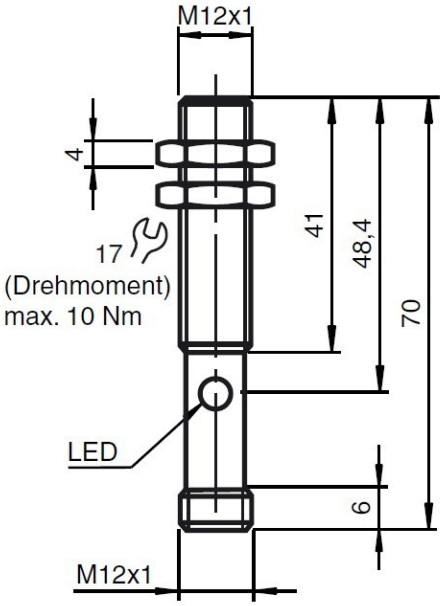
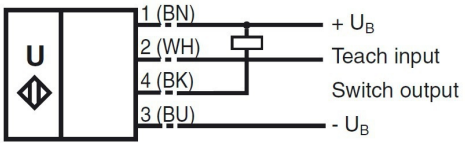
# Ultrasonic sensor

# UB400-12GM-E4-V1

| Technical data | |
|---|---|
| General Specifications | |
| Sensing distance | 30…400mm |
| Adjustment range | 50…400mm |
| Unusable area | 0…30mm |
| Standard target plate | 100mm×100mm |
| Transducer frequency | About 310kHz |
| Response delay | About 50ms |
| **Indicators/Operating means** | |
| LED blue | Power on |
| LED yellow | indication of the switching state<br>Flashing:program function object detected |
| LED red | permanently red: Error Red,flashing:program function,object not detected |
| **Electrical specifications** | |
| Operating voltage $U_B$ | 10…30VDC,ripple10%ss |
| No-load supply current | ≤30mA |
| **Input** | |
| Input type | 1 TEACH-IN input Operating distance A1:-$U_B$…+1V,operating distanceA2:+6…+ $U_B$ Input impedance:＞4.7KΩ TEACH-IN programmable pulse :≥1S |
| **Output** | |
| Output type | 1 switch output E5,NPN NO/NC,programmable |
| Rated operational current | 100mA,short-circuit/overload protected |
| Default setting | Switching point A1:70mm Switching point A2: 800mm |
| Voltage drop | ≤ 3V |
| Repeat accuracy | ≤ 1% |
| Switching frequency f | ≤ 8 HZ |
| Range hysteresis H | 1% of the set operating distance |
| Temperature influence | ± 1.5% of full-scale value |
| **Ambient conditions** | |
| Ambient temperature | -25…70℃(248...343K) |
| Storage temperature | -40…85℃(233...358K) |
| **Mechanical specifications** | |
| Protection grade | IP67 |
| Connection | V1 connector(M12×1),4-pin |
| Material Housing | brass,nickel-plated |
| Transducer | epoxy resin/hollow glass sphere mixture; foam polyurethane,cover PBT |
| Weight | 25g |
| Compliance with standards and di | |
| Standard conformity | EN 60947-5-2:2007<br>IEC 60947-5-2:2007 |

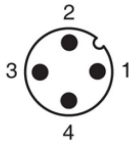



**Standard symbol/Connections:**
(version E4, npn)




Core colours in accordance with EN 60947-5-2.

**V1 Connector**



**Adjusting the switching points**

**The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage - $U_B$ or + $U_B$ to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s.LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Switching point A1 is taught with - $U_B$,A2 with +$U_B$.** 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.

**TEACH-IN window mode,normally-open function**

-Set target to near switching point

-TEACH-IN switching point A1 with - $U_B$

-Set target to far switching point

-TEACH-IN switching point A2 with + $U_B$

**TEACH-IN window mode,normally-closed function**

-Set target to near switching point

-TEACH-IN switching point A2 with + $U_B$

-Set target to far switching point

-TEACH-IN switching point A1 with - $U_B$

**TEACH-IN switching point, normally-open function**

-Set target to near switching point

-TEACH-IN switching point A2 with + $U_B$

-Cover sensor with hand or remove all objects from sensing range

-TEACH-IN switching point A1 with - $U_B$

**TEACH-IN switching point, normally-closed function**

-Set target to near switching point

-TEACH-IN switching point A1 with - $U_B$

-Cover sensor with hand or remove all objects from sensing range

-TEACH-IN switching point A2 with + $U_B$

**TEACH-IN detection of objects presence**

-Cover sensor with hand or remove all objects from sensing range

-TEACH-IN switching point A1 with - $U_B$

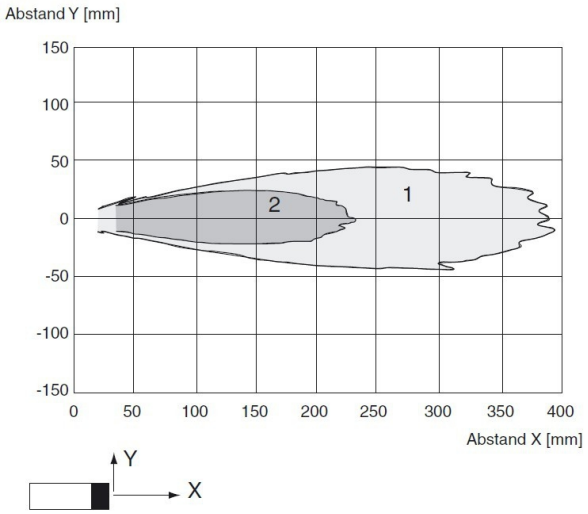
-TEACH-IN switching point A2 with + $U_B$

**Default setting of switching point**

A1=blind range,A2=nominal distance

| LED displays | | |
|---|---|---|
| Displays in dependence on operating mode | Red LED | Yellow LED |
| **TEACH-IN switching point** | | |
| Object detected | off | flashes |
| No object detected | flashes | off |
| Object uncertain(TEACH-IN invalid) | On | off |
| Normal operation | off | Switching state |
| Fault | on | Previous state |

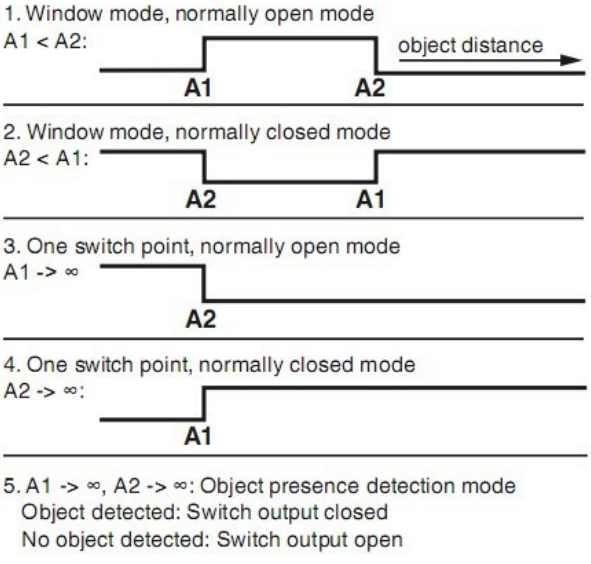
## Charakteristische Ansprechkurve




Curve1:flat surface 100mm×100mm

Curve2:round bar,Φ25mm

## Programmable output modes




**Installation conditions**

If the sensor is installed at the environment temperature fall below 0℃,It should do well on the protective measures. In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread.