# IMS



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## INSTRUCTION MANUAL

### ! WARNING

Thank you for selecting IMS product. This sheet primarily describes precautions required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

### ! CAUTION

Failure to follow these instructions may result in serious injury or death : Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)

Failure to follow these instructions may result in product damage :

Do not use this unit over rated voltage ;

Do not use this unit where there is flammable or explosive gas ;

Do not use this unit where there is vibration or impact ;

In cleaning the unit, do not use water or an oil-based detergent.

#### Features

- High performance ASIC based advance sensor
- Response time : 1ms
- Long product life time, 5us modulated pulse with 1/10 duty cycle reduced aging of LED
- Build in 100ms power on delay, self-recover short circuit protection, reverse polarity, over voltage protection
- Excellent noise immunity to DC light with modulated light source and CDS signal process technology
- Mode selection for light on and dark on

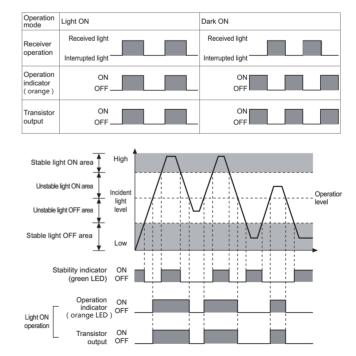
## Ordering information

urce code )
e L Cable type
C Connector type
1ms
M 0.25ms
0.23113
T available
Fixed
L Light on
D Dark on
S Selectable
N NPN
P PNP
O NPN+PNP
D 5V
C Relay
A Analog
Unit : mm
M Unit : m
Number Sensing distance
T Through-beam
D Diffuse reflective
R Retro reflective
V Convergent reflective
B Polarization-opaquing
BA Photoelectric sensor

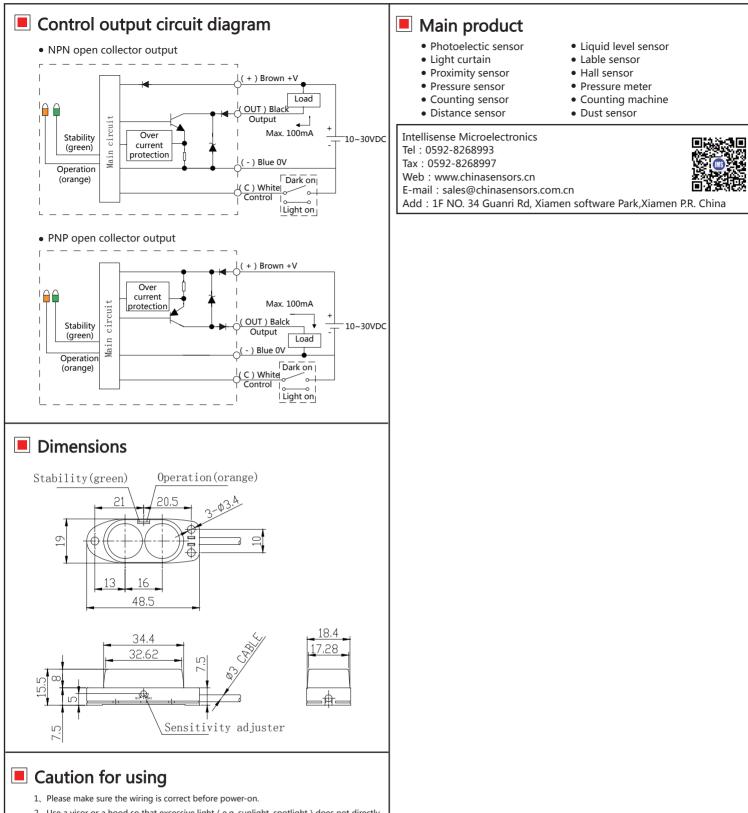
#### **Specifications**

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Sensing method		Diffuse reflective
Model	NPN	BAD500-NSL
	PNP	BAD500-PSL
Sensing distance		500mm(Non-glossy white paper300*300mm)
Hysteresis		Max. 20% at rated sensing distance
Directional angle		
Light source		Red LED (624nm)
Power supply		10~30VDC ( including voltage ripple of 10%(p-p)max. )
Current consumption		Max. 25mA
Output		NPN/PNP (open collector)
Load current		Max.100mA (Residual voltage: Max. 3V) , Load voltage: Max.26.4VDC
Operation mode		Selectable Light ON or Dark ON by control cable
Indicators		Operation indicator : Orange , stability indicator : Green
Circuit protection		Power supply reverse polarity protection, Output short-circuit protection, output reverse polarity protection
Response time		Max. 1ms
Sensitivity adjustment		One turn knob
Ambient illumination		Incandescent lamp:Max. 3 , 000lx /Sunlight:Max. 10 , 000lx
Ambient temperature		Operation : -25 $\sim$ 65 °C/Storage : -25 $\sim$ 70 °C ( with no icing and condensation )
Ambient humidity		Operation : 45 ~ 85 %/Storage : 35% ~ 95%(with no condensation)
Insulation resistance		Min. 20MΩ ( 500VDC )
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min. between current-carrying parts and case
Vibration resistance		1.5mm amplitude at frequency of 10 to 55Hz in each of X,Y,Z direction for 2 hours
Shock resistance		500m/s <sup>2</sup> in X,Y,Z directions for 3 times
Degree of protection		IEC : IP64
Connection		Cable (length: 1.5m)
Line color definition		Brown: 10~30V, Blue : GND, Black : NPN, White : NO/NC
Weight		Approx. 23g
Material	Case	ABS
	Lens	PMMA
Accessory		Instruction

## Operating timing diagram



% The waveforms of" Operation indicator" and "Transistor output" are for Light on mode.



- 2. Use a visor or a hood so that excessive light ( e.g. sunlight, spotlight ) does not directly enter into the inclination angle of the sensor.
- 3. When more than 2 sets of Through-beam type sensor are used closely, it might cause interference each other. Be sure to put enough space between them in order to avoid malfunction.
- 4. When more than 2 sets of diffuse reflective beam type or narrow beam reflective type are installed adjacently, it can occur malfunction by light beam from the other target. So it must be installed at an enough interval.
- 5. If the sensor is installed directly on a flat surface, the reflection off the surface may cause malfunction. Make sure there is enough space between the sensor and the surface.
- 6. If the sensor is wired with a high voltage line or power line, it may cause product damage or malfunction. Use separate wiring or a dedicated conduit.
- Please use short cables for wiring the sensors. Power surge from extended wiring may cause product malfunction;
- When the lens is stained by foreign substances, clean the lens lightly with dry cloth. Do not use chemical or organic solvents.