



## Model Number

**UB6000-F42-I-V1-Y220443**

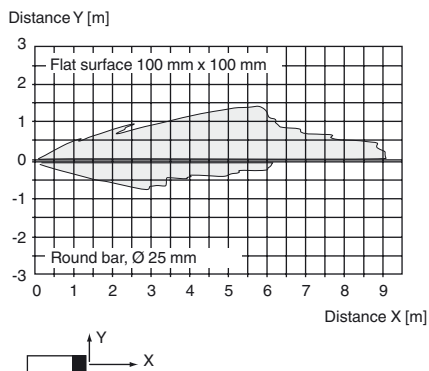
Single head system

## Features

- Analog output 4 mA ... 20 mA
- Extremely small unusable area
- Temperature compensation
- Synchronization options

## Diagrams

### Characteristic response curve



## Technical data

### General specifications

|                       |                 |
|-----------------------|-----------------|
| Measurement range     | 400 ... 6000 mm |
| Sensing range         | 350 ... 6000 mm |
| Unusable area         | 0 ... 350 mm    |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency  | approx. 65 kHz  |
| Response delay        | approx. 650 ms  |

### Indicators/operating means

|            |                            |
|------------|----------------------------|
| LED green  | Power on                   |
| LED yellow | object in evaluation range |
| LED red    | error                      |

### Electrical specifications

|                              |                                           |
|------------------------------|-------------------------------------------|
| Operating voltage $U_B$      | 10 ... 30 V DC, ripple 10 % <sub>SS</sub> |
| No-load supply current $I_0$ | ≤ 60 mA                                   |

### Input/Output

|                 |                                                                                                                                                                                          |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Synchronization | bi-directional<br>0 level: $-U_B \dots +1$ V<br>1 level: $+4$ V $\dots +U_B$<br>input impedance: > 12 KOhm<br>synchronization pulse: ≥ 100 μs, synchronization interpulse period: ≥ 2 ms |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                           |                                 |
|---------------------------|---------------------------------|
| Synchronization frequency |                                 |
| Common mode operation     | ≤ 7 Hz                          |
| Multiplex operation       | ≤ 7/n Hz, n = number of sensors |

### Output

|                                       |                             |
|---------------------------------------|-----------------------------|
| Output type                           | 1 analog output 4 ... 20 mA |
| Resolution                            | 0.7 mm                      |
| Deviation of the characteristic curve | ± 1 % of full-scale value   |
| Repeat accuracy                       | ± 0.1 % of full-scale value |
| Load impedance                        | 0 ... 300 Ohm               |
| Temperature influence                 | ± 1 % of full-scale value   |

### Ambient conditions

|                     |                                |
|---------------------|--------------------------------|
| Ambient temperature | -25 ... 70 °C (-13 ... 158 °F) |
| Storage temperature | -40 ... 85 °C (-40 ... 185 °F) |

### Mechanical specifications

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| Connection type   | Connector M12 x 1, 4-pin                                              |
| Protection degree | IP67                                                                  |
| Connection        | connector M12 x 1, 4-pin                                              |
| Material          |                                                                       |
| Housing           | ABS                                                                   |
| Transducer        | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT |
| Mass              | 330 g                                                                 |

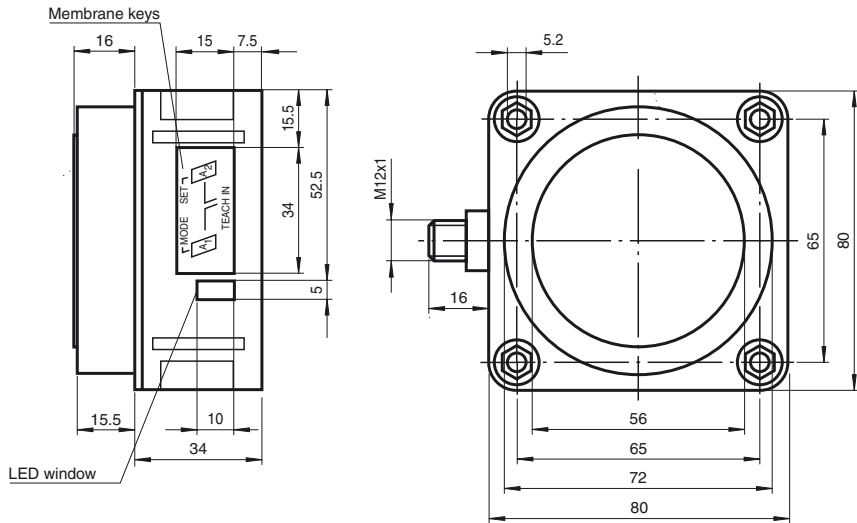
### Factory settings

|            |                                                                             |
|------------|-----------------------------------------------------------------------------|
| Output     | evaluation limit A1: 400 mm<br>evaluation limit A2: 6000 mm<br>rising slope |
| Beam width | wide sound lobe                                                             |

### Approvals and certificates

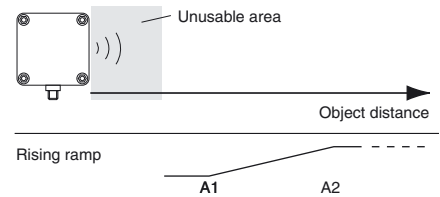
|              |                                                              |
|--------------|--------------------------------------------------------------|
| UL approval  | cULus Listed, General Purpose                                |
| CSA approval | cCSAus Listed, General Purpose                               |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |

## Dimensions



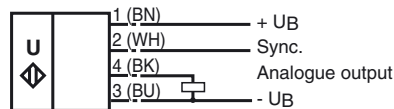
## Additional Information

### Analogue output programming



## Electrical Connection

### Standard symbol/Connections:



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

## Pinout

### Connector V1



## Accessories

### MH 04-3505

Mounting aid for FP and F42 sensors

### MHW 11

Mounting brackets for sensors

### DA5-IU-2K-V

Process control and indication equipment

### V1-G-2M-PVC

Female cordset, M12, 4-pin, PVC cable

### V1-W-2M-PUR

Female cordset, M12, 4-pin, PUR cable

## Description of Sensor Functions

### Synchronization

This sensor features a synchronization input for suppressing ultrasonic mutual interference ("cross talk"). If this input is not connected, the sensor will operate using internally generated clock pulses. It can be synchronized by applying an external square wave. The pulse duration must be  $\geq 100 \mu s$ . Each falling edge of the synchronization pulse triggers transmission of a single ultrasonic pulse. If the synchronization signal remains low for  $\geq 1$  second,

the sensor will revert to normal operating mode. Normal operating mode can also be activated by opening the signal connection to the synchronization input. (See note below) If the synchronization input goes to a high level for > 1 second, the sensor will switch to standby mode, indicated by the green LED. In this mode, the outputs will remain in the last valid output state.

**Note:**

If the option for synchronization is not used, the synchronization input has to be connected to ground (0 V).

**The following synchronization modes are possible:**

1. Several sensors (max. number see technical data) can be synchronized together by interconnecting their respective synchronization inputs. In this case, each sensor alternately transmits ultrasonic pulses in a self multiplexing mode. No two sensors will transmit pulses at the same time. (See note below)
2. Multiple sensors can be controlled by the same external synchronization signal. In this mode the sensors are triggered in parallel and are synchronized by a common external synchronization pulse.
3. A separate synchronization pulse can be sent to each individual sensor. In this mode the sensors operate in external multiplex mode. (See note below)
4. A high level (+U<sub>B</sub>) on the synchronization input switches the sensor to standby mode.

**Note:**

Sensor response times will increase proportionally to the number of sensors that are in the synchronization string. This is a result of the multiplexing of the ultrasonic transmit and receive signal and the resulting increase in the measurement cycle time.