microsonic
Ultrasonic Sensors

A comprehensive solution for industrial applications

ULTRASONIC SENSORS

Extract from our online catalogue:

zws ultrasonic sensors

Current to: 2013-07-30

microsonic gmbh, hauert 16, d-44227 dortmund, telephone: +49 231 975151-0, fax: +49 231 975151-51, e-mail: info@microsonic.de

The zws sensors are among the smallest ultrasonic sensors available on the market in colloidal housings with teach-in buttons.

Highlights

- **Small ultrasonic sensor in colloidal housing :::** *permits entirely new solutions*
- **Installation-compatible with many optical sensors :::** *a true alternative for critical applications*
- **Up to 250 Hz switching frequency :::** *for fast sampling*
- **Optionally with SoundPipe waveguide attachment :::** *for picky measurement tasks*
- **Synchronisation input :::** *for simultaneous operation of up to ten sensors in close quarters*

Basics

- **1 switching output in pnp or npn variant :::** *for all controllers*
- **Analogue output 4–20 mA or 0–10 V :::** *for analogue distance measurements*
- **5 Detection ranges with a measurement range of 20 mm to 1 m :::** *individually appropriate for the use case*
- **microsonic teach-in using a button :::** *for simple, uniform commissioning*
- **0.08 mm resolution :::** *for the highest precision possible*
- **20–30 V operating voltage :::** *for use on a variety of voltage networks*

Description

The compact sensor housing

of the zws-15 has a 20 mm x 32 mm x 12 mm dimension. The housing's design and mounting is compatible with many optical sensors. This facilitates the conversion to ultrasonic sensors for critical applications.

For the zws sensor range,

2 output versions and 3 detection ranges are available:

1 switching output optionally in pnp or npn circuitry

1 analogue output 4-20 mA or 0-10 V

The teach-in button

on the sensor's top facilitates the sensor's comfortable setting.

2 LEDs

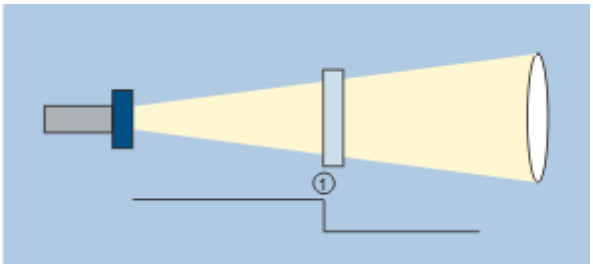
in the sensor housing's upper half indicate the switched output and respectively the analogue output states.

The zws sensors with switched output have 3 operating modes:

- Single detect point
- Two-way reflective barrier
- Window mode

The switched output is set by:

positioning the object to be detected within the desired distance (1) to the sensor, pressing the button for approx. 3 seconds and then pressing it once more for approx. 1 second – ready.

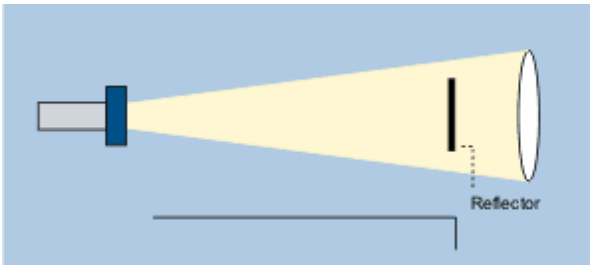


Teach-in of a detect point

A two-way reflective barrier

can be set with the help of a permanently mounted reflector by mounting the zws sensor and the reflector, then pressing the button for approx.

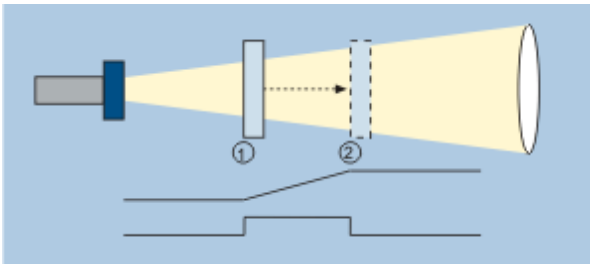
3 seconds and then pressing it once more for approx. 13 seconds. Now, the two-way reflective barrier has been set.



Teach-in of a two-way reflective barrier

The analogue output is set by:

initially positioning the object to be detected on the sensor-close window limit (1), pressing the button for approx. 3 seconds, shifting the object to the sensor-far window limit and pressing the button once more for approx. 1 second – ready.



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

For setting a window

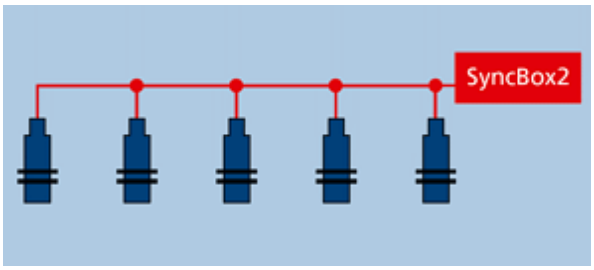
with two detect points on a single switched output, the procedure is the same as setting the analogue.

The NCC/NOC function and the rising/falling analogue characteristic

can also be set via the button.

The control input on pin 2

can be used to synchronise multiple zws sensors together. The SyncBox2 available as an accessory generates a synchronisation signal output on pin 2. This permits up to 50 zws sensors to be autonomously synchronised (see under Accessories).



Synchronisation of up to 50 zws sensors

The sound fields of all zws sensors

have been able to be considerably reduced in diameter. The size of the blind zone is only 20 mm.

High counting frequencies, short response times - no problem for the zws-7 ultrasonic sensor

zws-7: 250 Hz switching frequency for fast measurement

At a maximum detection range of 100 mm, the zws-7 can achieve a switching frequency of 250 Hz.

This allows both detection of objects with a high counting frequency and extremely narrow gaps between two objects at fast machinery speeds. The zws-7 responds under **3 ms**.

Additionally fitting the new SoundPipe to the zws-7 markedly raises the power to detect narrow gaps between two objects at high machine speeds.

Fast zws-7 - Fast zws-7/-15 with SoundPipe

The zws-7, with a 250 Hz switching frequency, is particularly suitable for counting tasks at high machine speeds.

Technical data:

Operating range: 70 mm

Maximum range: 100 mm

Switching frequency: 250 Hz

Response time: < 3 ms

zws-15 with SoundPipe - 1st place for sound field focusing (e.g. for level control)

Brings on intensively bundled sound field directly to the measuring point

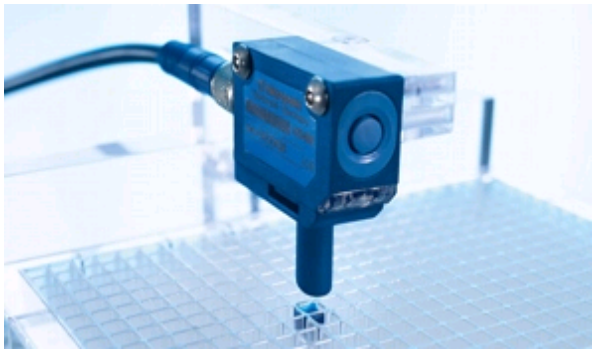
The SoundPipe can be used with any zws-15 or zws-7 sensor. It directs sound to the measuring point thus allowing measurements to be taken in drill holes and openings with diameters under **5 mm**.

Measurement can be carried out directly before the sound exit opening, since the blind zone is inside the SoundPipe.

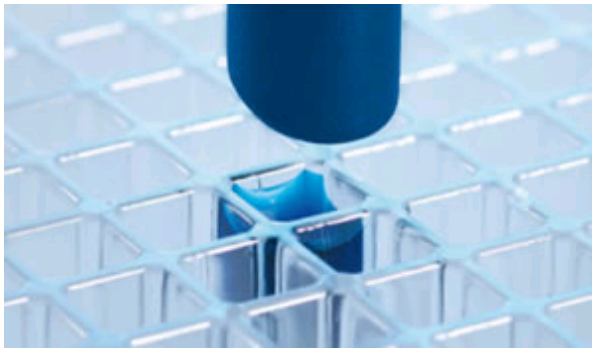
The SoundPipe is attached to the front of the zws-15 or zws-7 sensor and fastened with plastic adhesive (see under accessories).

A typical field of application is measuring levels in microplate wells which are used in medical analysis technology. The SoundPipe can be directly placed over the opening; this makes exact positioning that much easier. The attachment can also be used in scanning gaps of only a few millimetres in width between two objects.

The zws sensors are ideal for probing of circuit boards and wafers in the electronic industry or for use in packaging machines in which high-transparency films must be detected.

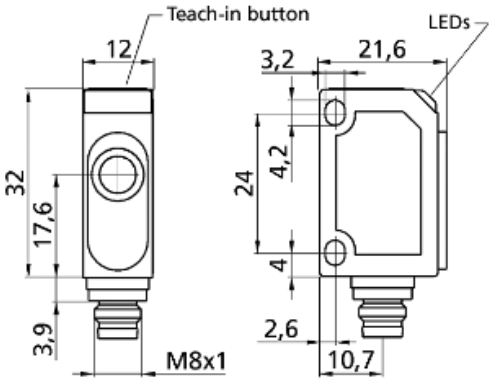
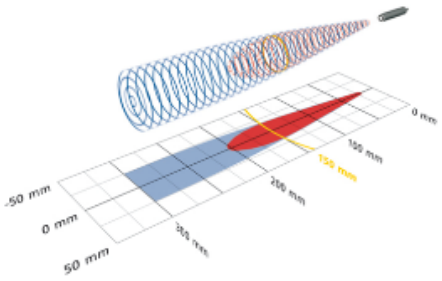


With the SoundPipe, the zws-15 sensor can measure fill levels in the smallest of openings.



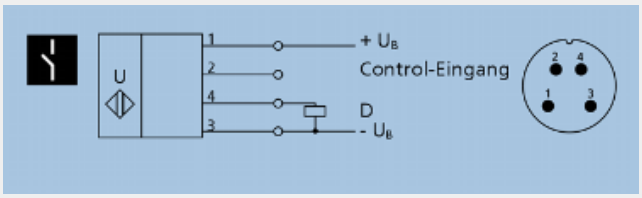
The SoundPipe is directly positioned over the measuring point.

zws-15/CD/QS

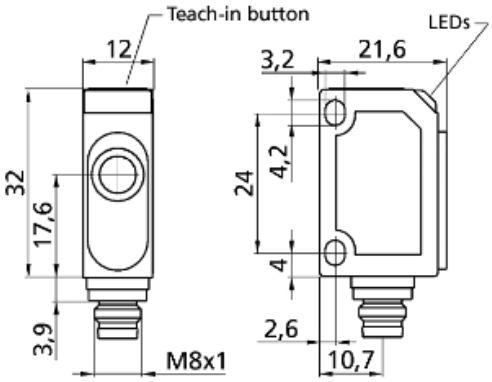
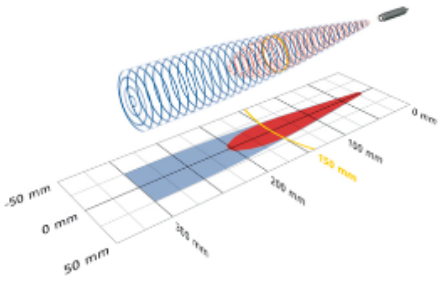
scale drawing	detection zone
	

1 x pnp	250 mm
operating range	20 - 150 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
maximum range	250 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	25 mA
type of connection	4-pin M8 initiator plug

zws-15/CD/QS

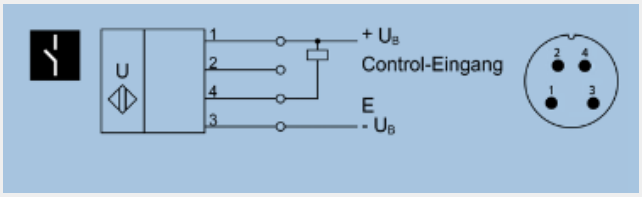
outputs	
output 1	switching output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
further versions	high chemical resistance cable connection (on request)
further versions	crz-15/CD/QS zws-15/CD/QS /K0.15 zws-15/CD/QS /K10,0
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-15/CE/QS

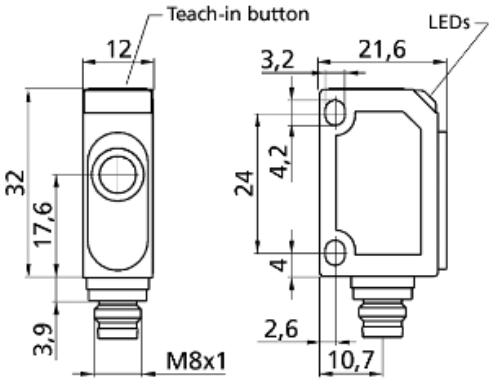
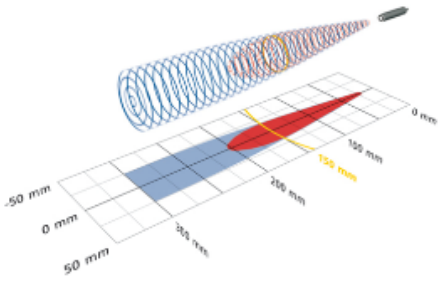
scale drawing	detection zone
	

1 x npn	250 mm
operating range	20 - 150 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
maximum range	250 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	25 mA
type of connection	4-pin M8 initiator plug

zws-15/CE/QS

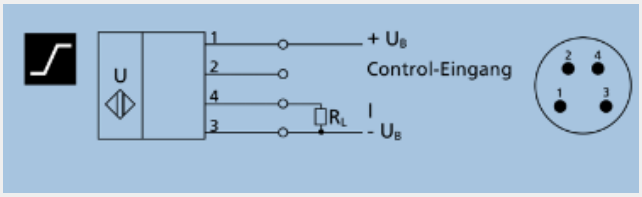
outputs	
output 1	switching output npn: I_{max} = 200 mA ($-U_B$+2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-15/CI/QS

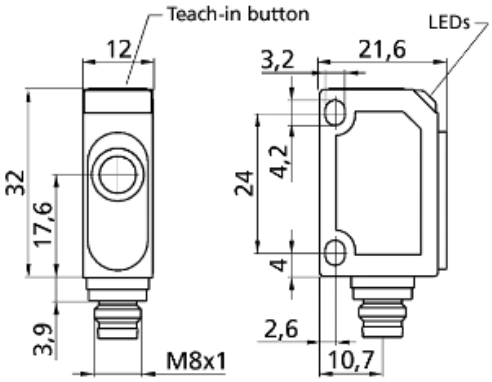
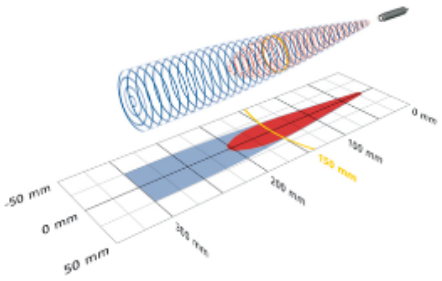
scale drawing	detection zone
	

1 x analogue 4-20 mA	250 mm
operating range	20 - 150 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
maximum range	250 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.056 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	25 mA
type of connection	4-pin M8 initiator plug

zws-15/CI/QS

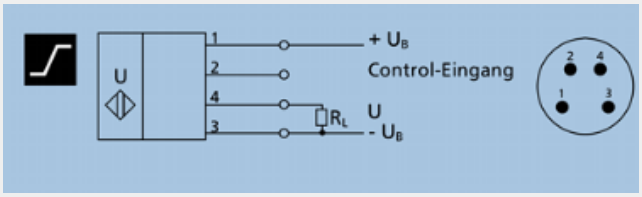
outputs	
output 1	analogue output current: 4-20 mA switchable rising/falling
response time	50 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
ultrasonic transducer	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	10 g
further versions	high chemical resistance
further versions	zws-15/SI/CI/QS crz-15/CI/QS
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-15/CU/QS

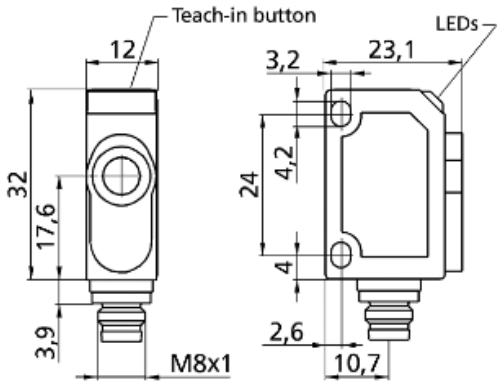
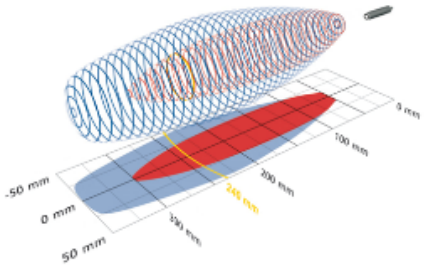
scale drawing	detection zone
	

1 x analogue 0-10 V	250 mm
operating range	20 - 150 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
maximum range	250 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.056 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	25 mA
type of connection	4-pin M8 initiator plug

zws-15/CU/QS

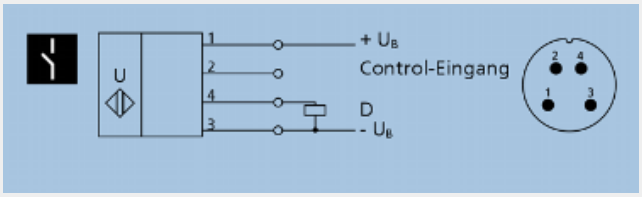
outputs	
output 1	analogue output voltage: 0-10 V, short-circuit-proof switchable rising/falling
response time	50 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
further versions	high chemical resistance
further versions	zws-15/SI/CU/QS crz-15/CU/QS
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-24/CD/QS

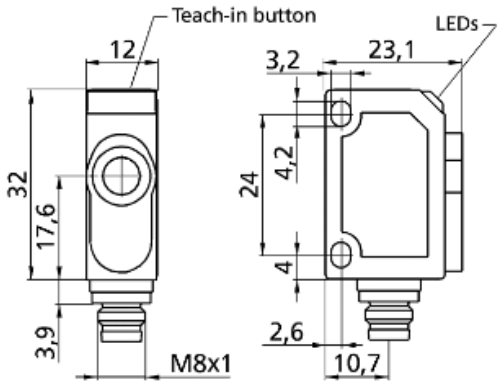
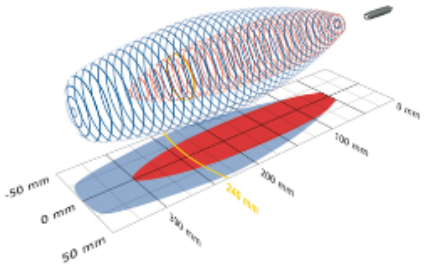
scale drawing	detection zone
	

1 x pnp	350 mm
operating range	50 - 240 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	50 mm
operating range	240 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-24/CD/QS

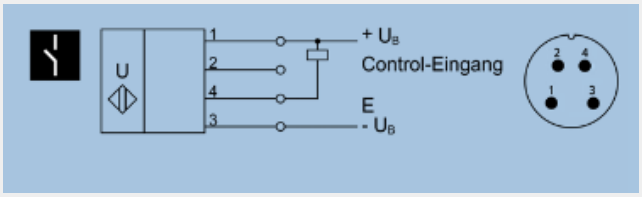
outputs	
output 1	switching output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-24/CE/QS

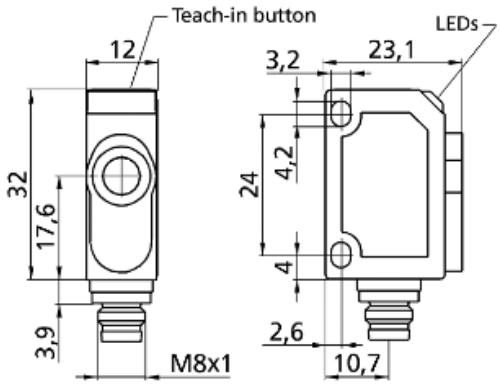
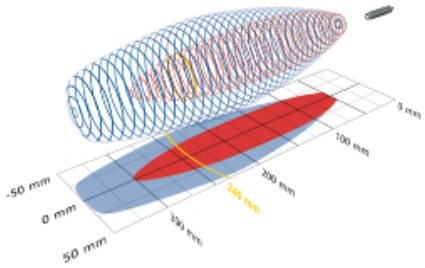
scale drawing	detection zone
	

1 x npn	350 mm
operating range	50 - 240 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	50 mm
operating range	240 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-24/CE/QS

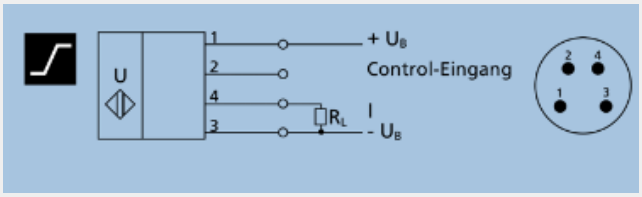
outputs	
output 1	switching output npn: I_{max} = 200 mA ($-U_B$+2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-24/CI/QS

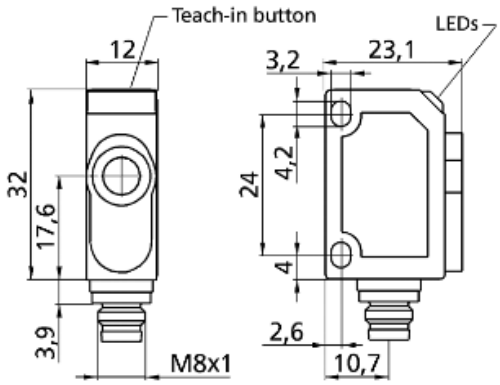
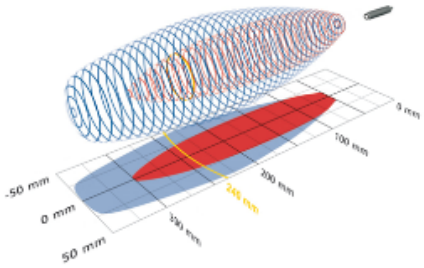
scale drawing	detection zone
	

1 x analogue 4-20 mA	350 mm
operating range	50 - 240 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	50 mm
operating range	240 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.037 mm to 0.072 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-24/CI/QS

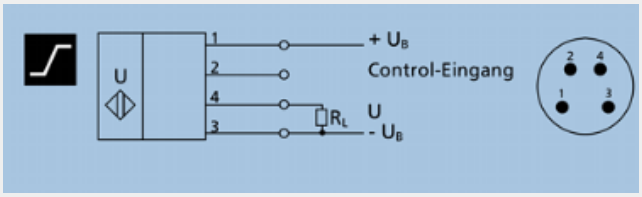
outputs	
output 1	analogue output current: 4-20 mA switchable rising/falling
response time	50 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
ultrasonic transducer	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	10 g
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-24/CU/QS

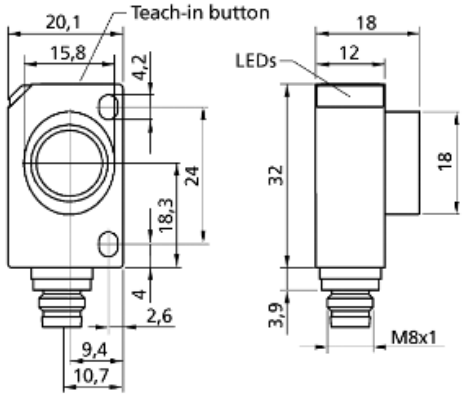
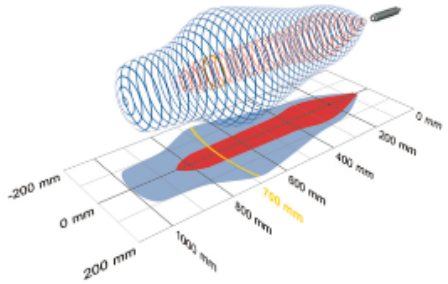
scale drawing	detection zone
	

1 x analogue 0-10 V	350 mm
operating range	50 - 240 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	50 mm
operating range	240 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.037 mm to 0.072 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-24/CU/QS

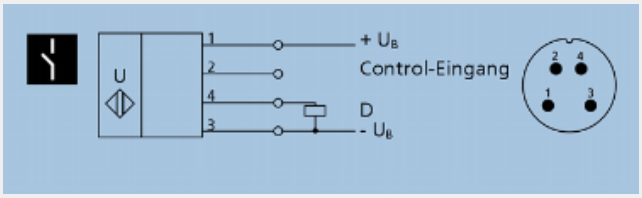
outputs	
output 1	analogue output voltage: 0-10 V, short-circuit-proof switchable rising/falling
response time	50 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-70/CD/QS

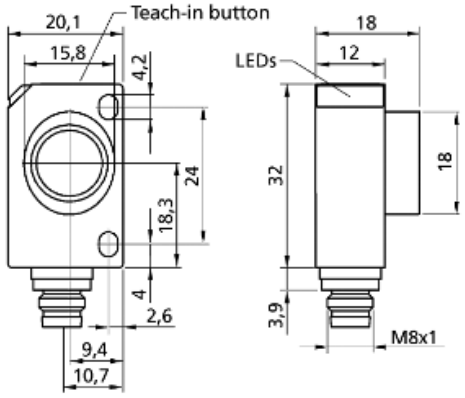
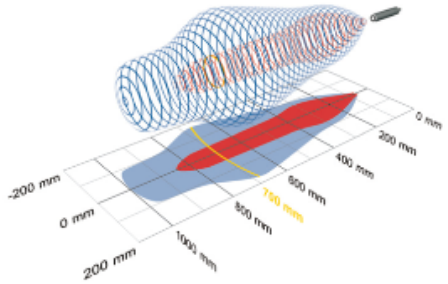
scale drawing	detection zone
	

1 x pnp	1,000 mm
operating range	120 - 700 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal type
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	300 kHz
blind zone	120 mm
operating range	700 mm
maximum range	1,000 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.08 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-70/CD/QS

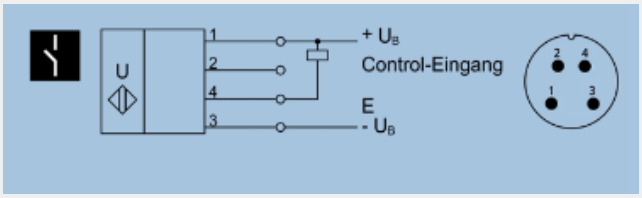
outputs	
output 1	switching output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	14 Hz
response time	42 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal type
documentation (download)	
pin assignment	

zws-70/CE/QS

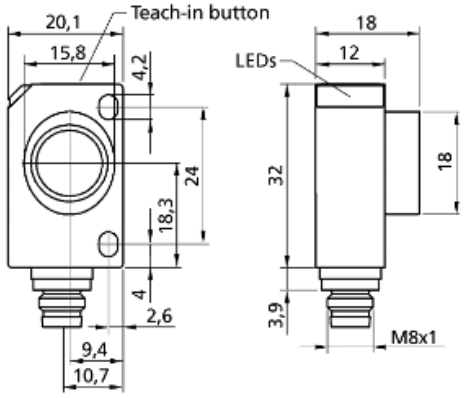
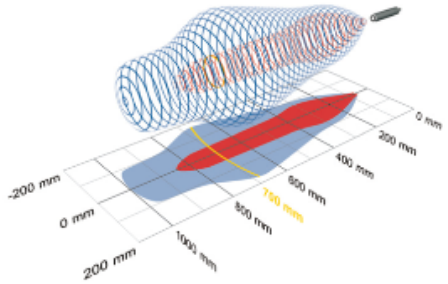
scale drawing	detection zone
	

1 x npn	1,000 mm
operating range	120 - 700 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal type
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	300 kHz
blind zone	120 mm
operating range	700 mm
maximum range	1,000 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.08 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-70/CE/QS

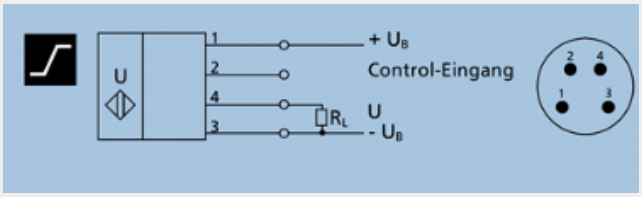
outputs	
output 1	switching output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	14 Hz
response time	42 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal type
documentation (download)	
pin assignment	

zws-70/CU/QS

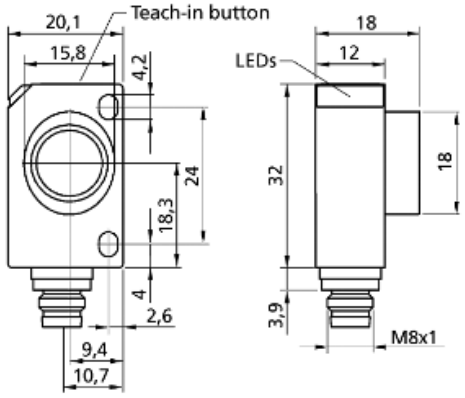
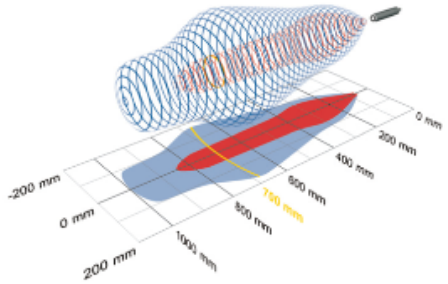
scale drawing	detection zone
	

1 x analogue 0-10 V	1,000 mm
operating range	120 - 700 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal type
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	300 kHz
blind zone	120 mm
operating range	700 mm
maximum range	1,000 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.037 mm to 0.215 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-70/CU/QS

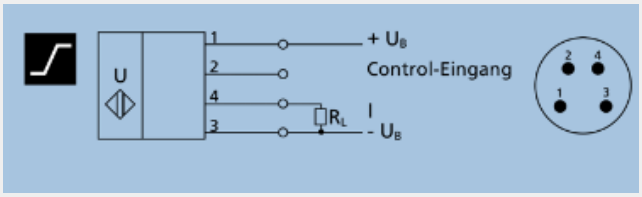
outputs	
output 1	analogue output voltage: 0-10 V, short-circuit-proof switchable rising/falling
response time	70 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal type
documentation (download)	
pin assignment	

zws-70/CI/QS

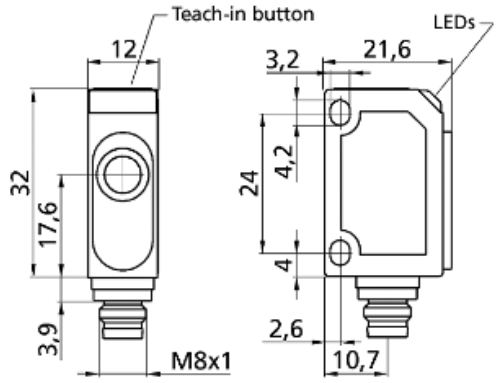
scale drawing	detection zone
	

1 x analogue 4-20 mA	1,000 mm
operating range	120 - 700 mm
design	colloidal
operating mode	analogue distance measurements
particularities	small colloidal type
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	300 kHz
blind zone	120 mm
operating range	700 mm
maximum range	1,000 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.037 mm to 0.215 mm, depending on the analogue window
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-70/CI/QS

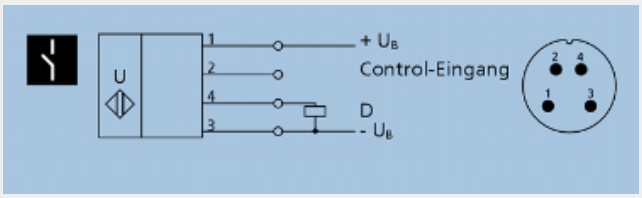
outputs	
output 1	analogue output current: 4-20 mA switchable rising/falling
response time	70 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
ultrasonic transducer	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	10 g
technical features/characteristics	
temperature compensation	yes
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: object in the window
particularities	small colloidal type
documentation (download)	
pin assignment	

zws-7/CD/QS

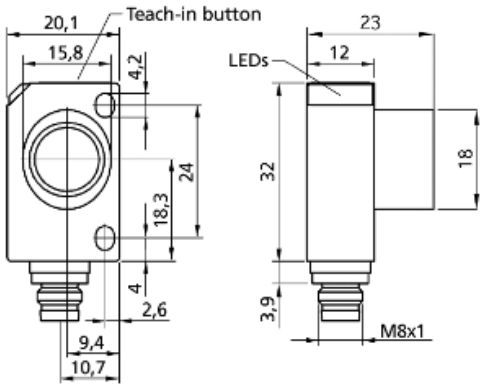
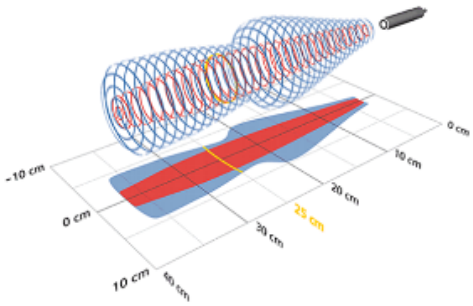
scale drawing	detection zone
	

1 x pnp	100 mm
operating range	20 - 70 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	250 Hz switching frequency small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	70 mm
maximum range	100 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.08 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-7/CD/QS

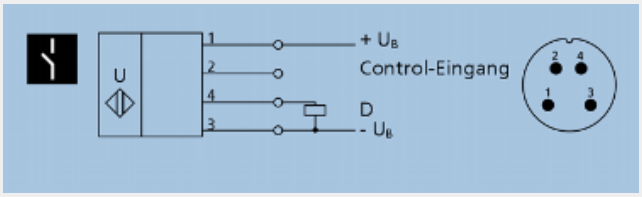
outputs	
output 1	switching output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	250 Hz
response time	3 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	250 Hz switching frequency small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-25/CD/QS

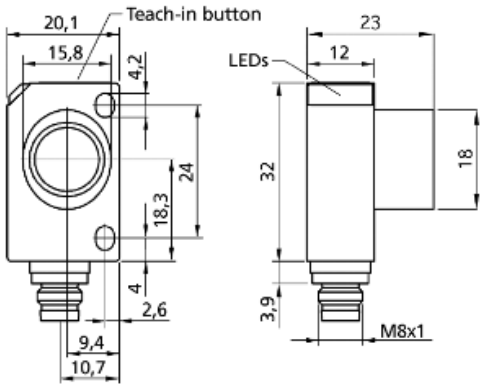
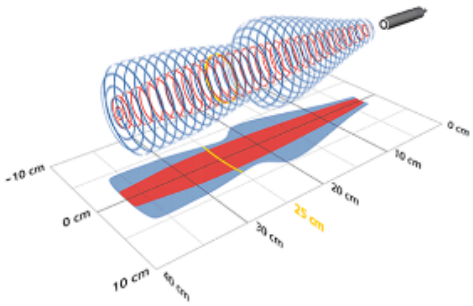
scale drawing	detection zone
	

1 x pnp	350 mm
operating range	30 - 250 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	320 kHz
blind zone	30 mm
operating range	250 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	35 mA
type of connection	4-pin M8 initiator plug

zws-25/CD/QS

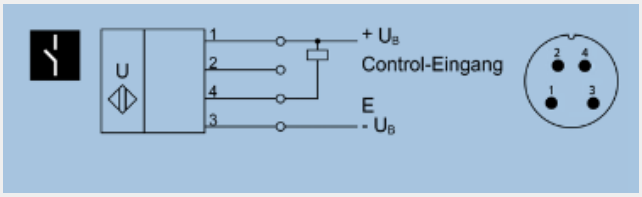
outputs	
output 1	switching output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-25/CE/QS

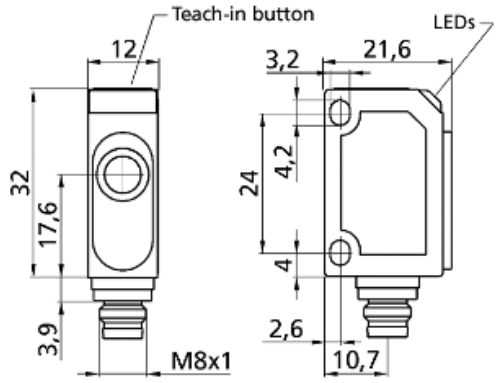
scale drawing	detection zone
	

1 x npn	350 mm
operating range	30 - 250 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	320 kHz
blind zone	30 mm
operating range	250 mm
maximum range	350 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.20 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	35 mA
type of connection	4-pin M8 initiator plug

zws-25/CE/QS

outputs	
output 1	switching output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	25 Hz
response time	24 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	small colloidal design narrow sound field
documentation (download)	
pin assignment	

zws-7/CE/QS

scale drawing	detection zone
	

1 x npn	100 mm
operating range	20 - 70 mm
design	colloidal
operating mode	proximity switch/reflective mode reflective barrier window mode
particularities	250 Hz switching frequency small colloidal design narrow sound field
ultrasonic -specific	
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	70 mm
maximum range	100 mm
angle of beam spread	please see graphics detection zone
resolution/sampling rate	0.08 mm
reproducibility	± 0.15 %
accuracy	temperature drift 0.17 %/K
electrical data	
operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	30 mA
type of connection	4-pin M8 initiator plug

zws-7/CE/QS

outputs	
output 1	switching output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
switching hysteresis	2.0 mm
switching frequency	250 Hz
response time	3 ms
delay prior to availability	< 300 ms
inputs	
input 1	synchronisation input
description	external synchronisation from rectangular signal with a defined pulse width
housing	
material	ABS
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	10 g
technical features/characteristics	
temperature compensation	no
controls	1 push-button
scope for settings	Teach-in via push-button
synchronization	yes
multiplex	no
indicators	1 x LED green: working, 1 x LED yellow: switch status
particularities	250 Hz switching frequency small colloidal design narrow sound field
documentation (download)	
pin assignment