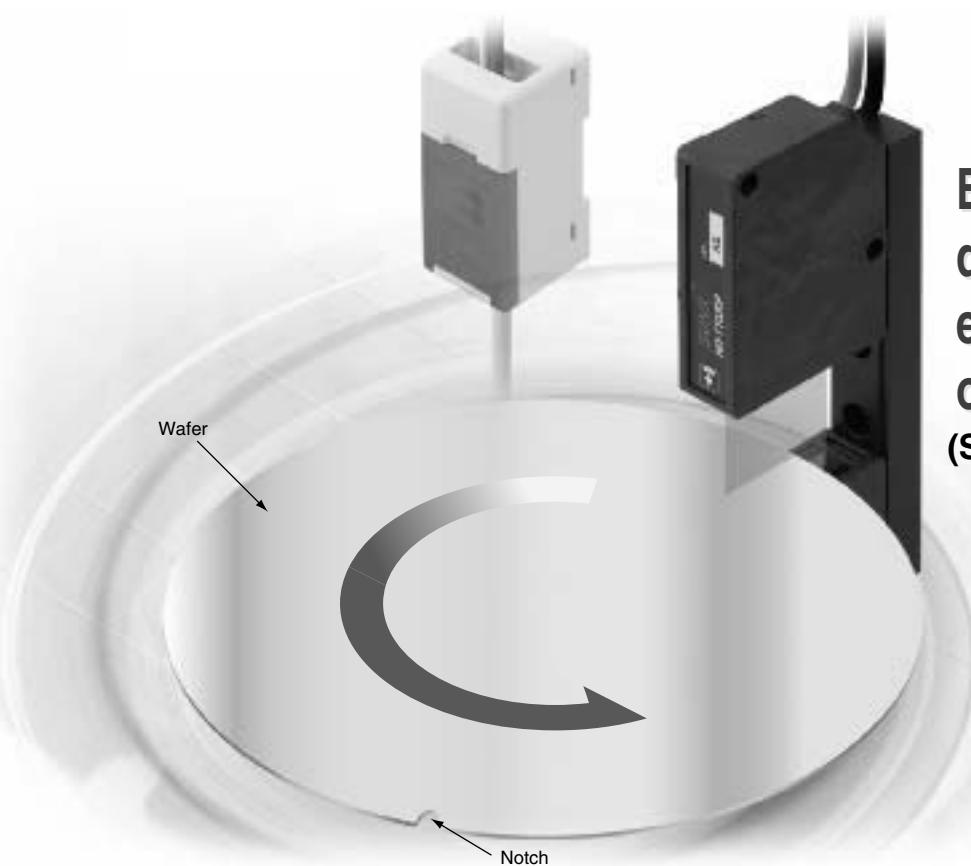


# HD-T1 SERIES

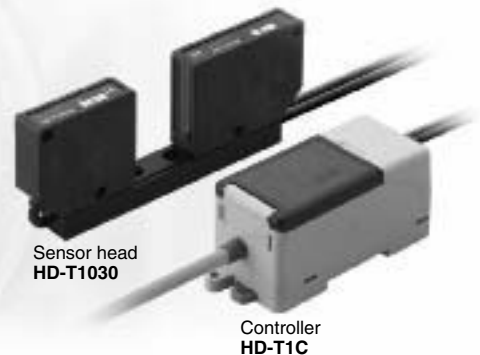
## Led Type Wafer Alignment Sensor



The use of a safe LED light beam now allows for high precision detection with a resolution of 30  $\mu\text{m}$



Best suited for the detection of wafer eccentricity, notches and orientation flats!  
(Sensing width 30 mm 1.181 in)



### No safety measures are required at all

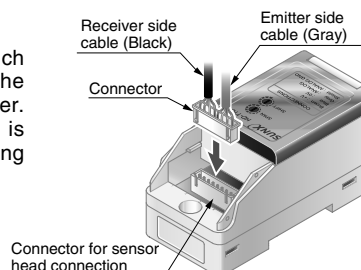
As a safe red LED is used as the light source, there is no need for time-consuming safety measures. The protective covers usually required when using laser beams are not needed, and FDA approval is not required in order to use this sensor in the US.

### High resolution of 30 $\mu\text{m}$ 1.181 mil

Although the HD-T1 series uses a red LED for its light source, it has the same high level of performance as laser sensors, thus enabling high precision detection.

### Easy installation

This unit utilizes a one-touch connector to connect the sensor head to the controller. The amount of wiring is therefore minimized, resulting in easy maintenance.

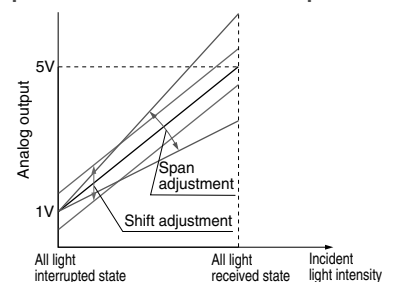


### No need for beam axis alignment

As both the receiver and the emitter are integrated into a single unit, there is no need to perform any troublesome alignment of the beam axis. In addition, as the HD-T1 series can perform its detection function over a broad area - with both a sensing range and a sensing width of 30 mm 1.181 in, this unit can be utilized for sensing wafers of many different sizes.

### Adjustment functions for both span and shift have been incorporated into the HD-T1 series

In addition to the span adjustment function, a convenient shift adjustment function has also been incorporated into the analog output (1 to 5 V). The shift adjustment function allows the analog voltage to be shifted by up to  $\pm 0.5$  V.



### Low current consumption of 70 mA or less

The HD-T1 series has a maximum current consumption of only 70 mA, for both the sensor head and the controller. The current consumption is almost as low as that of photoelectric sensors.

## SPECIFICATIONS

### Sensor head

Model No.	HD-T1030
Item	
Applicable controller	HD-T1C
Sensing width	30 mm 1.181 in (Linearity is specified at 28 mm 1.102 in width.)
Sensing range	30 mm 1.181 in (fixed) (Note 1)
Ambient temperature	0 to +40 °C +32 to 104 °F (No dew condensation), Storage: -20 to +55 °C -4 to +131 °F
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Emitting element	Red LED (Peak wavelength: 650 nm 0.026 mil)
Material	Enclosure: PEI, Front cover: Glass, Mounting base: Aluminum
Cable	Heat resistant PVC cable, 0.5 m 1.64 ft long, with a connector at the end
Weight	150 g 5.291 oz approx.

Note 1: The value is in a state that the sensor is mounted on the mounting base at the time of factory shipment.

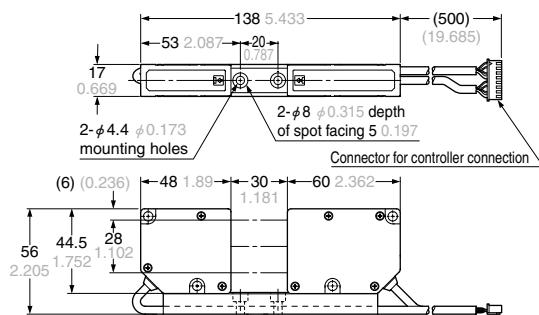
### Controller

Model No.	HD-T1C
Item	
Applicable sensor head	HD-T1030
Supply voltage	24 V DC $\pm$ 10 % Ripple P-P 10 % or less
Current consumption	70 mA or less (Including sensor head)
Analog output	Analog voltage • Output voltage: $1 \pm 0.5$ V (all light interrupted) to $5 \pm 0.5$ V (all light received) • Output impedance: 75 $\Omega$
Response time	0.5 ms or less (8 V/ms or more)
Resolution	30 $\mu$ m 1.181 mil (Note 1)
Linearity	$\pm 1.0$ % F.S. (at 28 mm 1.102 in sensing width of the sensing center) (Note 2)
Temperature characteristics	$\pm 0.1$ % F.S./ °C (at $24 \pm 2$ °C $75.2 \pm 35.6$ °F) (Note 2)
Span adjustment function	Span of the analog output voltage is adjusted. 15-turn endless adjuster
Shift adjustment function	Offset of the analog output voltage is adjusted. 15-turn endless adjuster
Warming-up period	30 min. or more
Ambient temperature	0 to +40 °C +14 +104 °F (No dew condensation), Storage: -20 to +70 °C -4 +158 °F
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH
Material	Enclosure: Heat-resistant ABS, Connector cover: Heat-resistant ABS Adjuster cover: Polycarbonate
Cable	0.22 mm <sup>2</sup> 3-core heat-resistant PVC cable, 0.3 m 0.984 ft long
Weight	85 g 2.998 oz approx.

Notes: 1) Resolution refers to the peak to peak distance conversion value of analog output (in the frequency band below 20 MHz).  
2) This is the representative example of measurement with a combination of sensor head and controller.

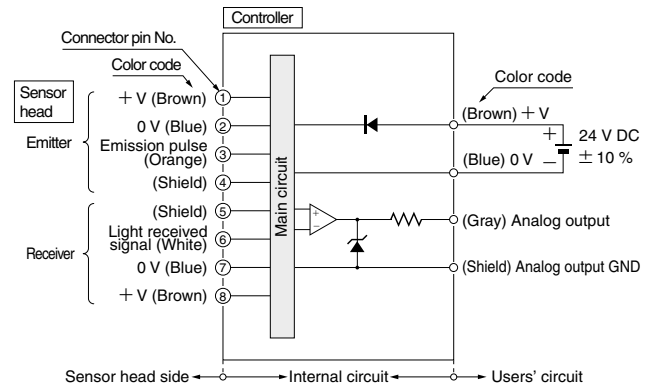
## DIMENSIONS (Unit : mm in)

### HD-T1030 Sensor head

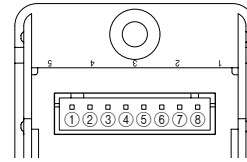


## I/O CIRCUIT AND WIRING DIAGRAMS

### I/O circuit diagram



### Terminal arrangement



Terminal No.	Description	
①	+ V	Emitter side
②	0 V	
③	Emission pulse	
④	Shield	
⑤	Shield	Receiver side
⑥	Light received signal	
⑦	0 V	
⑧	+ V	

## PRECAUTIONS FOR PROPER USE



- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

### HD-T1C Controller

