

Adjust switching distance on mic-xxx/D:

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until the LED flashes yellow
2. Set switching distance (*): T1 increases switching distance T2 decreases switching distance (if an object is detected within the actual switching distance, the LED is illuminated permanently yellow; otherwise it flashes yellow)
3. Do not press any button for 20 sec: the programmed switching distance is stored permanently within an EEPROM; mic-xxx/D returns to its normal operating mode

Adjust switching distance on mic-xxx/DD:

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until LEDs D1 and D2 flash yellow.
2. Release buttons: the LEDs flash vice versa.
3. Select switching output: T1 chooses output S1 (D1 yellow, D2 off) T2 chooses output S2 (D2 yellow, D1 off)
4. Set switching distance (*): T1 increases switching distance T2 decreases switching distance (if an object is detected within the actual switching distance, the LED is illuminated permanently yellow; otherwise it flashes yellow).
5. Do not press any button for 20 sec: the programmed switching distance is stored permanently within an EEPROM; mic-xxx/DD returns to its normal operating mode.

Repeat step 1-5 for each switching output.

Select switching function on mic-xxx/D and mic-xxx/DD:

1. Press pushbuttons T1 and T2 simultaneously for 10 sec until yellow flashing stops and both LEDs are on permanently (only 1 LED on /D).
2. Release buttons: LED flashes green: n.c. LED flashes red: n.o.

(/DD: LED D1 indicates the function of switching output S1, D2 the one of S2).

3. Button T1 toggles the function of S1, button T2 toggles the function of S2.
4. Do not press any button for 20 sec: the programmed switching characteristic is stored permanently in an EEPROM; the sensor returns to its normal operating mode

Remark: In normal operating mode red LEDs indicate that the corresponding switching distance is reached - independent of the selected switching characteristic.

Adjust window margins on mic-xxx/IU:

Hint: Set the inner margin (the margin near to the sensor) first, then set the outer margin. Please take into consideration, that the margins cannot be set closer than a minimum difference of 20 to 50 mm - depending on the sensortype

1. Press pushbuttons T1 and T2 simultaneously for 3 sec until both LEDs flash yellow.
2. Release buttons: The LEDs flash vice versa.
3. Press button T2 to select inner margin (D2 yellow, D1 off) Press button T1 to select outer margin (D1 yellow, D2 off).
4. Move margin (*): T1 increases distance T2 decreases distance
5. Do not press any button for 20 sec: The programmed margin will be stored permanently in an EEPROM; mic-xxx/IU returns to its normal operating mode

Repeat step 1-5 for each margin

Select output characteristic on mic-xxx/IU:

1. Press pushbuttons T1 and T2 simultaneously for 10 sec until flashing stops and both LEDs D1 and D2 are illuminated yellow.
2. Release buttons: LEDs flash green: falling output characteristic (20-4 mA / 10-0 V) LEDs flash red: rising output characteristic (4-20 mA / 0-10 V)

3. T1 chooses falling output characteristic T2 chooses rising output characteristic
4. Do not press any button for 20 sec: The programmed characteristic will be stored permanently within an EEPROM; mic-xxx/IU returns to its normal operating mode.

Remark: If an object is detected within the margins, both LEDs are illuminated green. If the distance of an object falls below the inner margin, LED D2 turns red. If no object is detected or the object is off the outer margin, LED D1 turns red.

When switching on the power supply mic-xxx/IU checks the load resistance, which is connected to the analogue output. It automatically decides which output mode to choose (voltage or current).

*** Quick adjust on mic-xxx/D/DD/IU:**

If the pushbuttons T1 and T2 are pressed simultaneously, the sensor saves the actual distance as the switching distance respectively the analogue window margin in to the EEPROM; the sensor returns to the normal operating mode immediately (learning function).

Pinning of plug connector:

All mic-sensors come with a 5-pin plug connector Binder Series 713

The pinning of the plug and the cable colours of the KSTx connector cables (to be ordered separately) can be found in the following table:

pin-nr.	/DD	/D	/IU	kleur
1	+UB	+UB	+UB	brown
2	S1	-	analogue	white
3	-UB	-UB	-UB	blue
4	S2	S	-	black
5	Contr.	Contr.	Contr.	grey

View onto plug (male):



- **0,36 mm-resolution**
- **5 different detection ranges (max. values from 30 to 6000 mm)**
- **3 outputs available**
 - 1 PNP switching outputs
 - 2 PNP switching outputs
 - analogue output
- **4 - 20 mA en 0 - 10V**
- **N.O. en N.C. selectable**
- **Automatic selection of voltage or current output**
- **Touchcontrol (settings by pushbuttons)**
- **Protects against short circuit and reverse polarity**

Ultrasonic proximity switches of the mic-family work on the principle of the echo runtime measurement.

The sensor emits short burst impulses. When hitting a target, these bursts are reflected and returned to the sensor. From the runtime between sending and receiving the sensor then calculates the distance to the detected object.

Depending on the output type the measured distance is either transformed into an analogue signal or the switching output is set, when the distance has fallen below the selected trip distance. All adjustments are made via 2 push-buttons which are located aside the housing (TouchControl). Three-colour-LED's indicate all possible operating states.

On devices with switching output the output function can be set to normally open (n.o.) or normally closed (n.c.)

The analogue signal of mic-sensors shows a very high accuracy and a minimal linearity error.

The output characteristic of the analogue signal can be set to rising or falling values, when an object approaches.

Common electrical and mechanical data	
Supply voltage U_B :	12 to 30 VDC, reverse polarity protected
Voltage ripple:	$\pm 10\%$
Current consumption:	$\leq 60\text{ mA}$ ($\leq 70\text{ mA}$ mic-xxx/IU)
Switching output mic-xxx/D and /DD:	PNP, $U_B - 2\text{ V}$, $I_{max} = 500\text{ mA}$ Protected against short circuit and reverse polarity, default function set to n.o.
Analogue output: mic-xxx/IU:	Current output 4 - 20 mA ($R_L = \leq 500\ \Omega$, $U_B \geq 20\text{ V}$; $R_L < 100\ \Omega$, $U_B \geq 12\text{ V}$) Voltage output 0 - 10 V ($R_L = \geq 100\text{ k}\ \Omega$, $U_B \geq 15\text{ V}$) Automatic selection by measuring R_L
Housing:	Bass-pipe, nickelized, (opt. stainless steel), thread M30*1,5
Control Elements (TouchControl):	2 pushbuttons, accessible aside the housing
Display Elements:	2 three-colour LED's (1 LED on mic-xxx/D) green: under operation red: distance below trip point or object outside selected windows margins yellow (on or blinking): programming
Operating temperature:	-20°C to +70°C
Storage temperature:	-40°C to +85°C
Connector type::	Universal plug Binder Series 713 material PBTP

Symbols:



