

microsonic

# EVERY THING ULTRA SONIC

Extract from our online catalogue:

Ics+ ultrasonic sensors

Current to: 2021-12-16



The new Ics+ ultrasonic sensors come in a very compact square-shaped housing - with analogue or switching output + IO-Link.

## HIGHLIGHTS

- › Very compact housing dimensions › only 62.2 mm x 62.2 mm x 36.7 mm
- › IO-Link interface › for support of the new industry standard
- › Synchronisation and multiplex mode › for simultaneous operation of up to ten sensors in close quarters
- › 8 m maximum detection range
- › UL Listed to Canadian and US safety standards
- › Smart Sensor Profiles › more transparency between IO-Link Devices

## BASICS

- › 1 Push-Pull switching output, or 2 pnp switching outputs
- › Analogue output 4–20 mA and 0–10 V › with automatic switching between current and voltage outputs
- › microsonic Teach-in by using button T1 and T2
- › 0.18 mm to 2.4 mm resolution
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC

# Description

## The Ics+ ultrasonic sensors

have a block-like plastic housing with a base area of only 62.2 x 62.2 mm and four fastening bores.

The sensors are Listed to applicable UL Standards and requirements by UL for Canada and the US.

## Two dual colour LEDs

show all operating statuses.

## Three output stages are available for selection:



1 Push-Pull switching output with pnp or npn switching technology



2 pnp switching outputs



1 analogue output 4–20 mA or 0–10 V

## Using the two Teach-in buttons T1 and T2

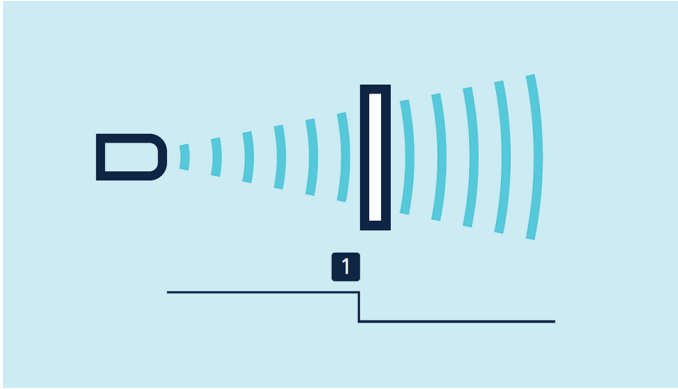
the Ics+ sensors can be easily set.

## The Ics+ sensors with switching output have three operating modes:

- › Single switching point
- › Two-way reflective barrier
- › Window mode

## Teach-in of a single switching point

- › Place object to be detected (1) at the desired distance
- › Push button T2 for about 3 seconds
- › Then push button T2 again for about 1 second

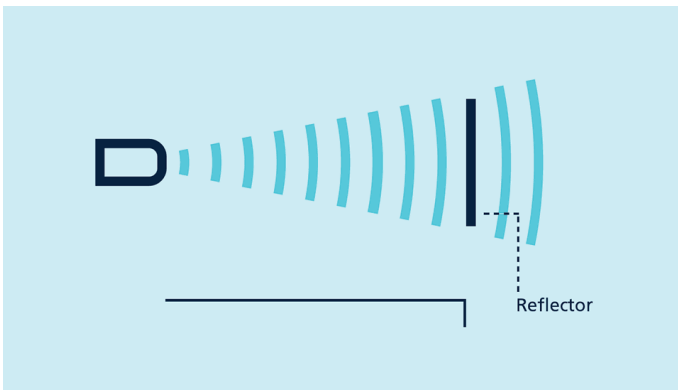


*Teach-in of a switching point*

### Teach-in of a two-way reflective barrier

with a fixed mounted reflector

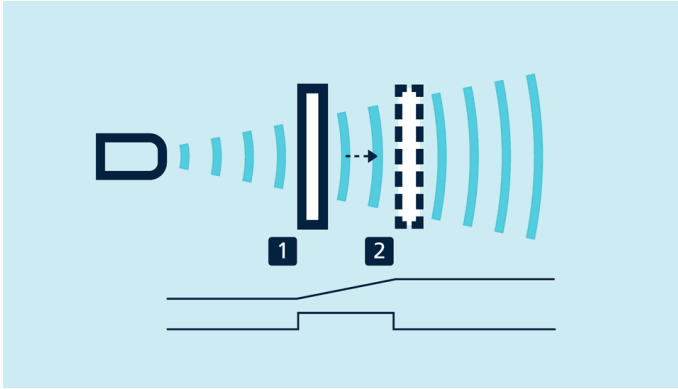
- › Push button T1 for about 3 seconds
- › Then push button T1 again for about 10 seconds



*Teach-in of a two-way reflective barrier*

### For setting the analogue output

- › Initially position the object to be detected to the sensor-close window limit (1)
- › Push button T1 for about 3 seconds
- › Then move the object to the sensor-distant window limit (2)
- › Then push button T1 again for about 1 second



*Teach-in of an analogue characteristic or a window with two switching points*

### For configuration of a window

with two switching points on a single switched output, the procedure is the same as setting the analogue.

### Analogue sensors

check the connected working resistance at the output and automatically switch to 4–20 mA current output or 0–10 V voltage output.

### NCC/NOC

and rising/falling analogue characteristics can also be set via the buttons.

### LinkControl

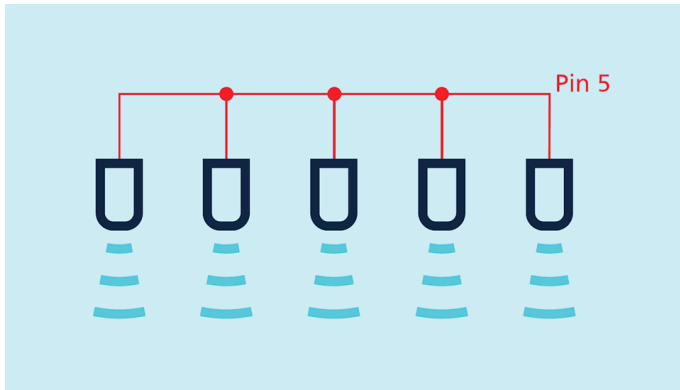
permits comprehensive parameterisation of lcs+ ultrasonic sensors via the **LinkControl adapter** LCA-2 which connects the sensors to the PC.



*Sensor connected to the PC via LCA-2 for programming*

### Easy to synchronise

If several lcs+ ultrasonic sensors are operated in one application, they can be synchronised via pin 5 to prevent.



*Synchronisation using pin 5*

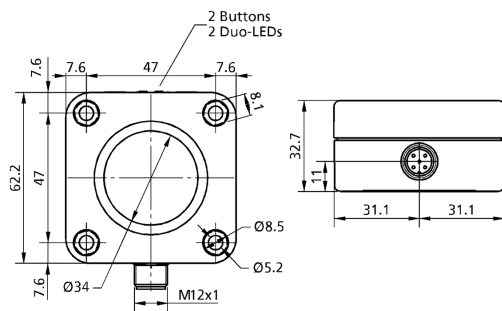
If more than 10 sensors must be synchronised, this can be carried out with the **SyncBox1** , which is available as an accessory. Synchronisation via pin 5 is also possible in IO-Link mode.

### IO-Link

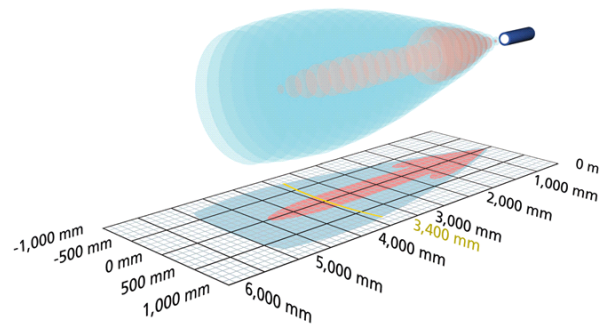
Ultrasonic sensors **Ics+340/F/A** and **Ics+600/F/A** have a Push-Pull switching output and support IO-Link in version 1.1 as well as the Smart Sensor profile.

# Ics+340/F/A

## scale drawing



## detection zone



1 x Push-Pull

5,000 mm

measuring range	350 - 5.000 mm
design	cuboidal
operating mode	IO-Link proximity switch/reflective mode reflective barrier window mode
particularities	IO-Link Smart Sensor Profile UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	120 kHz
blind zone	350 mm
operating range	3,400 mm
maximum range	5,000 mm
resolution	0.18 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA
type of connection	5-pin M12 initiator plug

# lcs+340/F/A

## outputs

output 1	switching output Push-Pull, $U_B-3\text{ V}$ , $-U_B+3\text{ V}$ , $I_{\max} = 100\text{ mA}$
switching frequency	4 Hz
response time	172 ms
delay prior to availability	< 380 ms

## inputs

input 1	com input synchronisation input
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## IO-Link

product name	lcs+340/F/A
product ID	32480
SIO mode support	yes
COM mode	COM2 (38,4 kBaud)
min. cycle time	43,2 ms
format of process data	32 Bit PDI
content of process data	Bit 0: initial state Pin 4; Bit 8-15: scale (Int. 8); Bit 16-31: measured value (Int. 16)
ISDU paramter	Identification, measuring configuration, switched output, filter, temperature compensation, operation
system commands	SP1 Teach-in, SP2 Teach-in, factory settings
Smart Sensor Profile	yes
IODD version	IODD version 1.1

## housing

material	PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	180 g

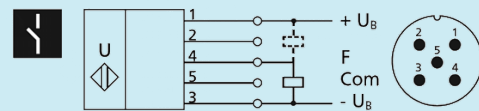


# lcs+340/F/A

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl IO-Link
Synchronisation	yes
multiplex	yes
indicators	2 x three-colour LED
particularities	IO-Link Smart Sensor Profile UL Listed

## pin assignment



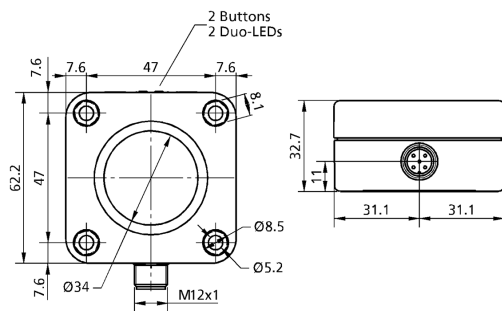
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**lcs+340/F/A**

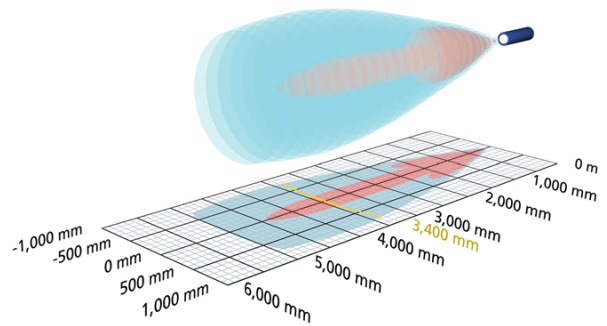
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# lcs+340/DD

## scale drawing



## detection zone



2 x pnp



5,000 mm

measuring range	350 - 5.000 mm
design	cuboidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	120 kHz
blind zone	350 mm
operating range	3,400 mm
maximum range	5,000 mm
resolution	0.18 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA

# lcs+340/DD

## outputs

output 1	switching output pnp: $I_{\max} = 200 \text{ mA}$ ( $U_B = 2\text{V}$ ) NOC/NCC adjustable, short-circuit-proof
output 2	switching output pnp: $I_{\max} = 200 \text{ mA}$ ( $U_B = 2\text{V}$ ) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	50 mm
switching frequency	4 Hz
response time	172 ms
delay prior to availability	< 380 ms

## inputs

input 1	com input synchronisation input
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## housing

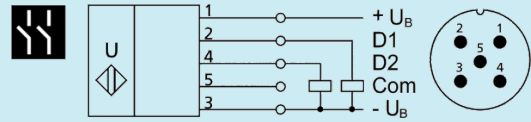
material	PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	180 g

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl
Synchronisation	yes
multiplex	yes
indicators	2 x three-colour LED
particularities	UL Listed

# Ics+340/DD

## pin assignment



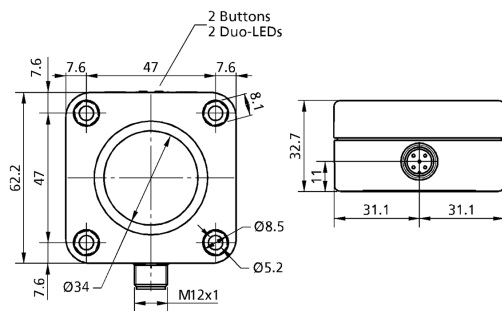
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Ics+340/DD

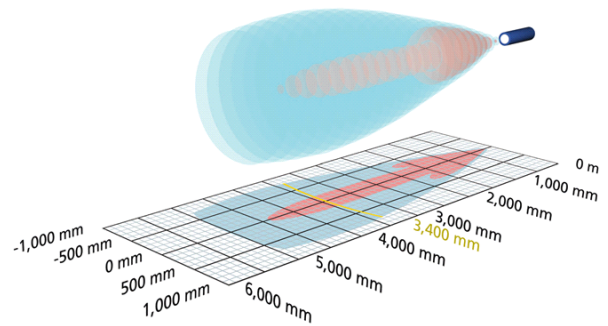
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# lcs+340/IU

## scale drawing



## detection zone



1 x analogue 4-20 mA + 0-10 V



5,000 mm

measuring range	350 - 5.000 mm
design	cuboidal
operating mode	analogue distance measurements
particularities	UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	120 kHz
blind zone	350 mm
operating range	3,400 mm
maximum range	5,000 mm
resolution	0.18 mm to 1.5 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA
type of connection	5-pin M12 initiator plug

# lcs+340/IU

## outputs

output 1	analogue output current: 4-20 mA / voltage: 0-10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling
response time	172 ms
delay prior to availability	< 450 ms

## inputs

input 1	com input synchronisation input
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## housing

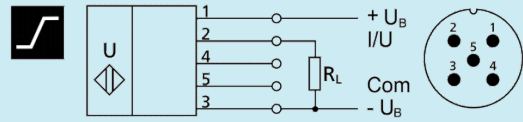
material	PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	180 g

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl
Synchronisation	yes
multiplex	yes
particularities	UL Listed

# Ics+340/IU

## pin assignment



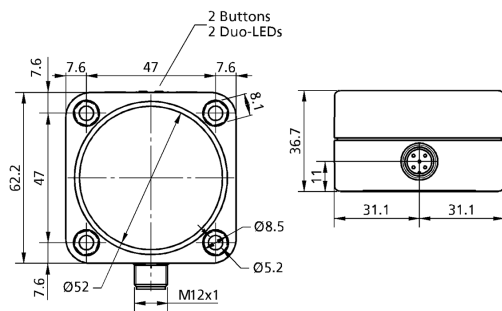
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Ics+340/IU

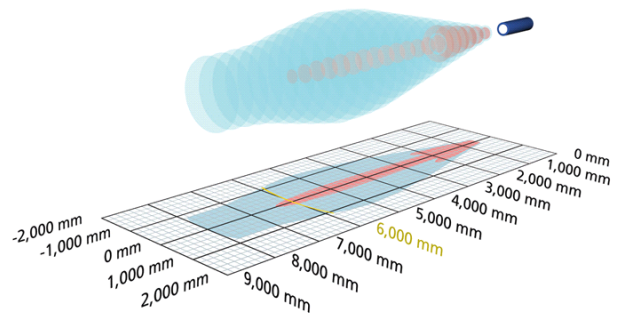
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# lcs+600/F/A

## scale drawing



## detection zone



1 x Push-Pull

8,000 mm

measuring range	600 - 8.000 mm
design	cuboidal
operating mode	IO-Link proximity switch/reflective mode reflective barrier window mode
particularities	IO-Link Smart Sensor Profile UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	80 kHz
blind zone	600 mm
operating range	6,000 mm
maximum range	8,000 mm
resolution	0.18 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA
type of connection	5-pin M12 initiator plug



# lcs+600/F/A

## outputs

output 1	switching output Push-Pull, $U_B-3\text{ V}$ , $-U_B+3\text{ V}$ , $I_{\max} = 100\text{ mA}$
switching frequency	3 Hz
response time	240 ms
delay prior to availability	< 450 ms

## inputs

input 1	com input synchronisation input
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## IO-Link

product name	lcs+
product ID	32580
SIO mode support	yes
COM mode	COM2 (38,4 kBaud)
min. cycle time	60,8 ms
format of process data	32 Bit PDI
content of process data	Bit 0: initial state Pin 4; Bit 8-15: scale (Int. 8); Bit 16-31: measured value (Int. 16)
ISDU paramter	Identification, measuring configuration, switched output, filter, temperature compensation, operation
system commands	SP1 Teach-in, SP2 Teach-in, factory settings
Smart Sensor Profile	yes
IODD version	IODD version 1.1

## housing

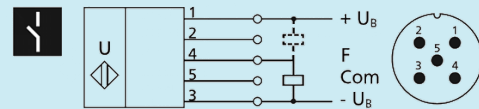
material	PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	240 g

# lcs+600/F/A

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl IO-Link
Synchronisation	yes
multiplex	yes
indicators	2 x three-colour LED
particularities	IO-Link Smart Sensor Profile UL Listed

## pin assignment



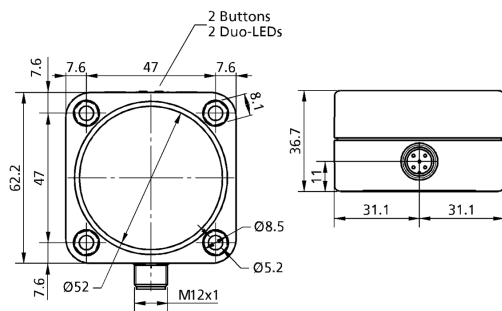
order no.

**lcs+600/F/A**

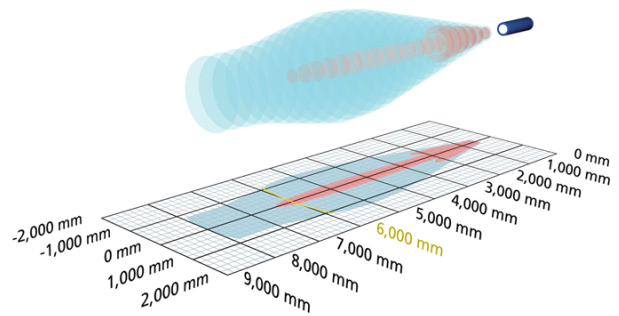
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# lcs+600/DD

## scale drawing



## detection zone



2 x pnp



8,000 mm

measuring range	600 - 8.000 mm
design	cuboidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	80 kHz
blind zone	600 mm
operating range	6,000 mm
maximum range	8,000 mm
resolution	0.18 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA
type of connection	5-pin M12 initiator plug

# lcs+600/DD

## outputs

output 1	switching output pnp: $I_{\max} = 200 \text{ mA}$ ( $U_B = 2\text{V}$ ) NOC/NCC adjustable, short-circuit-proof
output 2	switching output pnp: $I_{\max} = 200 \text{ mA}$ ( $U_B = 2\text{V}$ ) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	100 mm
switching frequency	3 Hz
response time	240 ms
delay prior to availability	< 450 ms

## inputs

input 1	com input synchronisation input
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## housing

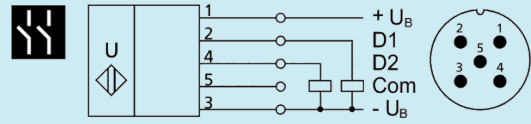
material	PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	240 g

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl
Synchronisation	yes
multiplex	yes
indicators	2 x three-colour LED
particularities	UL Listed

# lcs+600/DD

## pin assignment



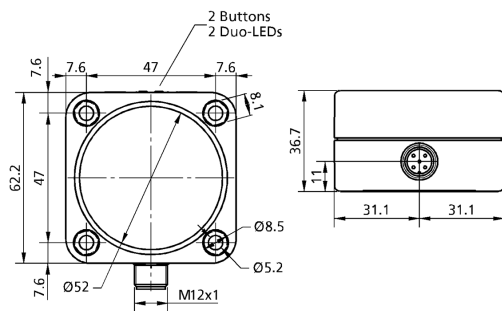
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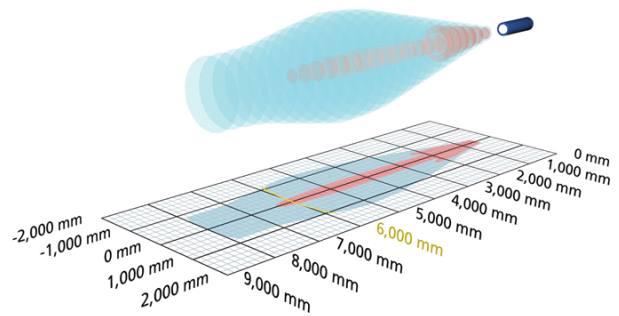
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# lcs+600/IU

## scale drawing



## detection zone



1 x analogue 4-20 mA + 0-10 V

8,000 mm

measuring range	600 - 8.000 mm
design	cuboidal
operating mode	analogue distance measurements
particularities	UL Listed

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	80 kHz
blind zone	600 mm
operating range	6,000 mm
maximum range	8,000 mm
resolution	0.18 mm to 2.4 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_B$	9 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 60 mA
type of connection	5-pin M12 initiator plug

# lcs+600/IU

## outputs

output 1	analogue output current: 4-20 mA / voltage: 0-10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling
response time	240 ms
delay prior to availability	< 450 ms

## inputs

input 1	com input synchronisation input
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## housing

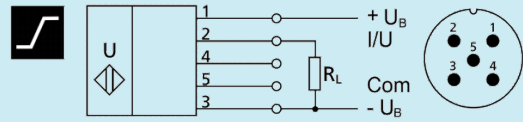
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operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	240 g

## technical features/characteristics

temperature compensation	yes
controls	2 push-buttons
scope for settings	Teach-in via push-button LCA-2 with LinkControl
Synchronisation	yes
multiplex	yes
particularities	UL Listed

# Ics+600/IU

## pin assignment



order no.

Ics+600/IU

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