
BT08M Single-Point LiDAR Based on DTOF Technology

1000Hz Measuring Frequency / 4m Range / High cost-effectiveness

Features

- Based on DTOF principle (Direct Time of Flight)
- Maximum Measuring Range: 4m
- Measuring Blind Zone: 5cm
- Response time: 10ms
- Accuracy: N/A
- Resolution: 1mm
- Operating Temperature: $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- Supply Voltage: 9-30VDC
- Compact Size: 43.3*29.5*15.5mm
- Weight: 90g (without the cable)
- Ambient Light Immunity: 5KLux



Applications

- Warehouse positioning
- Robot obstacle avoidance
- Material level detection
- Security control



1. Product Overview

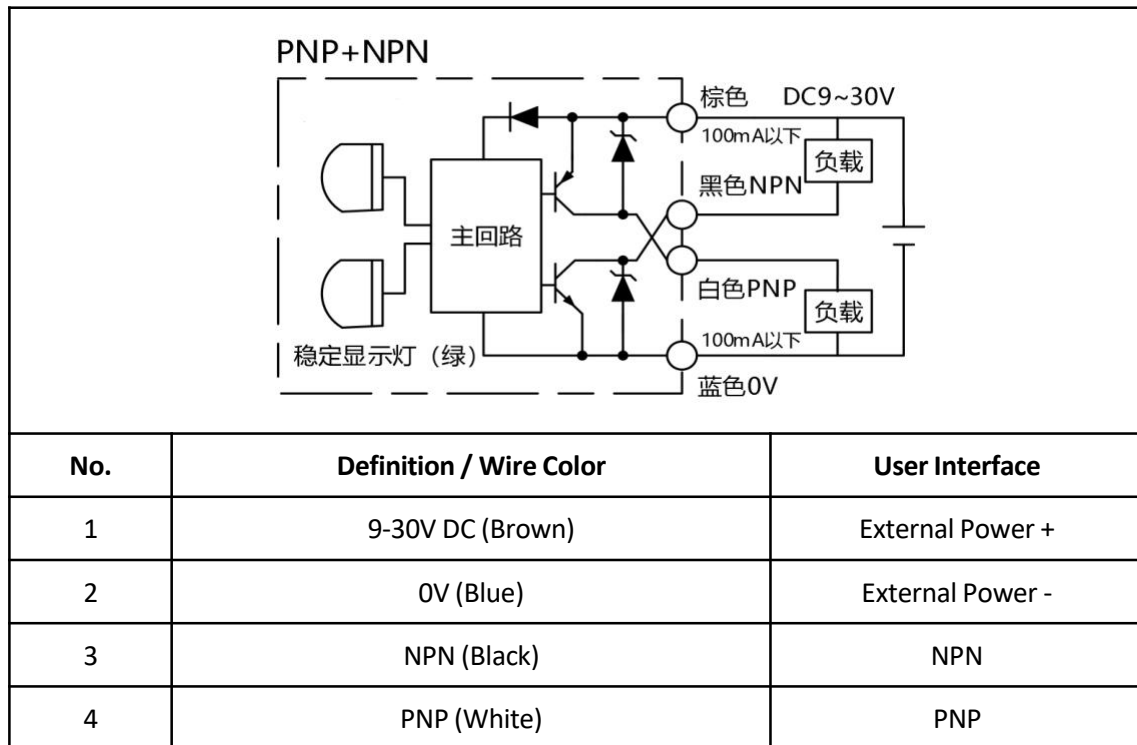
Unlike conventional photoelectric sensors, the BT08M breaks free from limitations in detection distance, detected object color, and sensor size. By adopting TOF (Time Of Flight) technology, it boasts a much wider range of applications, such as use in "production lines for handling different types of objects" and "assembly lines with limited installation space".Specifications.

2. Main Parameters

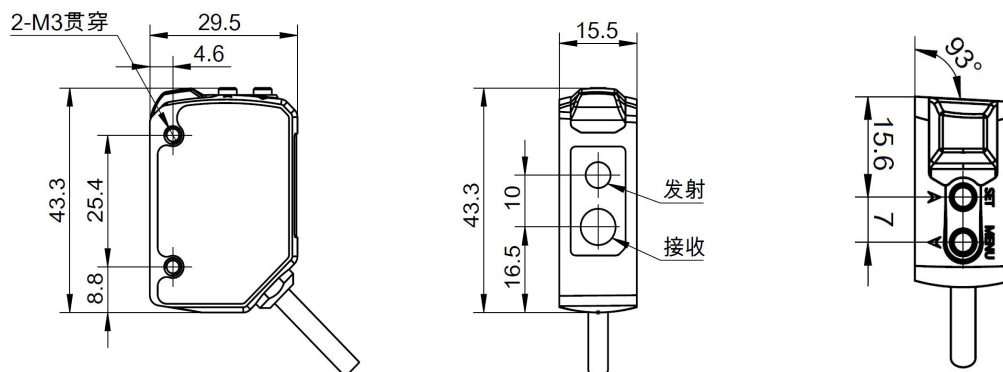
| # | Model | BT08M-PN |
|----|---------------------------------------|---|
| 1 | Range | 0.05m ~ 4m (80% reflectivity), 0.05m ~ 5m (10% reflectivity) ¹ |
| 2 | Frequency | 10ms (default: 10ms, adjustable to 1ms) |
| 3 | Accuracy | N/A |
| 4 | Repeatability | 5mm |
| 5 | Ambient Light Immunity | 5KLux |
| 6 | Central Wavelength | 660nm(visible light) |
| 7 | Photobiological Safety | Class 1 |
| 8 | FOV | N/A |
| 9 | Wavelength for Indication | N/A |
| 10 | Photobiological Safety for Indication | N/A |
| 11 | Supply Voltage | 9-30V DC |
| 12 | Peak Current | N/A |
| 13 | Average Current | 20mA@24VDC |
| 14 | Average Power Consumption | 0.5W |
| 15 | Communication Interface | NPN + PNP (with only 1 threshold) |
| 16 | Protection Level | IP67 |
| 17 | Dimension | 43.3*29.5*15.5mm |
| 20 | Weight | 90g |
| 21 | Operating Temperature | -20℃~+55℃ (No Condensation) |
| 20 | Wire Specification | 0.2mm 4 core PVC cable, length: 2m |
| 21 | Customization | available in communication protocol |

(Note: 1. This parameter was measured at 25℃ in an indoor environment.)

3. Definitions of Pins



4. Dimensions



5. Setting Method

The BT08M is equipped with two switch interfaces (NPN and PNP), which correspond to two independent buttons for separate configuration. Both NPN and PNP (two types of transistor/sensor output) have two modes: full-auto setting and two-point setting, each of which supports NO/NC (Normally Open/Normally Closed) respectively.



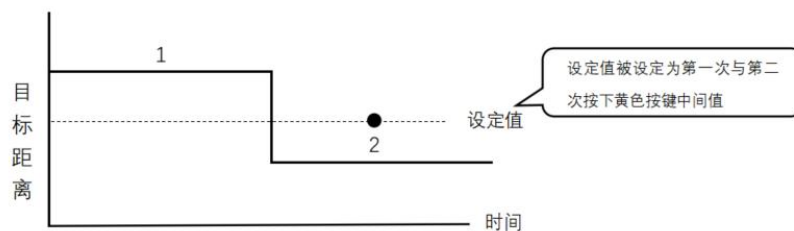
5.1 Automatic Setting Method:

Normally Open (NO) mode: Press and hold the NPN/PNP button for more than 2.5 seconds (but less than 7 seconds), then release it. If the setting is successful, the green LED will flash rapidly 3 times continuously.

Normally Closed (NC) mode: Press and hold the NPN/PNP button for more than 7 seconds (but less than 12 seconds), then release it. If the setting is successful, the green LED will flash rapidly 3 times continuously.

If the setting fails, the red LED will flash rapidly 3 times continuously, and it will return to the state before the setting was attempted.

5.2 Two-Point Setting Method



- 1) Short-press the NPN/PNP button once when the working condition is not present.
- 2) Briefly press the NPN/PNP button once when the working condition is not present.
- 3) Simply press the NPN/PNP button once respectively when the working condition is present and absent to establish the set value, which is the midpoint of the target distances from the first and second presses of the NPN/PNP button.
- 4) The order of steps 1) and 2) can be swapped.
- 5) The interval between steps 1) and 2) must not exceed 12 seconds; otherwise, the setting must be restarted.

(2) Status Indicator

When the setting is successful, the green LED flashes rapidly 3 times continuously. If the setting fails, the red LED flashes rapidly 3 times continuously and returns to the state before the

setting was attempted.

5.3 Signal Indicator

(1) When the NPN switch signal is output, the orange LED remains on; when there is no output, the orange LED remains off.

(2) When the PNP switch signal is output, the green LED remains on; when there is no output, the green LED remains off.

5.4 Setting Method for Instant Response Mode/Delayed Response Mode

Press and hold the NPN/PNP setting button for more than 12 seconds, then release it. If the green LED flashes rapidly 6 times, it indicates that the instant response mode is set successfully. Press and hold the NPN/PNP setting button for more than 12 seconds, then release it. If the green LED flashes slowly 6 times, it indicates that the delayed response mode is set successfully (this is the default mode, which has a signal anti-jitter function).

6.Key Notes

"Briefly press" is used for short-press operations, consistent with industrial operation descriptions.

"Remains on/off" accurately conveys the "constant on/off" state of indicators, avoiding ambiguity.

"Signal anti-jitter function" is a standard translation in electronics, clearly reflecting the function of suppressing signal fluctuations.

Repetitive operations (e.g., long-pressing for over 12 seconds) are retained as-is to ensure operational clarity, a common practice in technical documentation.

7.Update History

| Version | Date (YY/MM/DD) | Content |
|---------|-----------------|---|
| V1.0 | 2024/12/30 | According to the current design scheme, compile the initial version |
| V2.0 | 2025/6/17 | Correct some parameters and revise the protocol |
| V3.0 | 2025/9/8 | Add specifications by model and revise the protocol |



TEL: 0086-025-58327981

E-mail: swzn@surertech.com

Website: <http://www.surertech.com>

Address: 13th&14th Floor, Building 1, China
Railway Software Valley Headquarters
Economic Park, No. 66 Fengzhan Road,
Yuhuatai District, Nanjing City, Jiangsu
Province, 210012 P.R. China