64 x 70 x 114.5	75 x 70 x 91.1	71 x 70 x 91.1
Mount	Nikon F Mount	Nikon F Mount			Nikon F Mount		
Camera Weight(g)	380	470			350		
Cable Length(m)	Max 10m (e.g.3M-14B26-SZLB-A0D-OLC)	Max 10m (e.g.3M-14B26-SZLB-A0D-OLC)			Max 10m (e.g.3M-14B26-SZLB-A0D-OLC)	Max 10m	
Special Features	Remote parameter control (gain,off-set, etc.)	CE Mark Remote parameter control(gain,off-set,etc.) Bit correction & Shading Correction			CE Mark Remote parameter control (gain,off-set, etc.)		

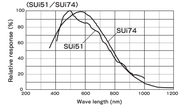
NFC2KD

Dimensions

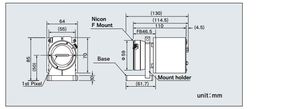


SUi51, SUi74 & SUFi74

Spectral response



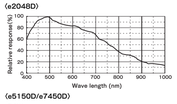
Dimensions



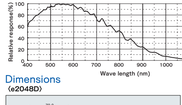
e2048D, e5150D & e7450D

Spectral response

(e2048D)

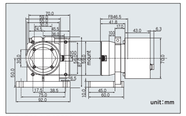


(e5150D/e7450D)



Dimensions

(e2048D)



(e5150D/e7450D)