- Designed for accurate detection of solid and transparent wafers
- Compact size (3.85in x 2.80in x 0.85in)
- NON-Contact measurement device
- No External Controllers required to run
- Uses Solid State Class 1 Laser Diode

- Custom Designed optics for high performance
- Max. resolution of 7 microns
- 2,400 measurements per second
- Cancellation of ambient light
- Parallel (TTL) Interface

AlignX14 (AlignX7) sensor Specifications :	
Detection Method	Laser through-beam with CCD element
Light Source	780 nm Class I Laser Diode
Measurement Range	140 microns (0.006 in) up to 28 mm (1.10 in)
Resolution	14 (7) microns
Repeatability	28 microns
Response Time	0.417 ms
Non-Linearity	0.3% of full range
Power	12 to 24 VDC / 170mA
Connections	2 x 10 pin double–row header
Interface (Input and Output)	Parallel binary (TTL)
Indicators	Green LED = Sensor ON ; Blue LED = Object Present
Data Format	11 (12) bit parallel
Data Range	0 up to 2000 (4000) pixels
Overall Dimension	97.8 mm x 71.1 mm x 21.6 mm (3.85 in x 2.80 in x 0.85 in)
Weight	170g (5.9oz)

Bottom
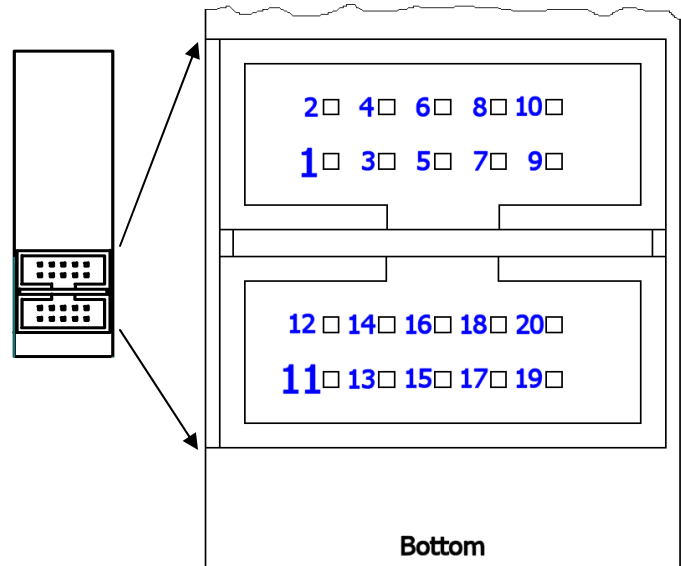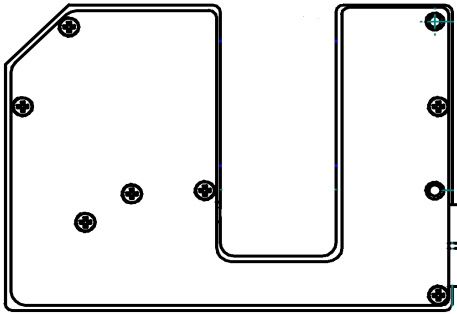
PIN	TYPE	NAME	DESCRIPTION
1	OUT	DATA0	Data bit 0 (LSB)
2	OUT	DATA1	Data bit 1
3	OUT	DATA2	Data bit 2
4	OUT	DATA3	Data bit 3
5	OUT	DATA4	Data bit 4
6	OUT	DATA5	Data bit 5
7	OUT	DATA6	Data bit 6
8	OUT	DATA7	Data bit 7
9	OUT	DATA8	Data bit 8
10	OUT	DATA9	Data bit 9
11	OUT	DATA10	Data bit 10
12	OUT	DATA11	Data bit 11(MSB)
13	OUT	DATA_READY	Data ready at end of measurement cycle
14	OUT	OBJECT_IN	Object Detected
15	IN	TRIGGER	Triggers measurement cycle
16	IN	MODE	Change mode SOLID/ TRANSPARENT
17,18	POWER	+PWR	12 - 24 VDC
19, 20	POWER	GND	Ground

MODES		
Selection	**Description**	**Mode**
0	First Interruption	Solid
1	Last Interruption	Transparent

The AlignX sensor is a self contained photoelectric sensor. It's primary designed to be used in wafer Prealigners (to detect notch/flat and center of wafer), but can be used in other applications too. Output is in a 11(12) bit parallel binary data format. 11(12)bit data output represents position in pixels. Pixel size is 14(7)μm.

The AlignX is capable of real time data acquisition and processing, and is specifically designed for fast and accurate measurements. Standard MODES can be set for SOLID or TRANSPARENT (solid wafer - detect first solid edge, ignoring all other edges, transparent detect last edge, ignoring any edges before). MODE changes during measurement will not take effect until the *next measurement cycle*.

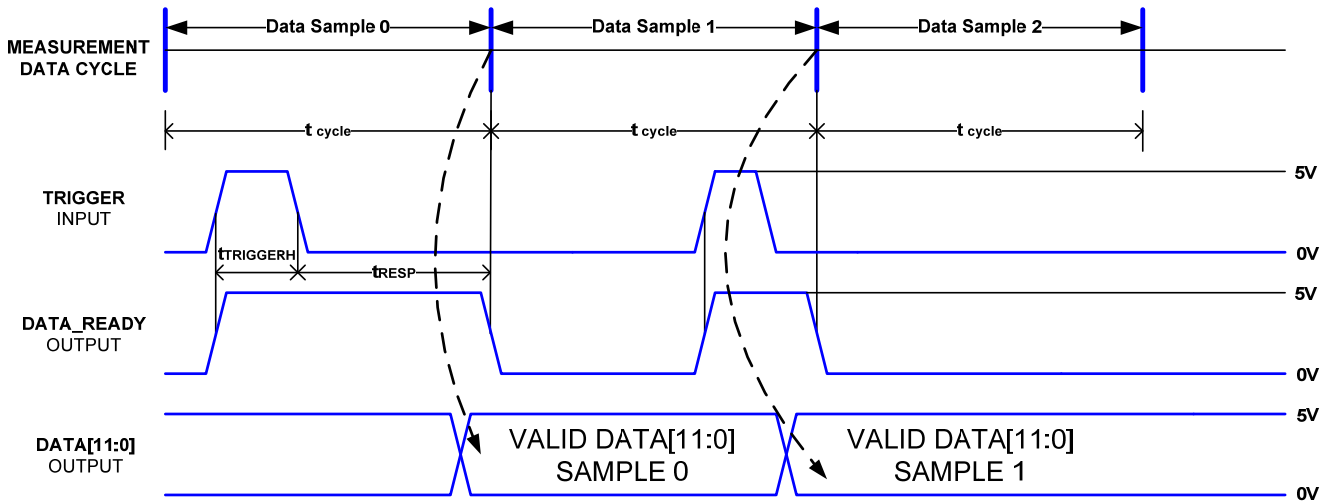The AlignX sensor uses standard two 10 pin headers (0.100" spacing)

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Timing Diagram

Fig. 2: Timing Diagram

Symbol	Description	Min.	Typ.	Max.
t_{CYCLE} (µs)	1 cycle time	——	——	417
t_{RESP} (µs)	Response time	10	——	415
$t_{TRIGGERH}$ (µs)	TRIGGER HIGH time	2	——	——

The timing diagram shows, that a HIGH to LOW signal on the TRIGGER, commences a data output at the end of the current measurement cycle. The HIGH to LOW signal on the DATA_READY confirms a Valid Data event. The maximum response time between the TRIGGER input and the DATA_READY output is 417 µs. This DATA is presented to the output pins and retained until the next TRIGGER event. In the absence of a TRIGGER event, the previous data will be held indefinitely. This process allows slow processing computers to by-pass several measurement cycles between measurement readings.
See Flowchart on next page for typical operation.

Accessories, Software, Cables

METRALIGHT, Inc. provides an available PCkit package option (i.e. Parallel PCI bus I/O card or USB conversion cable, PCkit Terminal, a Windows based SW, Source codes in VB and VB.NET) for collection, processing and display of data.

Various custom cables (e.g. Sensor to DB25) are also available.
Please call if you have any other specific requirements.

START

SET MODE
"0" or "1"

*MODE changes during measurement will not take effect
until the *next measurement cycle*.

NEW
MODE?

YES

NO

SET TRIGGER
HIGH

DATA_READY
STATUS ?

LOW

COMMUNICATION
ERROR

HIGH

SET TRIGGER
LOW AFTER 2µs

RESET
COUNTER

DATA_READY
STATUS ?

HIGH

INCREASE
COUNTER

COUNTER>415µs

ON

YES

COMMUNICATION
ERROR

LOW

READ
DATA[11:0],OBJECT_IN

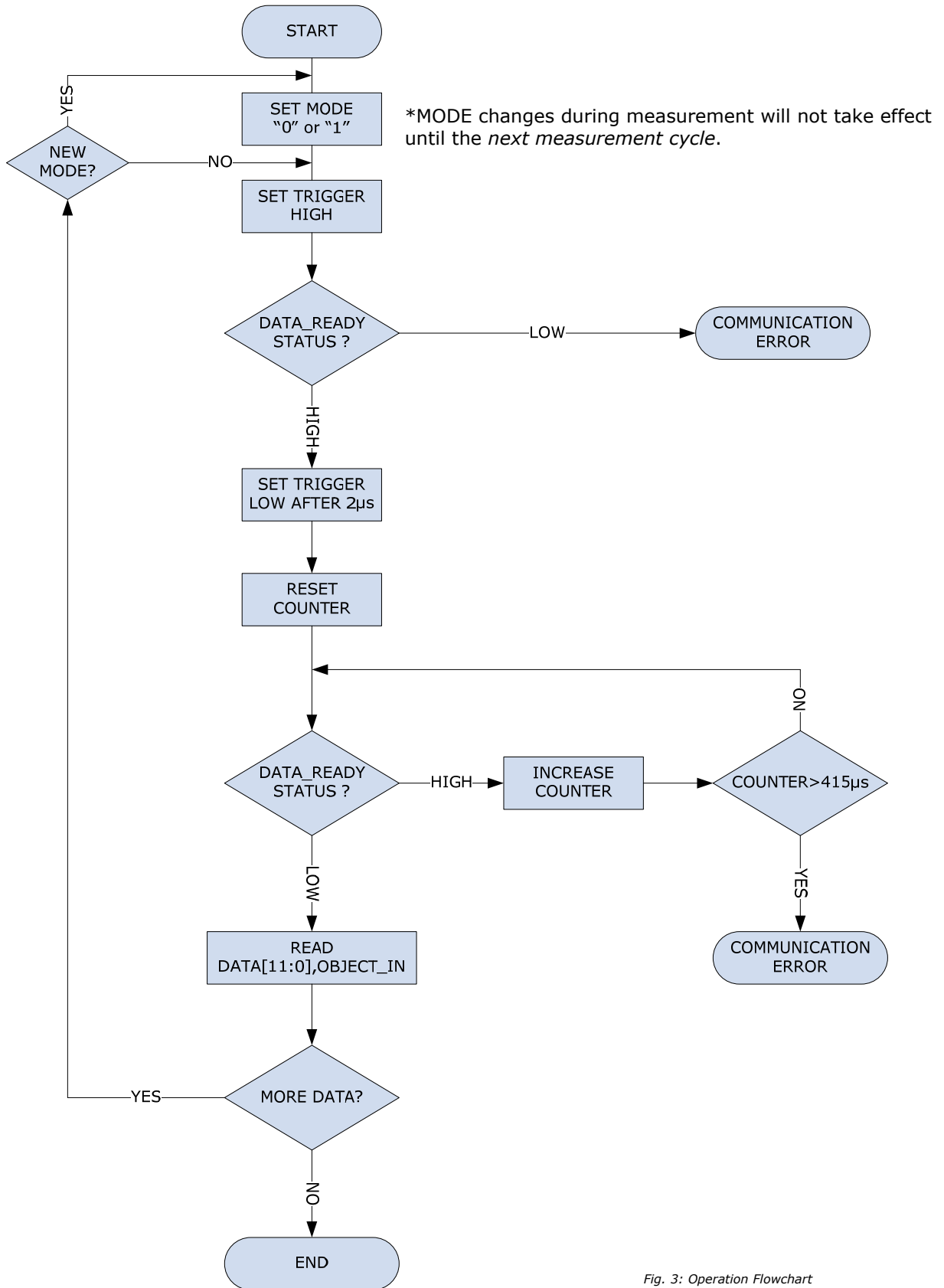MORE DATA?

YES

NO

END

Fig. 3: Operation Flowchart

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Installation Notes

- *USE APPROPRIATE MOUNTING SCREWS (SEE MECHANICAL DRAWING)*
- *!!! AVOID DIRECT SUNLIGHT !!! AND OTHER NON VISIBLE LIGHT SOURCES. RX SENSORS USES RG9 FILTERS TO FILTER OUT VISIBLE LIGHT (SEE CHARTS BELOW)*
- *ALWAYS KEEP OPTICAL WINDOWS CLEAN, FREE FROM DUST AND FINGERPRINTS , AVOID SCRATCHES ON THE OPTICAL WINDOWS.*
- *APPLY CORRECT VOLTAGE - SEE ELECTRICAL SPECIFICATION*
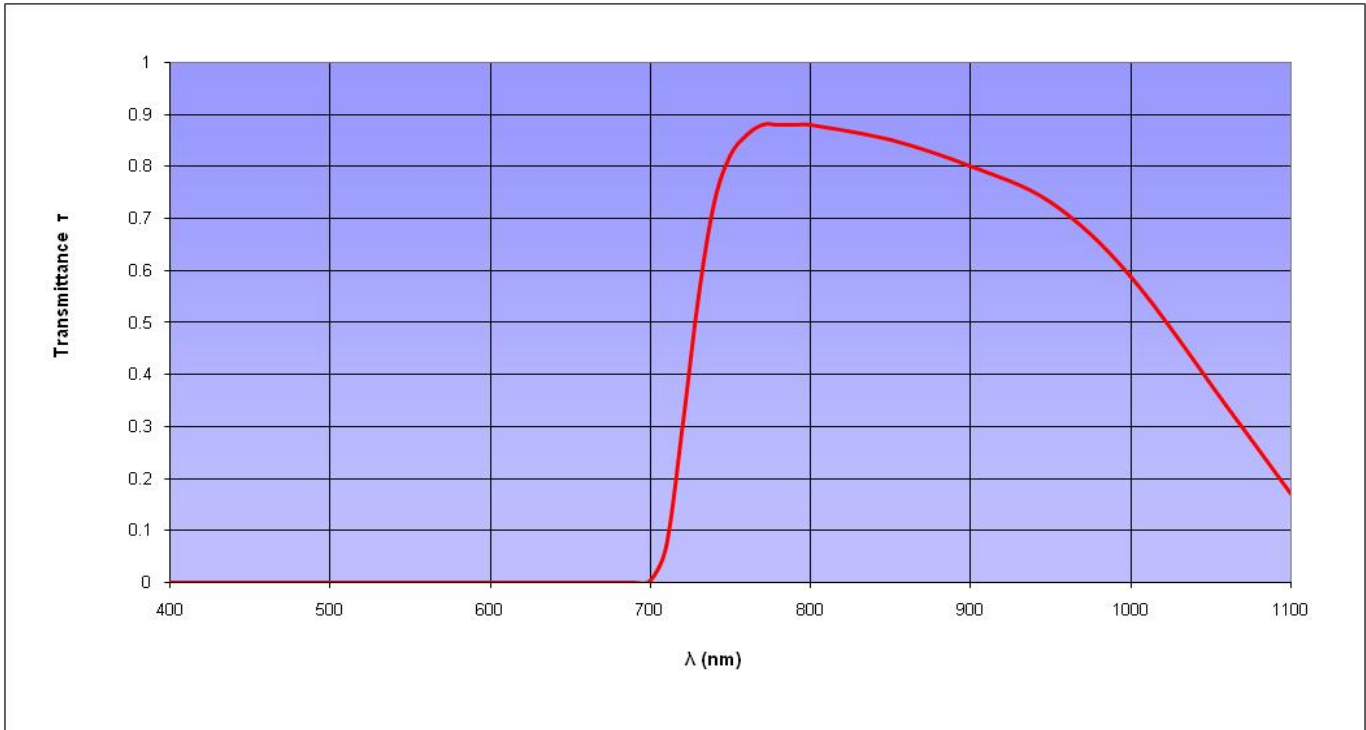
Fig. 4: Transmittance of optical (RG9) filter

Warranty

METRALIGHT provides a **ONE YEAR** manufacturer's limited warranty against defective materials and workmanship. Please do not attempt to open the unit, as this will void all warranties.

Contacts

METRALIGHT, Inc.
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San Mateo, CA 94402
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email: sales@metralight.com
technical support: support@metralight.com
web site: http://www.metralight.com

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ALIGNX

Wafer (with notch) profile

metralight

SCANNING LINE

2X LED

3X #6-32UNC-2B THRU

2.800
2.300
.300
1.560
1.420
.900
.500
3.850
3.700
1.000
1.100
1.140
.330
.950
2.650
.850
.755
1.850

REV

DESCRIPTION

REVISION HISTORY

DATE

APPROVED

DRAWN BY: henry

CHECKED BY: PP

MATERIAL: ALUM. 6061-T6

FINISH: ANODIZE

THIRD ANGLE PROJECTION

DATE: 2/28/07

SIZE: A

DWG NO:

FILENAME: Alignx.dft

TITLE: AlignX sensor

SCALE:

SHEET 1 OF 1

REV: A

METRALIGHT, Inc. 1670 S. Amphlett Blvd #214-M, Mailstop #1008 San Mateo, CA 94402

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. DIMENSIONS APPLY AFTER PROCESSING.

TOLERANCES
.XX   .01
.XXX   .005
.X/X   ±1/64
ANGLES: ±1/2°

REMOVE ALL BURRS AND SHARP EDGES

SURFACE FINISH

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