WHEC

WEIHAI HUALING OPTO-ELECTRONICS CO., LTD

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H4R24-170918

Approved by customer		

A.2017.09.18　　　　original　　　　　　　　　　Julihui

1. Outline

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Item	Specification	Note
Scanning width	24 mm	
Sensor element density	400 DPI	
Effective number of sensor elements	384 elements	
Scanning speed	44usec/line	
Clock speed	6.0 MHz	**Note 1**
Rod lens array	Single row	L03
Light source	$\lambda p = 660$ nm $\pm$ 20 nm +5V$\times$80 mA	LED ARRAY
Power supply	+3.3V$\times$70mA	
Data output	2 analog output Block #1 192 pixels Block #2 192 pixels	Synchronous
Dimensions	Figure 1	

Note 1) Clock Speed f must satisfy the following status:

$$f > (192 + 72) / tint$$

f : Clock speed

tint: Scanning speed

2. Image Data Output Characteristics (Ta = 25ºC)

The shipment test of WHEC is done on the condition of this table.

Item	Symbol	Specification	Note
DC supply voltage	VDD	+3.3V	Detector, Logic
LED supply voltage	VLED	+5.0V	
LED supply current	ILED	$\leqslant$80mA	**Note1**
White image target		0.05 ~ 0.09 OD	
Video Reference	Dref/Vref	800$\pm$200mV	
Dark output minimum	Vdmin	$\geqslant$-150mV	
Dark output maximum	Vdmax	$\leqslant$+150mV	
White output maximum	Vpmax	500 $\pm$ 100 mV **T.B.D**	
Dark output	Ud	Less than Vpmax/2	
White output uniformity	UEp	Less than 50%	
MTF		Min 30%	71.37lppi
Linearity Uniformity	LU	Less than 7%	

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Note 1) WHEC shipping test equipment has 10~15-Ohm resisters, at GLED or VLED (CIS connector pin #9 or #10) as shown bellow. Depending on the customer measurement methods and conditions, the UEp value would be better than above value.
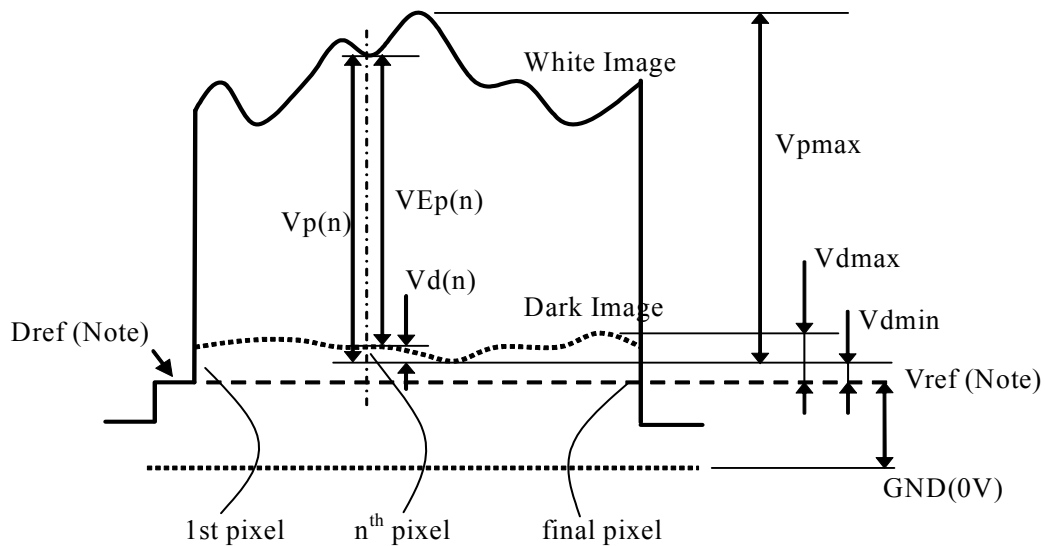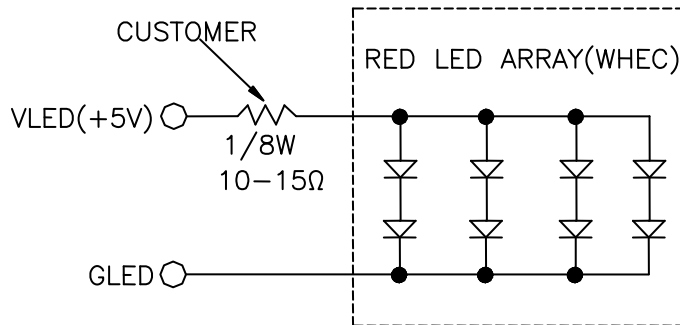
Note: Vref or Dref is the reference voltage for video signals. Either of them can be used as the reference voltage. Do not use the GND in stead of Vref or Dref.

Figure 2. Output Signals Waveform

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3. Electrical Characteristics (Ta = 25 ºC)

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Item	Symbol	Condition	Specification			Unit
			Min.	Typ.	Max.	
DC supply Voltage	VDD	GND reference	3.14	3.0	3.47	V
DC Supply Current	IDD	VDD = 5V		70	110	mA
LED Forward Voltage	VFred	IF=20mA VLED-GLED	1.8	2.0	2.2	V
LED Current	ILED	VLED-GLED		80		mA
Input voltage Note 1	VIH	SI,CLK	2.4			V
	VIL				0.5	V
Input Current Note 1	IIH	SI,CLK			5	mA
	IIL		-0.5			μA
Clock frequency	f	CLK		6.0		MHz
Clock pulse duty		tw(T)/to;to=1/f	48	50	52	%
SI delay time	tsu	SI-CLK	60		to	ns
	th	SI-CLK Note 2	60		5×to	ns
Data output stability time	ts2	CLK-SIG	20	30	40	ns

Note 1: 74HC244 or equivalent is recommended for input signal.

Note 2: These are reference values,tsu、th、ts2 are determined according to the evaluation of user's device.
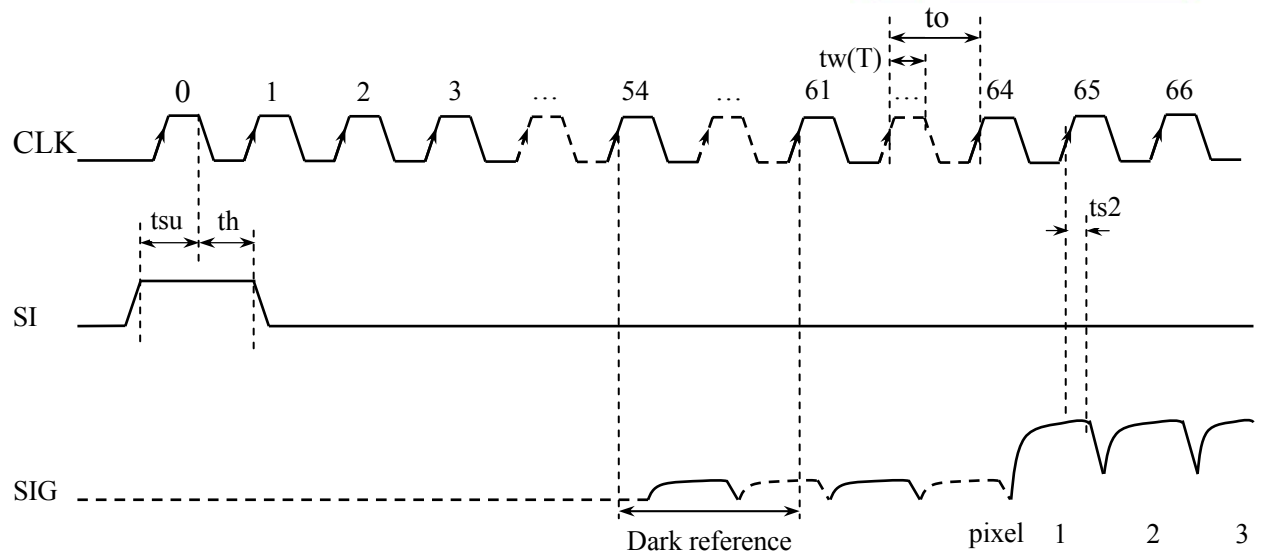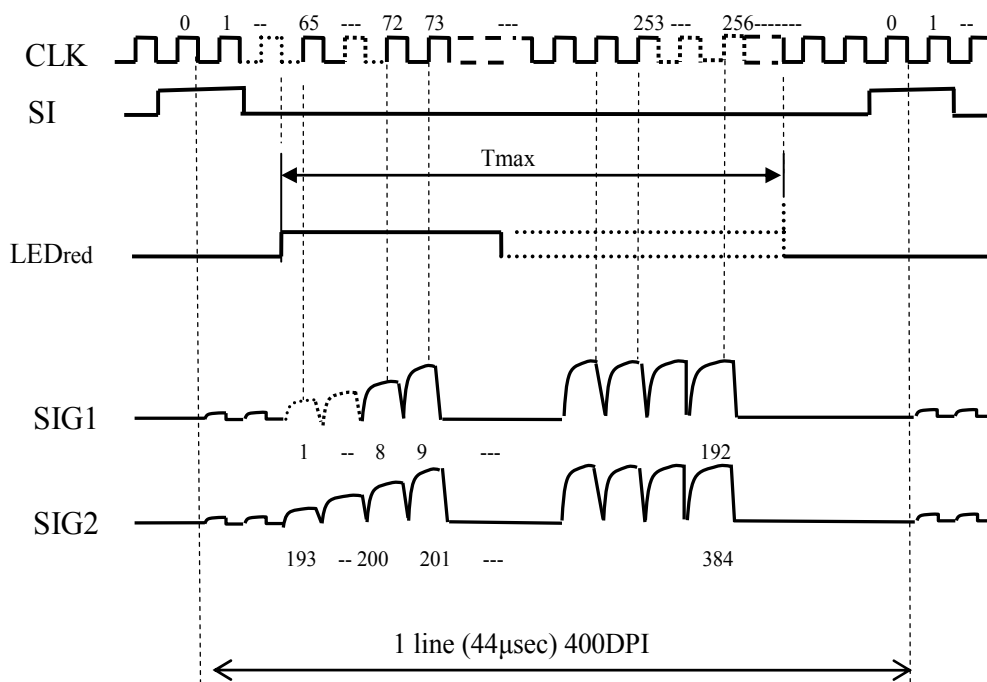
Dark reference for Dref appears between clock 54# to 61#; Dark dummy stable time is as same as ts2.

Figure 3. Timing Diagram

CLK:6.0MHz (L:duty 50%)

This is the WHEC shipping test condition.

1 line (44μsec) 400DPI

Note: More than 8 clocks are needed after#192,#384 video SIG.

Figure 4. Timing Diagram

Figure 1 Dimensions

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PIN CONNECTION	
PIN No.	NAME
1	SIG2
2	GND
3	SIG1
4	VDD
5	GND
6	SI
7	GND
8	CLK
9	VLED
10	LEDred

NOTE:
1. CONNECTOR: IL-Z-10P-S125L3-E (JAE) OR EQUIVALENT
2. CIS TYPE AND LOT NUMBER ARE PRINTED ON THE BOTTOM OF THE SENSOR FRAME.

H4R24-170918 ———— CIS TYPE

K 9 - XXXX
K 9 — — Serial No.
— Sep.
2017

Month	10	11	12
	A	B	D

Year	10	11	12	13	14	15	16	17	18	19	20
	A	B	D	E	F	H	I	K	L	M	N
Year	21	22	23	24	25	26	27	28	29	30	31
	O	P	R	S	T	U	V	W	X	Y	Z