LINEAR SENSOR

MODEL LSE4096

The Linear Sensor is a product applying a one-dimensional image sensor that measures position, width, length, etc. highly accurately.

APPLICATIONS

- Detecting sensor for EPC
- Detecting sensor for CPC
- Web width measurement

LINEAR SENSOR (with mount)

LINEAR SENSOR

FEATURES

●Simple Operation
- Operates on a single power line (DC+15V).
- Just connect the power supply and it outputs a voltage (0~5V) proportional to the measurement count (the number of illuminated pixels).
- The measurement count (the number of illuminated pixels) is displayed on an LED counter, so it is simple to check the operation status.

●Wide Scanning Time Range
- The scanning time setting can be changed in the range of 2 msec to 20 msec.

●Compact
- The volume of the device is approximately one third that of our previous models.
  Note: Not including the lens tube.

●Environment-resistant
- Operates stably in an ambient temperature range of 0-50˚C.

PRINCIPLE OF MEASUREMENT

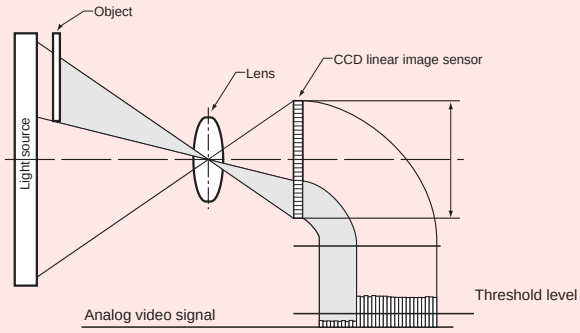


Fig. 1 Optical Signal and Signal Waveform of Linear Sensor

The receptor is a CCD linear image sensor with 4,096 pixels. It is a fixed imaging element with 4,096 photo cells arrayed in rows at intervals of 7μm.
Light that is partially shaded by the measurement subject passes through the lens to form an image on the receptor. Pulse signals are output with varied levels proportional to the amount of light falling on each pixel. That is the video signal, and it is output as a time series of pulse signals.
From that video signal, the number of pulse signals exceeding a certain level is measured, and an analog voltage (0~5V) proportional to that measurement count (equivalent to the bright portion that receives light) is output.

TABLE OF MODEL CODES

Linear Sensor

LSE — Model

4096	4,096 pixels (CCD)	No. of elements	Body
01	f= 35mm F2	Wide-angle lens	Lens
03	f= 50mm F1.8 (Standard)	Standard lens	
04			
05	f= 85mm F1.8	Telephoto lens	
06	f= 105mm F2.8		
10	f= 55mm F2.8 macro		
N	None	Close-up ring	
1	12mm		
2	20mm		
3	36mm		
4	Special close-up ring		
N	None	Mounting base	
1	Provided		
2	Provided	Mount fixture	
N	None	Conversion cable	
1	Provided		
Y	Y is affixed. The details are listed.	Special specification	

Projector

FL — Model

030A	AC100V 30W	Power capacity
032A	AC100V 32W	
040A	AC100V 40W	
110A	AC100V 110W	
N	None	Air purge mechanism
A	Provided	
5	50Hz	Power supply frequency
6	60Hz	
N	None	Connector
C	Provided	
Y	Y is affixed. The details are listed.	

FLR — Model

030A	AC100V 30W Equivalent LED lamp	LED lamp
032A	AC100V 32W Equivalent LED lamp	
040A	AC100V 40W Equivalent LED lamp	
N	None	Air purge mechanism
A	Provided	
5	50Hz	Power supply frequency
6	60Hz	
N	None	Connector
C	Provided	
Y	Y is affixed. The details are listed.	

SPECIFICATIONS

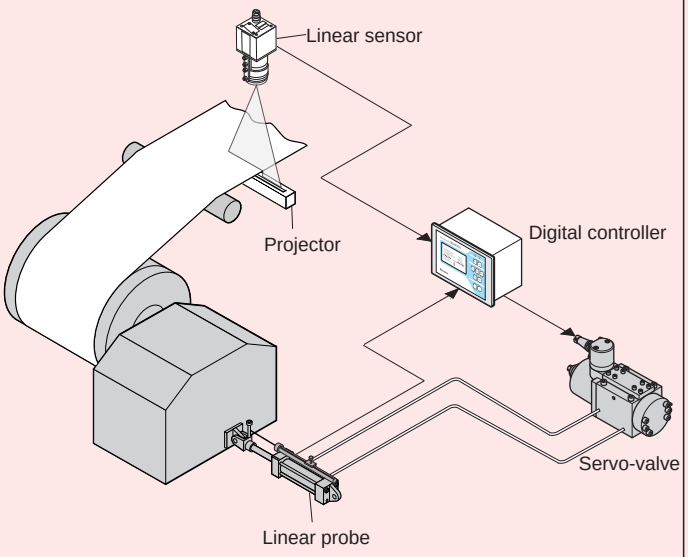
Receptor	CCD linear image sensor
Effective pixels	4,096 / 5150 (Standard setting is 4096 bits.)
Pixel spacing	7 μm
Scan time	2-20 msec/line
Data rate	3 MHz (2 msec/line ~) 750 KHz (7 msec/line ~)
Synch method	Internal synchronization
Output signals	Analog voltage 0 - 5V DC

Power supply	+15V DC±10%, 0.3A
Display unit	4 - digit decimal 7 - segment LED display unit
Lens mount	Nikon F mount
Ambient temperature	0-50˚C

SYSTEM CONFIGURATION

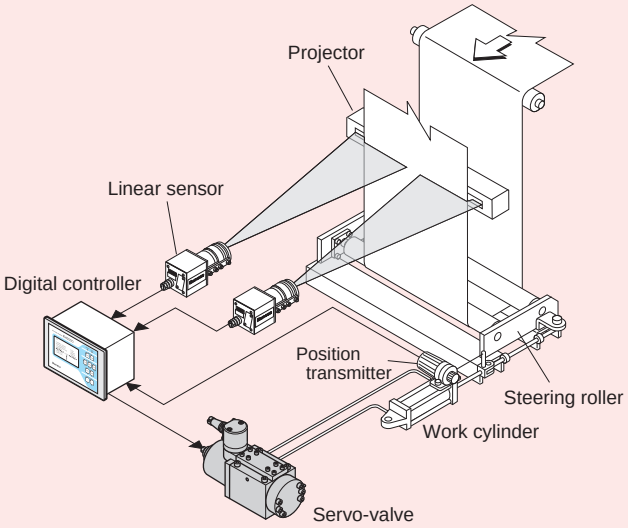
EPC (Edge Position Control) System

Fig. 2



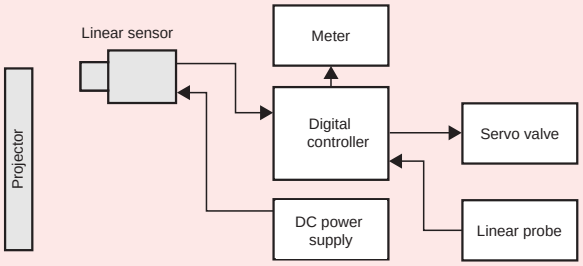
CPC (Center Position Control) System

Fig. 3



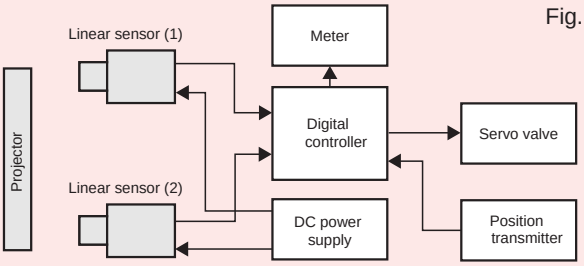
EPC

Fig. 4



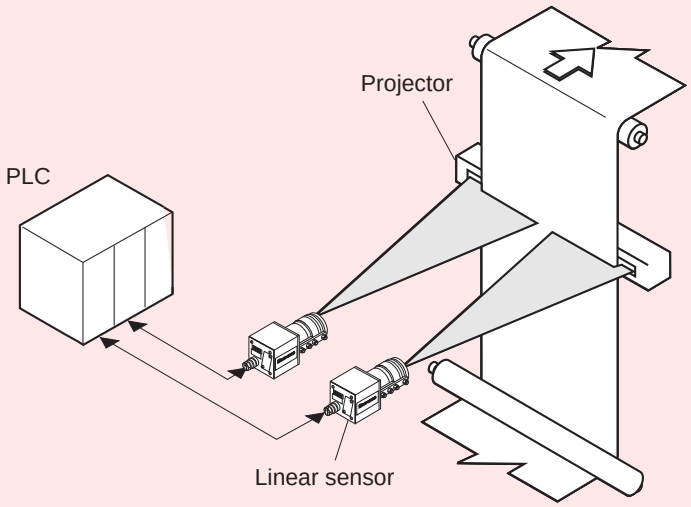
CPC

Fig. 5



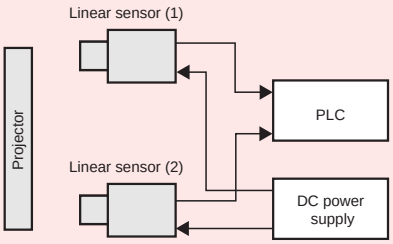
Web Width Measurement System

Fig. 6



Web width detection

Fig. 7



Wiring connections

Pin No.	Signal	
1	DC+15V±10%　0.3A	Power supply
2	COM－P	Ground for power supply
3	OUT（0～5V）	Voltage signal output
4	COM	Signal ground

Note : The power supply ground (COM-P) and the signal ground (COM) wires are insulated. Connect the specific ground with each line.

EXTERNAL DIMENSIONS

The lens that you have selected may alter the total length of the linear sensor. Please check the length using the chart below.

Part number	Lens	(mm)Lens length(L)	(ϕ)Max. dia.	(kg)Mass	Remarks
MD0000110-EA	f/50mm F/1.8	48(max)	ϕ64	1.2	
MD0000170-EA	f/35mm F/2	52(max)	ϕ64	1.1	
MD0000180-EA	f/85mm F/1.8	58(max)	ϕ71	1.3	
MD0000190-EA	f/105mm F/2.8	116(max)	ϕ66	1.2	
MD0000210-EA	f/50mm F/1.8	48(max)	ϕ64	2.5	With mount
MD0000220-EA	f/35mm F/2	52(max)	ϕ64	2.5	With mount
MD0000230-EA	f/85mm F/1.8	58	ϕ71	2.7	With mount
MD0000240-EA	f/105mm F/2.8	116(max)	ϕ66	2.8	With mount

Note : We offer several different types of close-up rings.

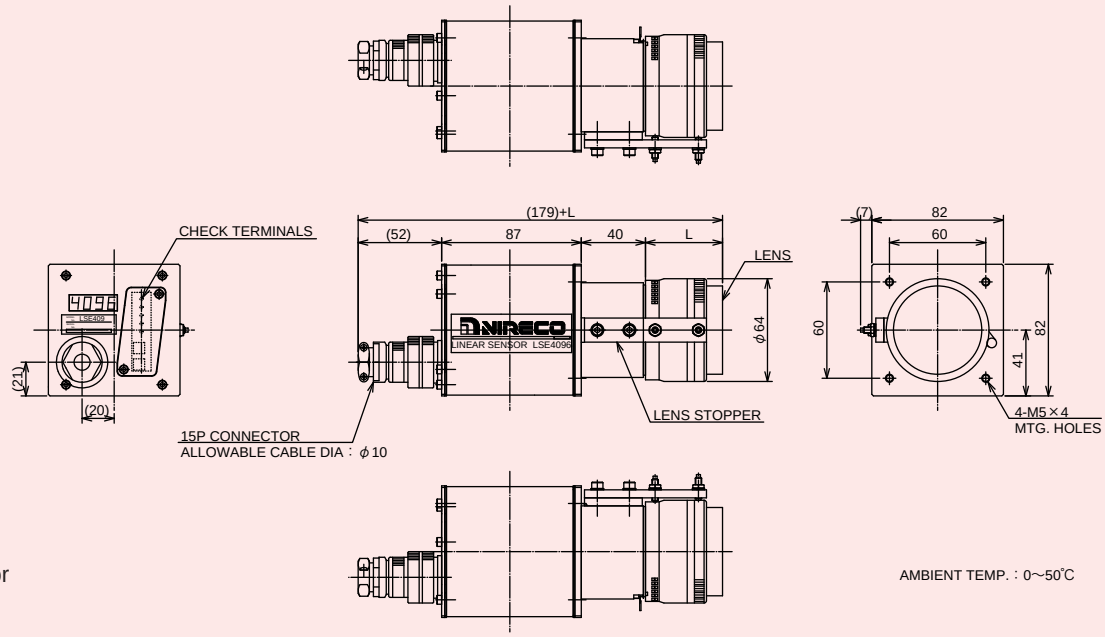


Fig. 8
Linear Sensor
LSE4096

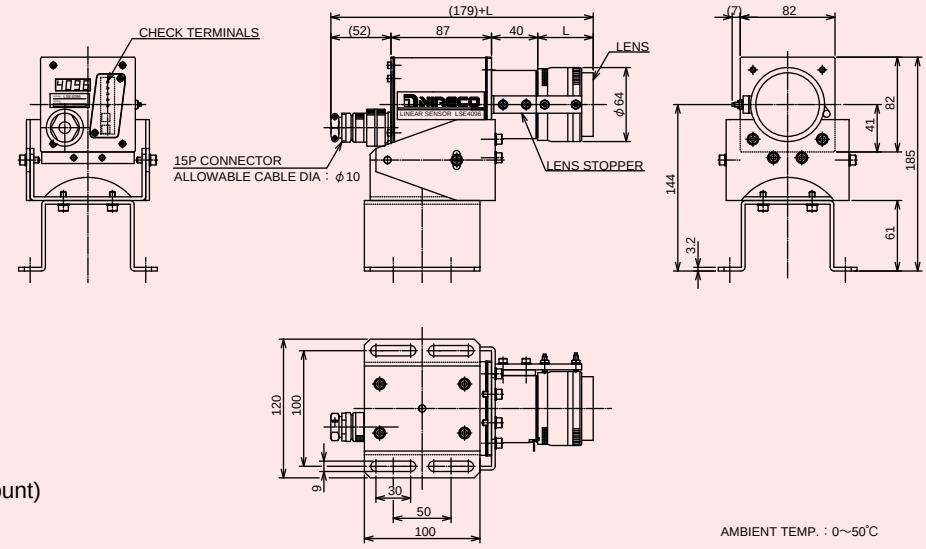


Fig. 9
Linear Sensor (with mount)
LSE4096

We reserve the right to change the specifications in this catalog without prior notice to improve and update our products.

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