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| **Ultrasonic sensor** |  | **UBS500-18GM-E5-V15** |
| **Technical data** |  | |  | | --- | |  | | |
| General Specifications |  |
| Sensing distance | 50…500mm |
| Adjustment range | 50…500mm |
| Unusable area | 0…200mm |
| Standard target plate | 200mm×200mm |
| Transducer frequency About | 200 kHz |
| Response delay About | 85ms |
| **Indicators/Operating means** |  |
| LED Blue |  |
| **LED red** |  |
| Electrical specifications |  | |  | | --- | |  | | |
| **Operating voltage U**B | 10…30VDC ripple10%ss |
| No-load supply current | ≤30mA |
| **Output** |  |
| Output type | 1 switch output PNP |
| **Resolution** |  |
| Deviation of the characteristic  curve | ±1% of full-scale value |
| Repeat accuracy | ±0.1% of full-scale value |
| Maximum switching current | 200 mA |
| **Maximum switching current** |  |
| Temperature influence | ±1.5% of full-scale value |
| **Ambient conditions** |  |
| Ambient temperature | -25…70℃ |
| Storage temperature | -40…85℃ |
| **Mechanical specifications** |  | |  | | --- | |  | | |
| **Protection grade** | IP65 |
| Connection | Connector M12,5-PIN |
| **Material** |  |
| Housing | Brass nickel-plated |
| **Transducer** | epoxy resin/hollow glass sphere  mixture; Polyurethane foam | **1 BROWN：+U 2 WHITE: TECH IN  3 BLUE: -U 4 BLACK: OUTPUT**  **5 GREY: SYNC** |
| **Weight** | 50g |
| **Compliance with standards and Directives** | |
| Standard conformity | EN 60947-5-2:2020 |  |

**Synchronization**

This sensor features a synchronization input for suppressing ultrasonic mutual interference ("cross talk").If the input port is not switched on, the sensor operates at the internal frequency. A square wave voltage can also be added to the input port to synchronize the sensor. A synchronization pulse on the synchronization input initiates a measurement cycle. The synchronization pulse width must be greater than 100ms. The measurement period is triggered by the falling edge of the pulse. Because the sensor uses the average of five measurements internally, the switching state changes only when all five measurements exceed the switching threshold. If the low level duration reaches or exceeds 1 second, or if the synchronous input port is suspended, the sensor will operate normally. Synchronization is not allowed during the setting period. Otherwise, learning cannot be performed if synchronization is used. Synchronization can work in two ways.

1. Multiple sensors are triggered by the same synchronization signal and work synchronously.

2. The synchronization pulse is output to a sensor in turn, that is, each sensor works in multiple ways. Adding a high level tothe synchronous input stops the sensor.

**Adjusting the switching points**

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage - UB or + UB to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. Switching point A1 is taught with - UB,A2 with +UB. Five different output functions can be set.

1. Window mode, normally-open function.
2. Window mode, normally-closed function.
3. One switching point,normally-open function
4. One switching point,normally-closed function.
5. Detection of objet presence.

Switching point, Setting distance only after power on. The internal clock can assure can't be changed after 5 mins when power

on. If want to change the switching point, the user can only setting the request distance after power restart.

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| **TEACH-IN window mode,normally-open function**  -Set target to near switching point  -TEACH-IN switching point A1 with - UB  -Set target to far switching point  -TEACH-IN switching point A2 with + UB |  |
| **TEACH-IN window mode,normally-closed function**  -Set target to near switching point  -TEACH-IN switching point A2 with + UB  -Set target to far switching point  -TEACH-IN switching point A1 with - UB |
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| **TEACH-IN switching point, normally-open function**  -Set target to near switching point  -TEACH-IN switching point A2 with + UB  -Cover sensor with hand or remove all objects from sensing range  -TEACH-IN switching point A1 with - UB |
| Curve1:flat surface 100mm×100mm  Curve2:round bar,Φ25mm |
| **TEACH-IN switching point, normally-closed function**  -Set target to near switching point  -TEACH-IN switching point A1 with - UB  -Cover sensor with hand or remove all objects from sensing range  -TEACH-IN switching point A2 with + UB |
| **TEACH-IN detection of objects presence**  -Cover sensor with hand or remove all objects from sensing range  -TEACH-IN switching point A1 with - UB  -TEACH-IN switching point A2 with + UB |
| **Default setting of switching point**  A1=blind range,A2=nominal distance |