

## 18GM40-500 Ultrasonic Sensor

IP67 / 500mm Range / Short Size Design / Cost-effective / Teach-in

### Product Overview

18GM40-500 Ultrasonic Sensor is a series of measurement sensors based on the principle of ultrasonic. With its compact design and flexible configuration, it is widely used in Robot protection, Material level detection, Object detection and other fields. This product is easy to use, flexible to install, convenient for expansion, and extremely cost-effective

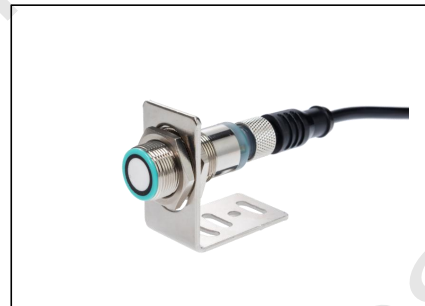
### Features

- Short Size Design
- 500mm High Accuracy Range
- IP67 Protection Level
- Teach-in Function
- Temperature compensation
- 0-10v/0-5v/4-20mA/NPN/PNP Output



### Applications

- Robots Obstacle Avoidance
- Industrial Measure
- Material Level Detection
- Object Detection
- Water/Oil Level Measure



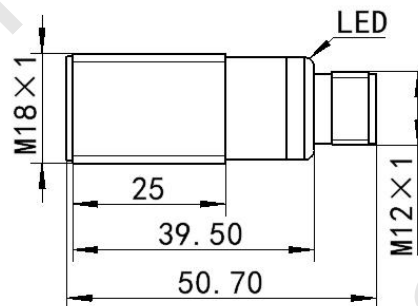
## Specification

| Model                         | 18GM40-500-I  | 18GM40-500-U5 | 18GM40-500-U10 | 18GM40-500-N             | 18GM40-500-P             |
|-------------------------------|---|---------------|----------------|--------------------------|--------------------------|
| Output                        | 4-20mA  | 0-5V          | 0-10V          | Switch Output NPN, NO/NC | Switch Output PNP, NO/NC |
| Detection range               | 40-500mm  |               |                |                          |                          |
| Blind Spot                    | 0-40mm  |               |                |                          |                          |
| Standard Target Board         | 100mm × 100mm   |               |                |                          |                          |
| Angle                         | ±7°   |               |                |                          |                          |
| Transducer frequency          | Approximately 200kHz  |               |                |                          |                          |
| Response delay                | ≤ 50ms  |               |                |                          |                          |
| Resolution                    | 0.5mm   |               |                |                          |                          |
| Linearity                     | ± 1% of full-scale value  |               |                |                          |                          |
| Repeat accuracy               | ± 0.3% of full-scale value  |               |                |                          |                          |
| Temperature drift             | ± 2% of full scale value(built-in temperature compensation)       |               |                |                          |                          |
| Power-on delay                | <500ms  |               |                |                          |                          |
| Operating voltage             | 20-30v DC, 10%Vpp   |               |                |                          |                          |
| No-load current               | ≤30mA   |               |                |                          |                          |
| Work current                  | 200mA Short-circuit protection / Overload protection              |               |                |                          |                          |
| Input Type                    | Teach-in  |               |                |                          |                          |
| Material                      | Nickel plated copper sleeve, plastic fittings, glass filled epoxy |               |                |                          |                          |
| Protection level              | IP67  |               |                |                          |                          |
| Connection Type               | V3 connector (M12 × 1), 4-pin                                     |               |                |                          |                          |
| Ambient temperature           | -25°C~+70°C (248~343K)  |               |                |                          |                          |
| Electromagnetic compatibility | GB/T17626.2-2006; GB/T17626.4-2008                                |               |                |                          |                          |
| Weight:                       | ≈22g (No cable)   |               |                |                          |                          |

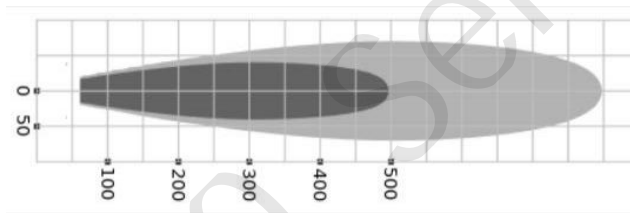
**Definitions**

|   |              |                     |
|---|--------------|---------------------|
|  <p>V3 Connector</p> | 1-Brown (棕色) | +UB Power +(20-30v) |
|   | 2-White (白色) | Teach-in            |
|   | 4-Black (黑色) | Output              |
|   | 3-Blue (蓝色)  | -UB Power -(Ground) |

**Dimensions**



**Response Curve**






★ Test conditions: Power supply 24V, 25°C, Humidity 50%. for reference only.

**Indicator light definition**

| Sensor Model                          | LED        | Action | Definition                             |
|---------------------------------------|------------|--------|--|
| <b>Switch Output:<br/>-N/-P</b>       | LED Yellow | Light  | Switch status (closed)                 |
|                                       |            | Flash  | Teach-in status detects the target     |
|                                       | LED Red    | Light  | Switch status (open)                   |
|                                       |            | Flash  | Teach-in status not detects the target |
| <b>Analog output:<br/>-I/-U10/-U5</b> | LED Yellow | Light  | The target is within the A1-A2 range   |
|                                       |            | Flash  | Teach-in status detects the target     |
|                                       | LED Red    | Light  | The target is without the A1-A2 range  |
|                                       |            | Flash  | Teach-in status not detects the target |

**Quick Start**

**1. Test Preparation**

|   |   |   |
|---|---|---|
| 18GM40-500 sensor   | Power Supply  | Cable   |
|  |  |  |

**2. Installation**

Because ultrasonic sensors are directional, the installation position should be Carefully considered. It is recommended that the installation position be Perpendicular to the measured object to obtain better relative accuracy.

**3. Power on**

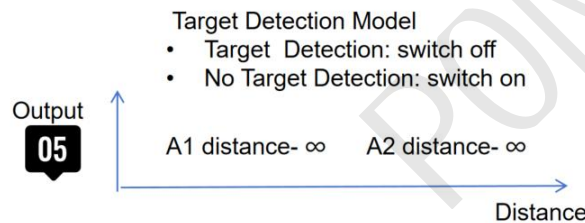
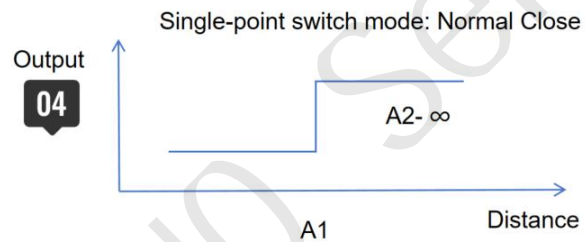
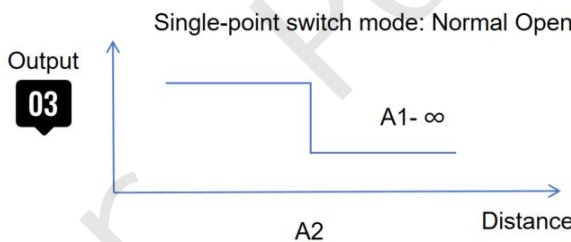
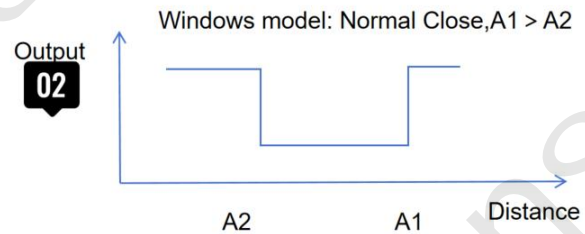
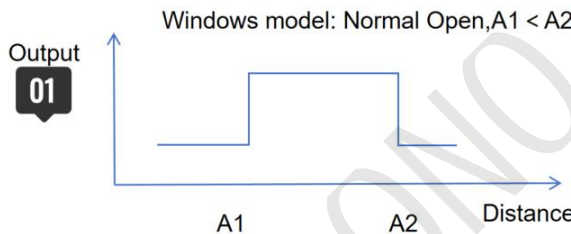
Connect the sensor to the power supply base on the definitions.

**4. Work Mode**

18GM40-500 Series Ultrasonic has 5 types(-N/-P/-U10/-U5/-I) output model, please make sure what output model you are choose sensor.

● **Switch Output: NPN/PNP model working mode**

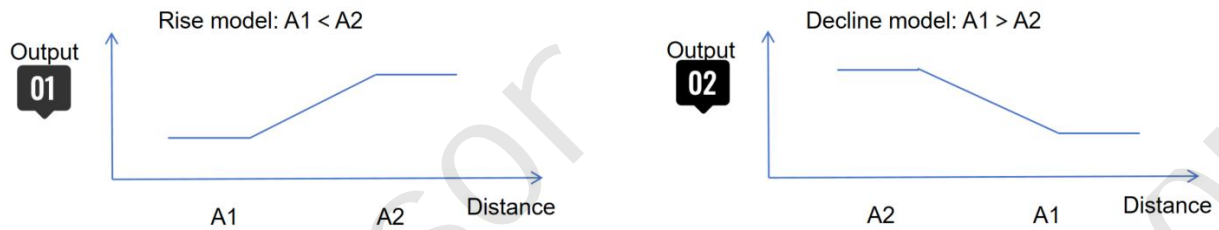
Working mode: A1 and A2 can be studied separately. by setting the position of A1 point and A2 point, You can choose the working mode, which is divided into the following 5 types:



- ★ Note: A1/A2-∞ mean: when Teach-in no target detection
- ★ Default setting: Windows normal open, A1=40mm; A2=500mm;

**● Analog output: 0-10v/0-5v/4-20mA model working mode**

Working mode: A1 and A2 can be studied separately. by setting the position of A1 point and A2 point, You can choose the working mode, which is divided into the following 2 types:

**Set Point A2:**

- Place measured object where distance needs to be set;
- Connect the Teach-in(White) cable to the +UB(Power+/Brown) cable. During this period, if the Object under test is captured, the yellow light will flash. After this state lasts For 2-3 seconds, disconnect the Teach-in(White) cable (Note: Do not disconnect the power within 2 seconds after disconnecting the Teach-in(White) cable, otherwise the setting may fail). If the A2 is set successful, but no target is detected during the setting period, the red light will flash;

**Set Point A1:**

- Place measured object where distance needs to be set;
  - Connect the Teach-in(White) cable to the -UB(Power-/Blue) cable. repeat the above steps;
- ★ Note: The Teach-in mode can only be used within 5 minutes after power-on.

**Attentions**

- Temperature drift is mainly caused by the initial heating of the sensor, which leads to the temperature measurement deviation in the sensor and then the distance measurement deviation. It will be stable after about half an hour.
- Do not input a voltage other than the normal working voltage to avoid burning out the sensor.
- Do not connect the wiring incorrectly to avoid burning out the sensor.
- Please avoid pulling the sensor lead to prevent damage to the electrical connection of the sensor.
- Do not cover the surface of the sensor probe to avoid affecting the sensor detection range.
- The sensor should be used without strong mechanical vibration, and the working environment should not have strong electromagnetic interference and rapid air circulation.
- Please do not disassemble the sensor without permission. If the sensor cannot work normally, please contact the after-sales service immediately to solve the problem.