Operational manual

Ultrasonic proximity switch with two switched outputs

Product description

The lcs+ sensor offers a non-contact measurement of the distance to an object which must be positioned within the sensor’s detection zone. The switched outputs are set conditional upon the adjusted detect distances. Via the Teach-in procedure, the detect distances and operating modes can be adjusted. Two LEDs indicate operation and the state of the switched outputs.

Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl Adapter LCA-2 (optional accessory) and the LinkControl software for Windows.

Safety instructions

- Read the operating instructions prior to start-up.

- Connection, installation and adjustments may only be carried out by qualified staff.

- No safety component in accordance with the EU Machine Directive.

Use for intended purpose only

Ics-ultrasonic sensors are used for non-contact detection of objects.

Installation

- Mount the sensor at the place of fitting.

- Connect a connection cable to the M12 device plug.

Start-up

- Connect the power supply.

- Carry out sensor adjustment in accordance with the diagram.

Set switched output D1

- Place object at position 1.

- Press T1 for about 1 s.

- | LED D1 | LED D2 |
  | flash mutually | flashes |

- % change output characteristic press T1 for about 1 s.

Normal mode operation

- Wait for 10 s.

Further settings

- Activate/deactivate Teach-in

- Turn supply voltage OFF

- While pressing T1 turn supply voltage ON.

- Reset to factory setting

- Press T1 for about 13 s until both LEDs flash mutually.

- To change output characteristic press T1 for about 1 s.

- Wait for 10 s.

- Normal mode operation

Notes

- The sensors of the lcs+ family have a blind zone, within which a distance measurement is not possible.

- The lcs+ sensors are equipped with an internal temperature compensation. Due to the sensor’s self-heating, the temperature compensation reaches its optimum working point after approx. 30 minutes of operation.

- During normal operation a yellow LED signal of the corresponding output has connected.

- If no push-buttons are pressed for 20 seconds during parameter setting mode the made changes are stored and the sensor returns to

Synchronisation

If under multiple sensor operation the assembly distance falls below the values shown in Fig. 2, the internal synchronisation should be used. For this purpose interconnect each pin 5 of max. 10 sensors.

Normal mode operation

Factory setting

- Switched output on NOC.

- Detect distance at operating range and half operating range.

Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cables

Fig. 2: Assembly distances

Maintenance

microsonic sensors are maintenance-free. In case of excess caked-on dirt we recommend cleaning the white sensor surface

Carry out sensor adjustment in accordance with the diagram.

Further settings

- Further settings

- Set switched output D1

- Set switched output D2

- | LED D1 | LED D2 |
  | on: NOC/ NCC | |

- | LED D1 | LED D2 |
  | flashes | |

- | LED D1 | LED D2 |
  | on: NOC/ OFF: NCC | |

- | LED D1 | LED D2 |
  |обеспечен | |

- | LED D1 | LED D2 |
  | on: Teach-in activated | off: Teach-in deactivated |

- | LED D1 | LED D2 |
  | on: Teach-in deactivated | off: Teach-in activated |

- To activate or deactivate Teach-in press T1 for about 1 s.

- Wait for 10 s.

- Normal mode operation

- Normal mode operation

Set NOC/NCC D1

- Place object at position 1.

- Press T1 for about 3 s until both LEDs flash simultaneously.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Place object at position 2.

- Press T1 for about 1 s.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Press T1 for about 10 s until both LEDs stop flashing.

- % change output characteristic press T1 for about 1 s.

Normal mode operation

- Wait for 10 s.

Further settings

- Safety instructions

- Set switched output D2

- Safety instructions

Further settings

- Set switched output D2

- Forward indications

- Set NOC/NCC D2

- Place object at position 1.

- Press T2 for about 3 s until both LEDs flash simultaneously.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Place object at position 2.

- Press T2 for about 1 s.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Press T2 for about 5 s until both LEDs stop flashing.

- % change output characteristic press T2 for about 1 s.

Normal mode operation

- Wait for 10 s.

Further settings

- Set NOC/NCC D2

- Place object at position 1.

- Press T2 for about 3 s until both LEDs flash simultaneously.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Place object at position 2.

- Press T2 for about 1 s.

- | LED D1 | LED D2 |
  | both LEDs | both LEDs |

- Both LEDs flash mutually.

- Press T2 for about 10 s until both LEDs stop flashing.

- % change output characteristic press T2 for about 1 s.

Normal mode operation

- Wait for 10 s.
### Technical data

#### Operating voltage $U_{\text{op}}$
- 9.9 to 30 V DC, Class 2

#### No-load current consumption
- ≤ 60 mA

#### Housing
- PBT, Polyester, ultrasonic transducer: polyurethane foam, epoxy resin with glass content

#### Type of connection
- 5-pin M12 circular plug, PBT

#### Indicator
- 2 LEDs yellow/green (switched output set/not set)

#### Synchronization
- Internal synchronization up to 10 sensors

#### Operating temperature
- $-25^\circ\text{C}$ to $+70^\circ\text{C}$

#### Storage temperature
- $-40^\circ\text{C}$ to $+85^\circ\text{C}$

#### Weight
- 120 g

#### Switching hysteresis
- 200 mm

#### Switching frequency
- 10 Hz

#### Response time
- 100 ms

#### Time delay before availability
- 300 ms

#### Norm conformity
- EN 60947-5-2

#### Order no.
- lcs1000DD

#### Switched output
- 2 pnp, U_{op} = 2 V, $I_{\text{max}} = 2 \times 200$ mA

#### Norm conformity
- EN 60947-5-2

#### Note
- 1) Can be programmed with LinkControl

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**Fig. 3: Setting the detect point for different directions of movement of the object**

- The sensor can be reset to its factory setting (see «Sensor adjustment with Teach-in procedure»).
- Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl adapter (optional accessory) and the LinkControl software for Windows.

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**UL**

Enclosure Type 1

For use only in industrial machinery NFPA 79 applications.

The proximity switches shall be used with a Listed (CYJV/7) cable/connector assembly rated minimum 32 VDC, minimum 290 mA, in the final installation.

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The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not confirm any product features.