Ultrasonic sensors

Reliable on almost all surfaces

UT 20
from Page 571

UT 20-S – miniature ultrasonic sensors with soundpipe
- *Reliable detection through the smallest of openings and drilled holes*
- *Ideal for measuring filling levels of microplates and for scanning circuit boards*
- *Small housings for installation in smallest of spaces*
- *PNP, NPN or analogue output options*
- *>> Page 571*

UT 20 – miniature ultrasonic sensors
- *Small housing for installation in smallest of spaces*
- *High scanning distances of up to 700 mm with with compact miniature housing*
- *PNP, NPN or analogue output options*
- *>> Page 575*

UT 12
from Page 587

UT 12 – M12 ultrasonic sensors
- *Robust metal housings for harsh operating conditions*
- *Simple installation with universal M12 standard thread*
- *Simple sensor setting via control input*
- *>> Page 587*

UT/UM 18
from Page 591

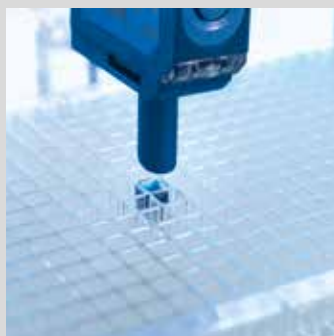*UT/UM 18 – M18 ultrasonic sensors*
- *Robust brass or stainless steel housings for harsh operating conditions*
- *Simple installation with universal M18 standard thread*
- *Simple sensor setting via control input*
- *>> Page 591*

Ultrasonic sensors may be a useful alternative where optical sensors come up against their physical limits. This applies, for example, for objects with uneven surfaces or under difficult ambient conditions, or with highly transparent media as well as moving, highly reflective liquid surfaces. Typical uses of ultrasonic sensors are therefore checking the presence of highly transparent foils and measuring the filling levels in liquid containers. A major advantage of ultrasonic sensors is the absolutely reliable background suppression resulting from their sound time-of-flight measurement principle.

The new ultrasonic sensor with soundpipe (UT 20S), in its very compact cubic housing, is a special product variant. As a result of its narrow sound cone, it allows the detection of objects even through the smallest of openings and drilled holes with a diameter of less than 5 mm. This makes it ideal for special applications, such as level measurement in the wells of microplates in medical analysis systems or for scanning circuit boards in the electronics industry.

The ultrasonic sensors of the UMT 30 series are real multifunctional artists. A three-digit display makes all sensor settings easy for users. The add-on menu with numerous supplementary functions, e.g. the synchronisation of several sensors or multiplex operation, in which several sensors measure after one another in ascending order, allows the UMT 30 to offer extremely flexible use for a wide range of applications.

The UT 20-S measuring levels in microplate wells.

Deflection mirrors are available for deflecting the sound beam when machine space is limited.

UMT 30

from Page 601

UMT 30 – M30 ultrasonic sensors
with display
- *Long scanning distances up to 6 m*
- *Simple adjustment and direct*
  measurement value output via display
- *Automatic synchronisation and multiplex*
  operation for the simultaneous operation
  of up to 10 sensors
- *Numerous supplementary functions*
  (add-on menu)
- *>> Page 601*

🔴🟡 made in Germany

TYPICAL ULTRASONIC SENSORS

- Reliable detection of objects with critical surfaces and highly transparent objects

- Available in cubic (32 x 20 x 12 mm) or cylindrical (M12/M18/M30) housing options

- Simple adjustment via teach-in, control input or display

- PNP, NPN or analogue output options

- Tight metal or plastic housings (IP 67 & IP 65)

- Wide range of mounting accessories

| Ultrasonic Sensors – Product Overview				
	Adjustment	Scanning distances	Special features	Page
UT 20	Teach-in	140 mm / 150 mm / 240 mm / 700 mm	Ultrasonic sensors with soundpipe, PNP, NPN, analogue output	571
UT 12	Via control input	400 mm	PNP, NPN, analogue output	587
UT/UM 18	Via control input	250 mm / 300 mm / 800 mm	Variants with stainless steel housings, PNP, NPN, analogue output	591
UMT 30	Teach-in or display	350 mm / 1300 mm / 3400 mm / 6000 mm	Display, PNP, 2 x PNP or analogue output	601

Ultrasonic sensors
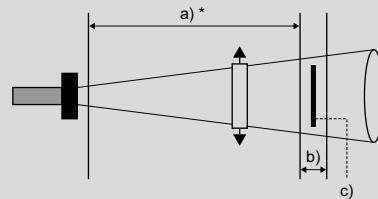
System description

Method of function

Ultrasonic diffuse types operate on the basis of echo time-of-flight measurement. An ultrasonic pulse emitted by the sensor is reflected when it hits an object. The sensor calculates the distance from the time elapsed between emission of the ultrasonic pulse and receipt of the echo. Depending on the power amplifier, the measured distance is converted to a current or voltage signal (analogue sensor) proportional to the distance or the switching output is activated, depending on the set switching point.

Applications
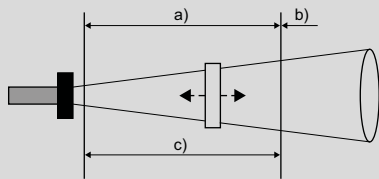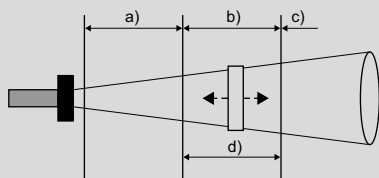
a) Output on
b) Output off
c) Adjusted switching distance
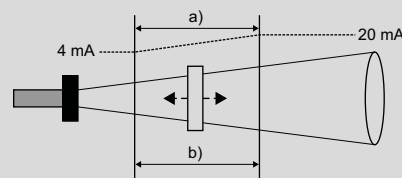
As a reflex scanner (diffuse type)
The classic operating mode uses background suppression, superior to other sensor principles. The switching output is activated when the object is located within the set switching distance. The switching point is subject to a hysteresis. This operating mode is suitable, for example, for detecting objects on a conveyor belt or for checking presence.

a)* Output on
b) Configured window
c) Reflector
* No object = output off

As a barrier or reflex switch
An ultrasonic sensor is used like a light barrier here, though no special reflector is employed (a piece of sheet metal is entirely sufficient here). For this purpose, the sensor in window mode is set in such a way that the reflector is located within the window. The ultrasonic reflex switch provides a signal as soon as an object is completely covered by the reflector. Whereby it is irrelevant whether the object absorbs the sound or even deflects it away. This operating mode is used for poorly detected material with irregular surfaces, e. g. foam.

a) Output off
b) Output on
c) Output off
d) Configured window

In window mode
The switching output is only activated when the object is located within a window that has been defined by setting two window limits. This can be used to monitor, for example, the correct bottle size in a crate of drinks. Bottles that are too tall or too short are diverted out.

a) Linear output
b) Configured analogue window

4 mA   20 mA

Ultrasonic sensors with analogue output
In these models a voltage (0…10 V) or current (4…20 mA) is transmitted in proportion to the object distance. The window limits can be defined and selected between falling and rising characteristic curves.

Installation

a) Smooth
b) Rough

a) b)

≤ ±3°   >> ±3°
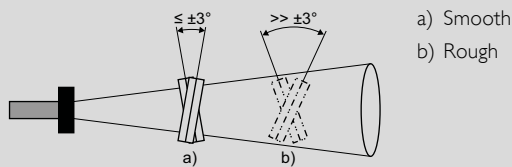
Ultrasonic sensors can be installed and operated in any orientation. Though installation locations that could lead to contamination of the sensor surface should be avoided because water droplets and encrustation can impair functional performance. Thin layers of dust and paint droplets generally have no effect.

If smooth surfaces are to be detected, sensors should be mounted as vertically as possible, i. e. at an angle of from 87° to 93° to the surface.

Rough surfaces, on the other hand, permit considerably greater angular deviations. A surface whose valley-to-peak depth is greater than or equal to the wavelength of the ultrasonic frequency is considered rough. The sound, however, is then reflected diffusely, which can lead to a reduction of the operating scanning distance. In this case the maximum permissible angular deviation and maximum scanning distance should be determined in trials.

Sound-absorbing materials (such as cotton wool or foam) can further reduce the scanning distance. In contrast, liquids and solid materials are good reflectors.

Mounting distances

a) Switching distance

a)

	A	B
0.25 m	≥ 0.35 m	≥ 2.50 m
0.35 m	≥ 0.40 m	≥ 2.50 m
1.30 m	≥ 1.10 m	≥ 8.00 m
3.40 m	≥ 2.00 m	≥ 18.00 m
6.00 m	≥ 4.00 m	≥ 30.00 m
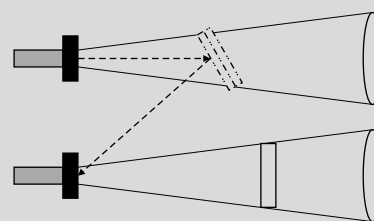
The table provides the minimum distances between non-synchronised ultrasonic sensors. Sensors may mutually influence one another if these distances are not observed.

The above-mentioned mounting distances are only intended as a guide. In the case of tilting, the sound can be reflected towards the neighbouring sensor. The minimum distance should then be determined by means of trials. Some sensors permit synchronisation with one another and thus allow considerably lower scanning distances.

UT 20-S150

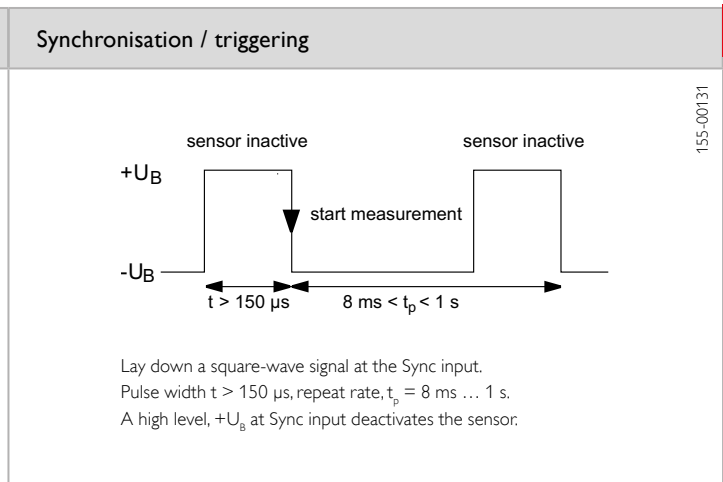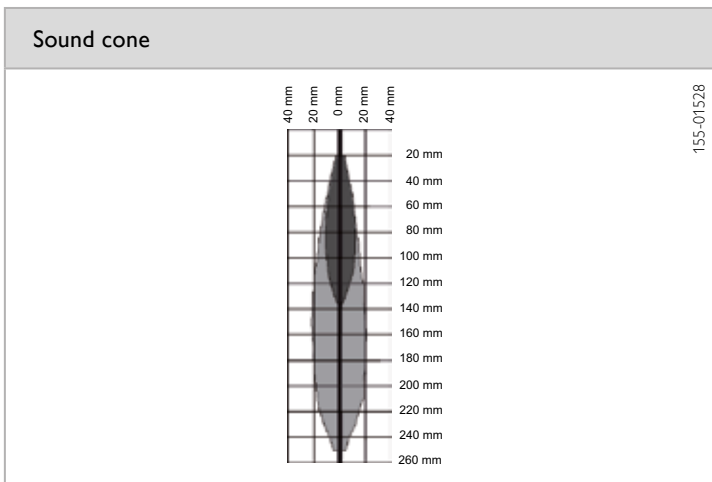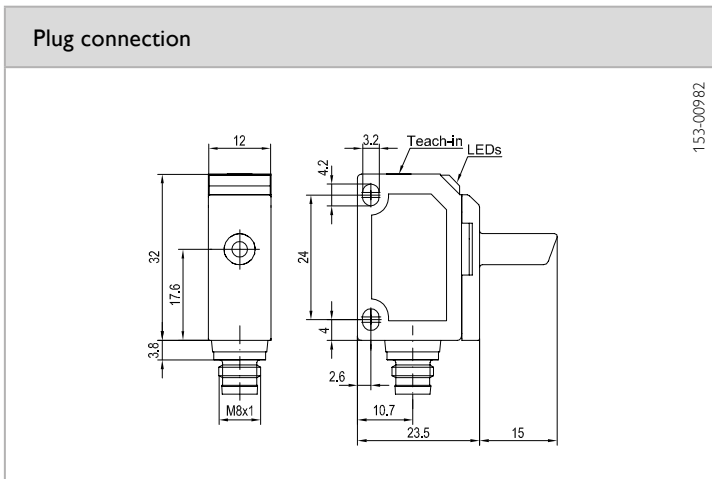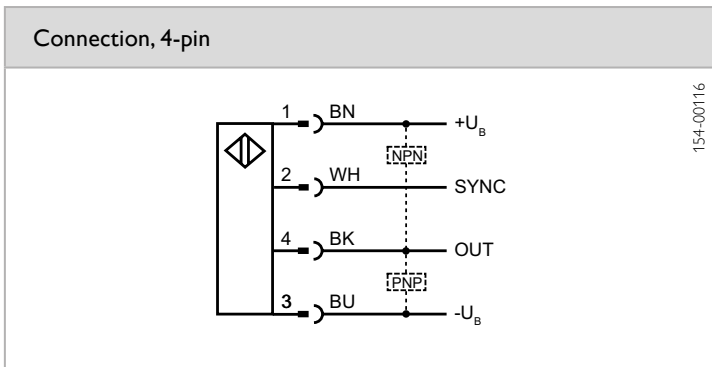Ultrasonic sensor with soundpipe and switching output

PRODUCT HIGHLIGHTS

- Ideal for level control, particularly in narrow containers
- Narrow sound beam for precise detection even through small openings and drilled holes
- Reliable detection of highly transparent objects
- Detection independent of object colour and surface
- Compact miniature housings for use when space in machine is limited

Sensor data	
Limiting scanning distance	250 mm
Operating scanning distance	20 … 140 mm
Ultrasonic frequency	~ 380 kHz
Resolution	0.20 mm
Repeatability	± 0.15 %[1]
Hysteresis	2 mm
Temperature drift	0.17 % / °C

Functions	
LED indicator, green	Operating voltage indicator
LED indicator, yellow	Switching output indicator
Scanning distance adjustment	Via Teach-in button
Teach-in modes	Mode 1: set switching point Mode 2: set Window Mode Mode 3: set two-way / reflex switch
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Synchronisation via control input Default settings via Teach-in button
Default settings	Max. sensitivity and N.O.

Electrical data	
Operating voltage, $+U_B$	20 … 30 V DC[2]
No-load current, I_0	≤ 25 mA
Output current, le	200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Power On Delay	< 300 ms
Switching output, Q	PNP / NPN (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	25 Hz
Response time	24 ms
Connection, WH	Sync.

Mechanical data	
Dimensions	32 × 38.5 × 12 mm
Enclosure rating	IP 67[3]
Material, housing	ABS
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	10 g
Vibration and impact resistance	EN 60947-5-2

[1] From final value of limit scanning distance   [2] Max. 10 % ripple, within U_B [3] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
20 … 140 mm	PNP	Metal plug, M8×1, 4-pin	UT 20-S150-PSM4	693-11012
20 … 140 mm	NPN	Metal plug, M8×1, 4-pin	UT 20-S150-NSM4	693-11013

Plug connection

Teach-in
LEDs

12
32
17.6
3.8
M8x1

3.2
4.2
24
4
2.6
10.7
23.5
15

Connection, 4-pin

1	BN	+U_B
2	WH	SYNC
4	BK	OUT
3	BU	-U_B

NPN

PNP

Sound cone

40 mm 20 mm 0 mm 20 mm 40 mm

20 mm
40 mm
60 mm
80 mm
100 mm
120 mm
140 mm
160 mm
180 mm
200 mm
220 mm
240 mm
260 mm

Synchronisation / triggering

10

sensor inactive   sensor inactive

+U_B

start measurement

-U_B

t > 150 µs   8 ms < t_p < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, +U_B at Sync input deactivates the sensor.

Accessories

| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |

UT 20-S150-A

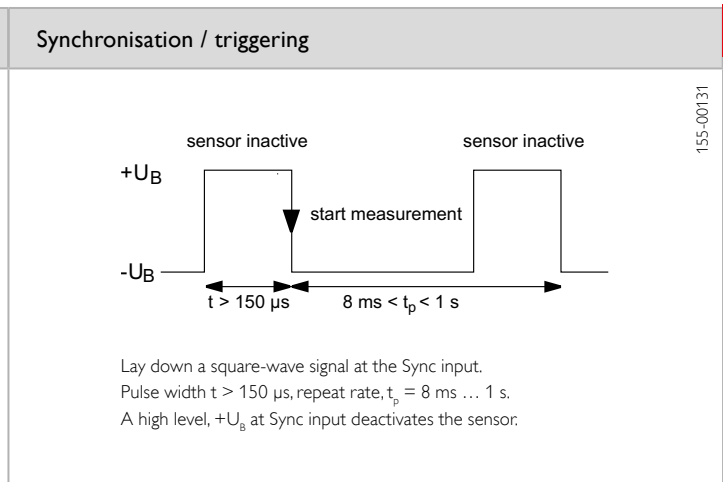Ultrasonic sensor with soundpipe and analogue output
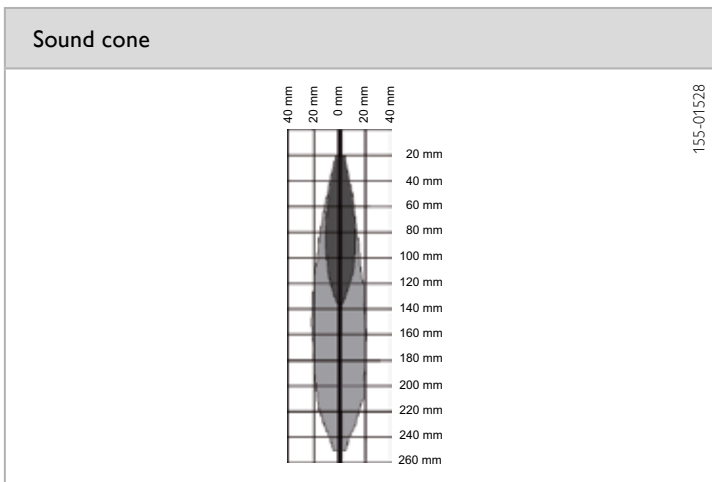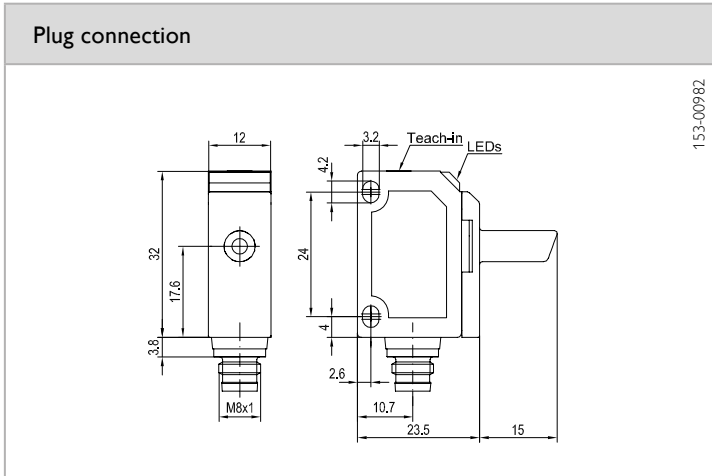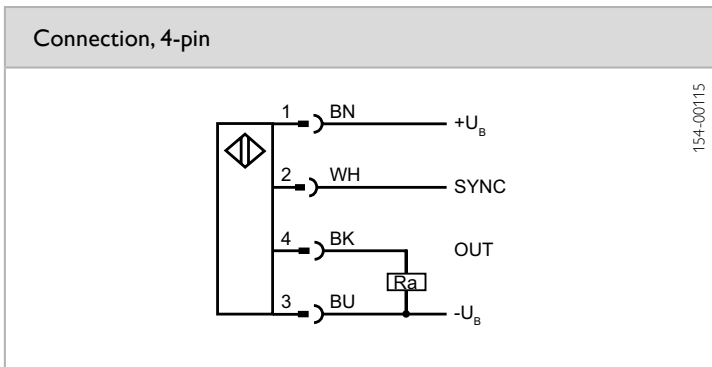
CE
IP 67

PRODUCT HIGHLIGHTS

- Ideal for level control, particularly in narrow containers
- Narrow sound beam for precise detection even through small openings and drilled holes
- Reliable detection of highly transparent objects
- Compact miniature housings for use when space in machine is limited
- Analogue output 0 … 10 V or 4 … 20 mA

Sensor data[1]

Limiting scanning distance	250 mm
Operating scanning distance	20 … 140 mm
Ultrasonic frequency	~ 380 kHz
Resolution	0.20 mm
Repeatability	± 0.15 %[2]
Temperature drift	≤ 2 %

Functions

LED indicator, green	Operating voltage indicator
LED indicator, yellow	Switching output indicator
Set analogue characteristic	Via Teach-in button
Adjustment possibilities	Rising / falling edge via Teach-in button
	Button lock via Teach-in button
	Synchronisation via control input
	Default settings via Teach-in button

Electrical data

Operating voltage, $+U_B$	20 … 30 V DC[3]
No-load current, I_0	≤ 25 mA
Current output	$R_a < 500\ \Omega$
Voltage output	$R_a > 500\ \Omega$
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Power On Delay	< 300 ms
Analogue output	0 … 10 V / 4 … 20 mA (see selection table)
Response time	30 ms
Connection, WH	Sync.

Mechanical data

Dimensions	32 × 38.5 × 12 mm
Enclosure rating	IP 67[4]
Material, housing	ABS
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	10 g
Vibration and impact resistance	EN 60947-5-2

[1] After 30 min. settling time   [2] From final value of limit scanning distance   [3] Max. 10 % ripple, within U_B [4] With connected IP 67 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
20 … 140 mm	0 … 10 V	Metal plug, M8×1, 4-pin	UT 20-S150-AUM4	693-11014
20 … 140 mm	4 … 20 mA	Metal plug, M8×1, 4-pin	UT 20-S150-AIM4	693-11015

Plug connection

12

32
17.6
3.8
M8x1

3.2 Teach-in LEDs
4.2
24
4
2.6
10.7
23.5
15

Connection, 4-pin

Pin	Colour	Signal
1	BN	$+U_B$
2	WH	SYNC
4	BK	OUT
3	BU	$-U_B$

Ra

Sound cone

40 mm 20 mm 0 mm 20 mm 40 mm

20 mm
40 mm
60 mm
80 mm
100 mm
120 mm
140 mm
160 mm
180 mm
200 mm
220 mm
240 mm
260 mm

Synchronisation / triggering

10

sensor inactive   sensor inactive

$+U_B$

start measurement

$-U_B$

t > 150 µs   8 ms < t_p < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, $+U_B$ at Sync input deactivates the sensor.

Accessories

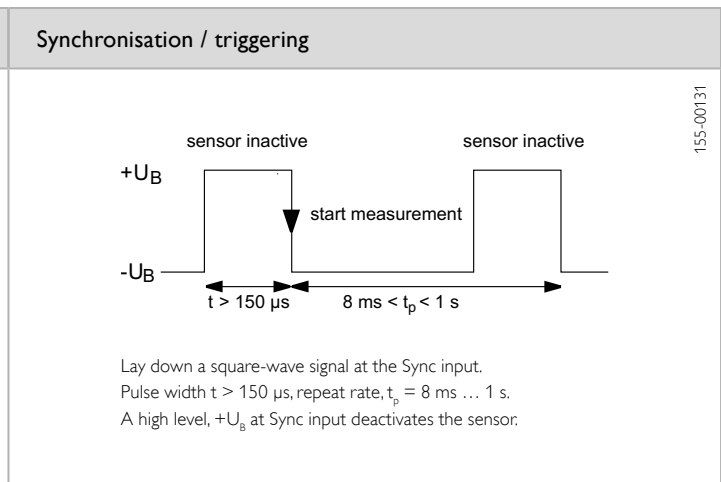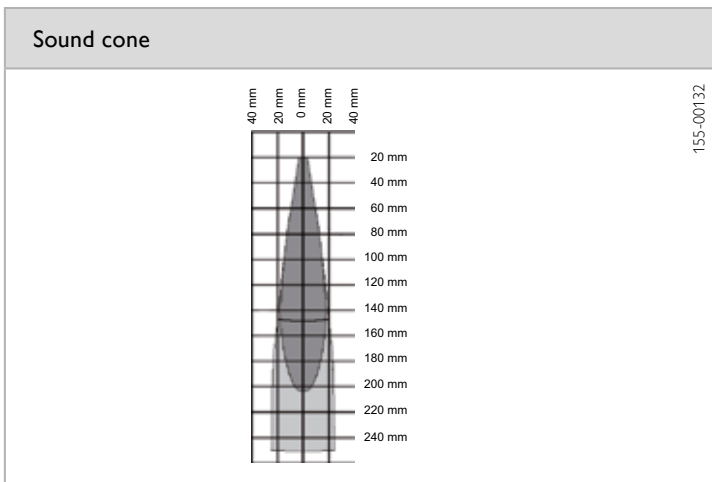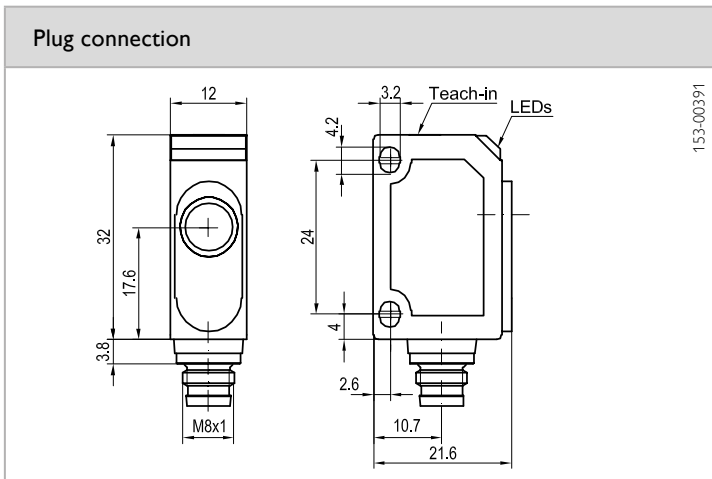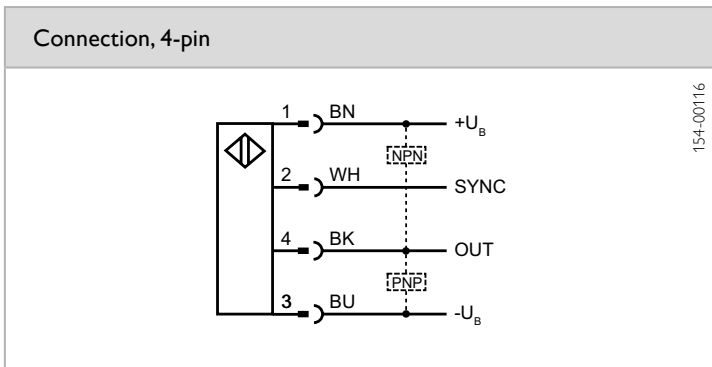|	
Connection cables	From Page A-38
Brackets	From Page A-4

UT 20-150

Ultrasonic sensor with switching output

PRODUCT HIGHLIGHTS

- Detection regardless of object colour and surface
- Compact miniature housing for use when machine space is limited
- Robust ambient conditions have no effect on sensor
- Reliable detection of highly transparent objects

Sensor data

Limit scanning distance	250 mm
Operating scanning distance	20 … 150 mm
Ultrasonic frequency	~ 380 kHz
Resolution	0.20 mm
Repeatability	± 0.15 %[1]
Hysteresis	2 mm
Temperature drift	0.17 % / °C

Functions

Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Scanning distance adjustment	Via Teach-in button
Teach-in modes	Mode 1: set switching point Mode 2: set window operation Mode 3: set two-way / retroflective sensor
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Synchronisation via control input Default settings via Teach-in button
Default settings	Max. sensitivity and N.O.

Electrical data

Operating voltage, $+U_B$	20 … 30 V DC[2]
No-load current, I_0	≤ 25 mA
Output current, Ie	200 mA
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Power On Delay	< 300 ms
Switching output, Q	PNP / NPN (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	25 Hz
Response time	24 ms
Connection, WH	Sync.

Mechanical data

Dimensions	32 × 21.6 × 12 mm
Enclosure rating	IP 67[3]
Material, housing	ABS
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	10 g
Vibration and impact resistance	EN 60947-5-2

[1] From end-value of limit scanning distance   [2] Max. 10 % ripple, within U_B [3] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
20 … 150 mm	PNP	Metal plug, M8x1, 4-pin	UT 20-150-PSM4	693-11000
20 … 150 mm	NPN	Metal plug, M8x1, 4-pin	UT 20-150-NSM4	693-11001

Plug connection

153-00391

12
3.2 Teach-in
LEDs
4.2
32
17.6
24
3.8
4
2.6
M8x1
10.7
21.6

Connection, 4-pin

154-00116

1	BN	+U_B
2	WH	SYNC
4	BK	OUT
3	BU	-U_B

NPN

PNP

Sound cone

155-00132

40 mm 20 mm 0 mm 20 mm 40 mm

20 mm
40 mm
60 mm
80 mm
100 mm
120 mm
140 mm
160 mm
180 mm
200 mm
220 mm
240 mm

Synchronisation / triggering

155-00131

sensor inactive   sensor inactive

$+U_B$

start measurement

$-U_B$

t > 150 µs   8 ms < t_p < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, $+U_B$ at Sync input deactivates the sensor.

Accessories

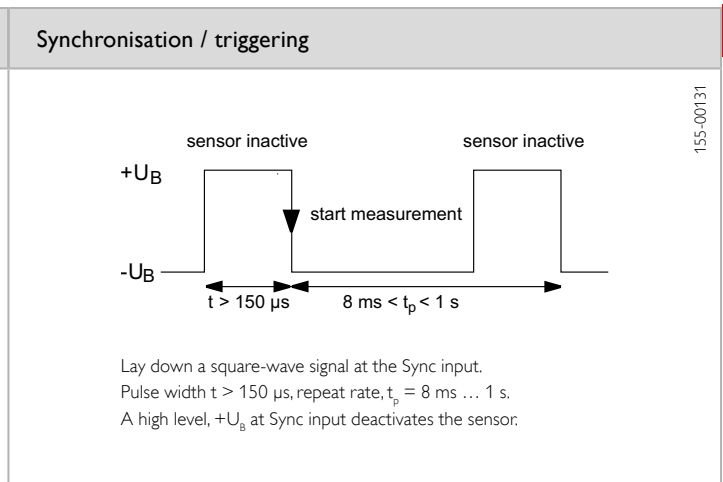| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |
| | |

UT 20-150-A

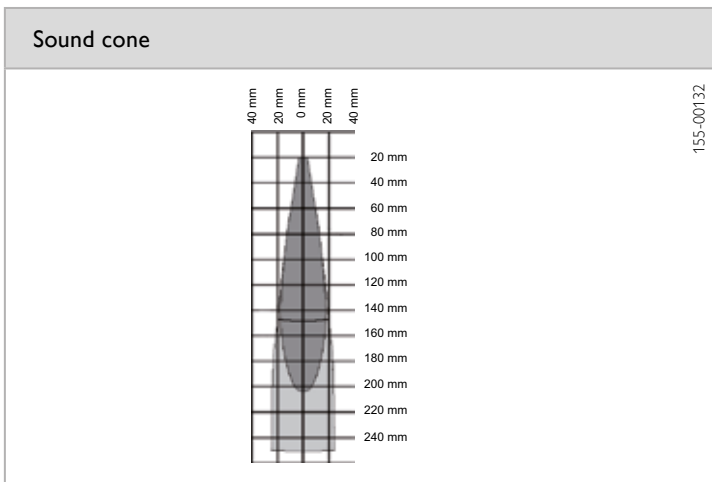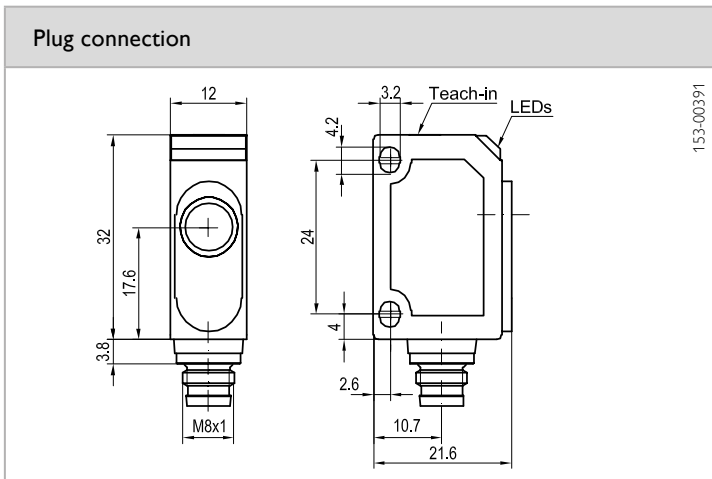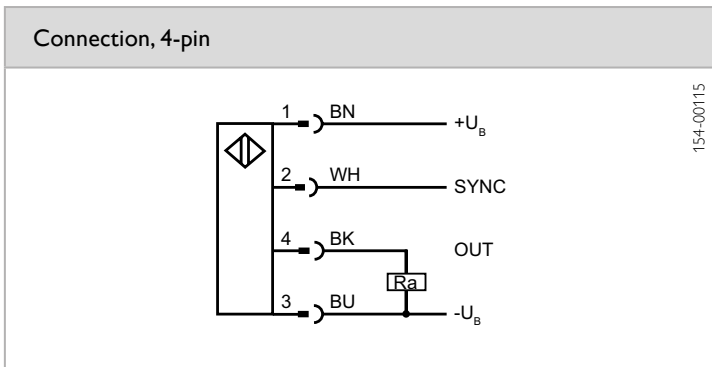Ultrasonic sensor with analogue output

PRODUCT HIGHLIGHTS

- Detection regardless of object colour and surface
- Compact miniature housing for use when machine space is limited
- Synchronisation input – simultaneous operation of several sensors in highly limited spaces
- Analogue output: 0 … 10 V or 4 … 20 mA

Sensor data[1]		Functions	
Limit scanning distance	250 mm	Indicator LED, green	Operating voltage indicator
Operating scanning distance	20 … 150 mm	Indicator LED, yellow	Switching output indicator
Ultrasonic frequency	~ 380 kHz	Set characteristic analogue curve	Via Teach-in button
Resolution	0.20 mm	Adjustment possibilities	Rising / falling slope via Teach-in button
Repeatability	± 0.15 %[2]		Button lock via Teach-in button
Temperature drift	≤ 2 %		Synchronisation via control input
			Default settings via Teach-in button

Electrical data		Mechanical data	
Operating voltage, $+U_B$	20 … 30 V DC[3]	Dimensions	32 × 21.6 × 12 mm
No-load current, I_0	≤ 25 mA	Enclosure rating	IP 67[4]
Current output	R_a < 500 Ω	Material, housing	ABS
Voltage output	R_a > 500 Ω	Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)	Type of connection	(See selection table)
Protection Class	2	Ambient temperature: operation	-25 … +70 °C
Power On Delay	< 300 ms	Ambient temperature: storage	-40 … +85 °C
Analogue output	0 … 10 V / 4 … 20 mA (see selection table)	Weight	10 g
Response time	30 ms	Vibration and impact resistance	EN 60947-5-2
Connection, WH	Sync.		

[1] After 30 minutes settling time   [2] From end-value of limit scanning distance   [3] Max. 10 % ripple, within U_B [4] With connected IP 67 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
20 … 150 mm	0 … 10 V	Metal plug, M8×1, 4-pin	UT 20-150-AUM4	693-11004
20 … 150 mm	4 … 20 mA	Metal plug, M8×1, 4-pin	UT 20-150-AIM4	693-11005

Version: 01/2021. Subject to changes; diagrams similar

Plug connection

153-00391

12

3.2   Teach-in

LEDs

4.2

32

17.6

24

3.8

4

M8x1

2.6

10.7

21.6

Connection, 4-pin

154-00115

1	BN	+U_B
2	WH	SYNC
4	BK	OUT
3	BU	-U_B

Ra

Sound cone

155-00132

40 mm 20 mm 0 mm 20 mm 40 mm

20 mm
40 mm
60 mm
80 mm
100 mm
120 mm
140 mm
160 mm
180 mm
200 mm
220 mm
240 mm

10

Synchronisation / triggering

155-00131

sensor inactive   sensor inactive

+U_B

start measurement

-U_B

t > 150 µs   8 ms < t_p < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, +U_B at Sync input deactivates the sensor.

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UT 20-240

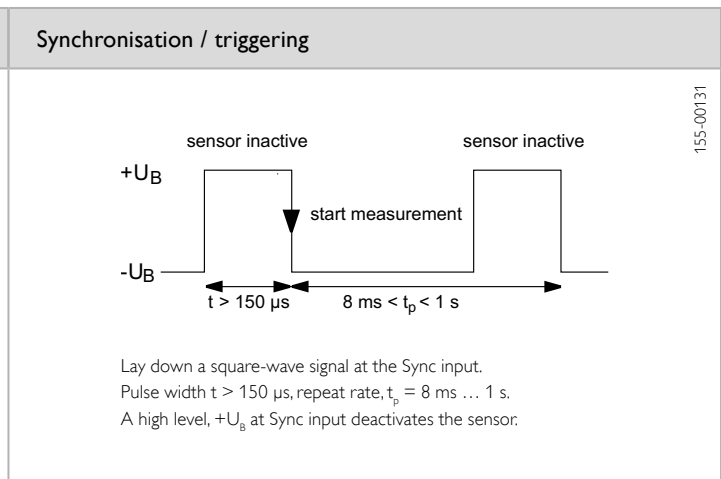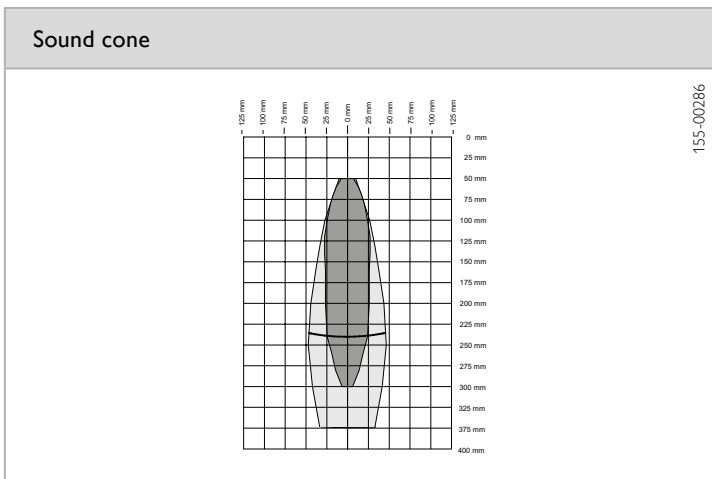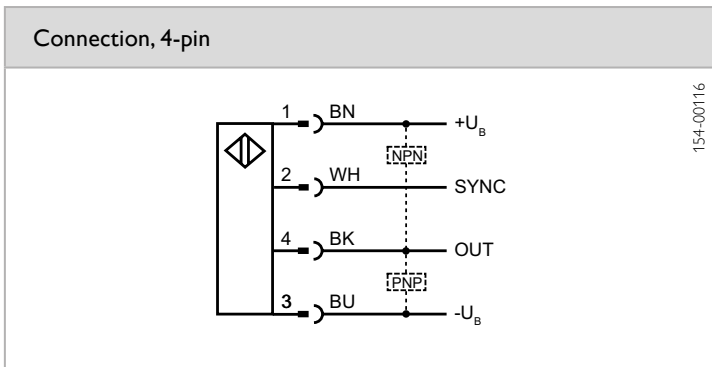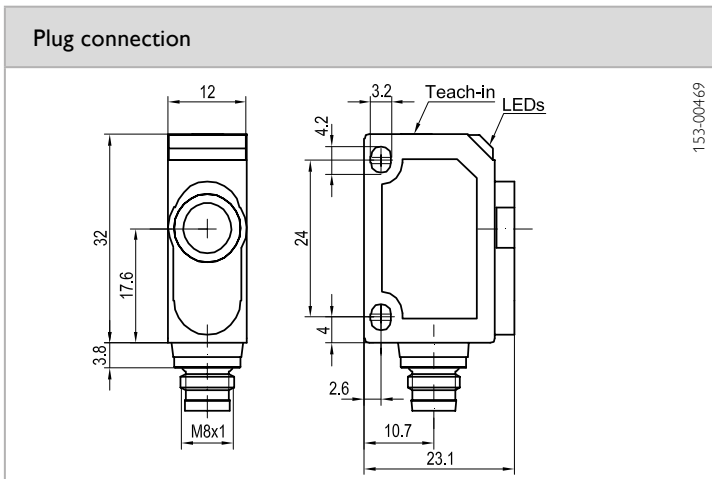Ultrasonic sensor with switching output

CE

IP 67

PRODUCT HIGHLIGHTS

- Ideal for monitoring filling levels, e.g. of liquids
- Reliable detection of highly transparent objects
- Detection regardless of object colour and surface
- Compact miniature housings for use when machine space is limited

Sensor data	
Limit scanning distance	350 mm
Operating scanning distance	50 … 240 mm
Ultrasonic frequency	~500 kHz
Resolution	0.20 mm
Repeatability	± 0.15 %[1]
Hysteresis	2 mm
Temperature drift	0.17 % / °C

Functions	
Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Scanning distance adjustment	Via Teach-in button
Teach-in modes	Mode 1: set switching point Mode 2: set window operation Mode 3: set two-way / retroflective sensor
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Synchronisation via control input Default settings via Teach-in button
Default settings	Max. sensitivity and N.O.

Electrical data	
Operating voltage, $+U_B$	20 … 30 V DC[2]
No-load current, I_0	≤ 25 mA
Output current, Ie	200 mA
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Power On Delay	< 300 ms
Switching output, Q	PNP / NPN (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	25 Hz
Response time	24 ms
Connection, WH	Sync.

Mechanical data	
Dimensions	32 × 23.1 × 12 mm
Enclosure rating	IP 67[3]
Material, housing	ABS
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	10 g
Vibration and impact resistance	EN 60947-5-2

[1] From end-value of limit scanning distance   [2] Max. 10 % ripple, within U_B [3] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
50 … 240 mm	PNP	Metal plug, M8×1, 4-pin	UT 20-240-PSM4	693-11002
50 … 240 mm	NPN	Metal plug, M8×1, 4-pin	UT 20-240-NSM4	693-11003

Plug connection

Teach-in LEDs

12

32

17.6

3.8

M8x1

3.2

4.2

24

4

2.6

10.7

23.1

Connection, 4-pin

1	BN	$+U_B$
2	WH	SYNC
4	BK	OUT
3	BU	$-U_B$

NPN

PNP

Sound cone

125 mm 100 mm 75 mm 50 mm 25 mm 0 mm 25 mm 50 mm 75 mm 100 mm 125 mm

0 mm
25 mm
50 mm
75 mm
100 mm
125 mm
150 mm
175 mm
200 mm
225 mm
250 mm
275 mm
300 mm
325 mm
375 mm
400 mm

Synchronisation / triggering

10

sensor inactive   sensor inactive

$+U_B$

start measurement

$-U_B$

t > 150 µs   8 ms < t_p < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, $+U_B$ at Sync input deactivates the sensor.

Accessories

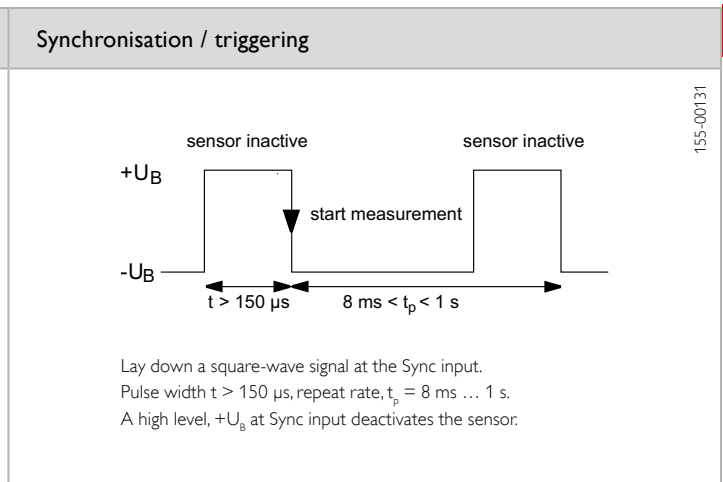| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |

UT 20-240-A

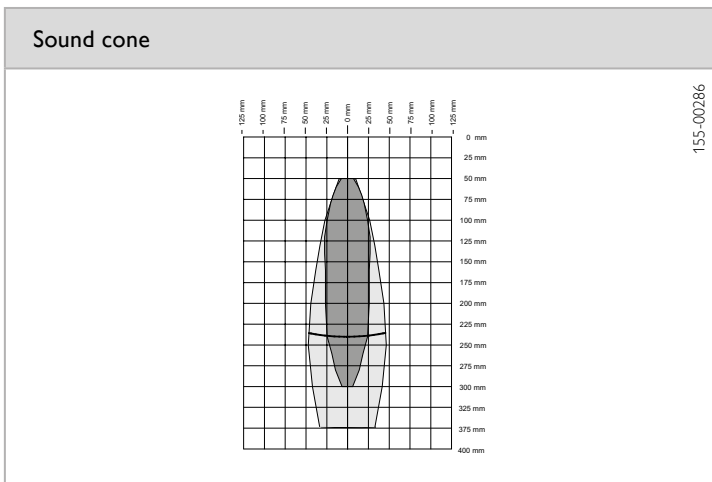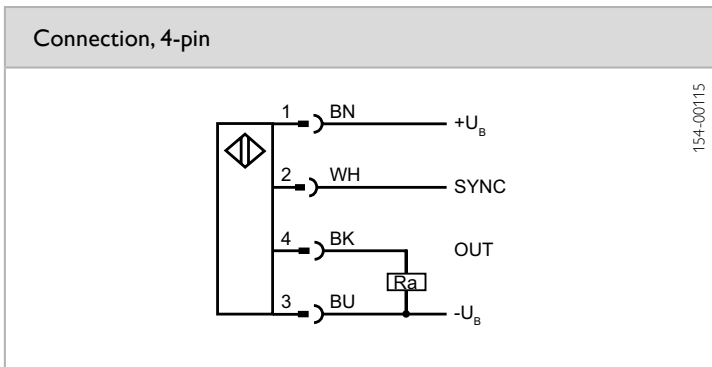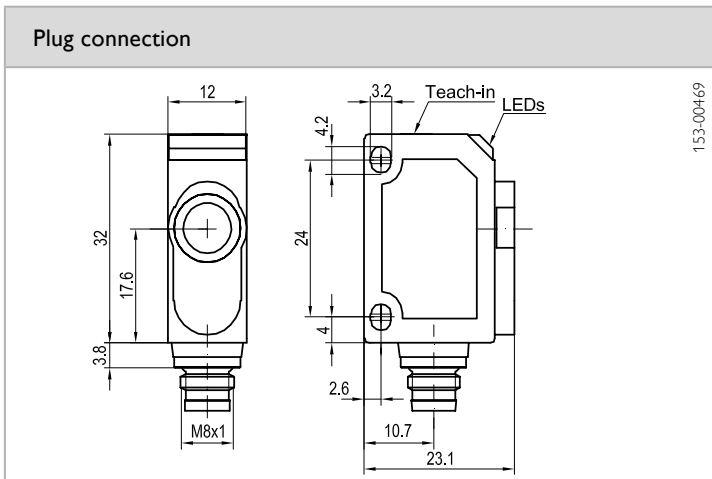Ultrasonic sensor with analogue output

PRODUCT HIGHLIGHTS

- Detection regardless of object colour and surface
- Compact miniature housing for use when machine space is limited
- Analogue output: 0 … 10 V or 4 … 20 mA
- Synchronisation input – simultaneous operation of several sensors in highly limited spaces

Sensor data[1]		Functions	
Limit scanning distance	350 mm	Indicator LED, green	Operating voltage indicator
Operating scanning distance	50 … 240 mm	Indicator LED, yellow	Switching output indicator
Ultrasonic frequency	~ 500 kHz	Set characteristic analogue curve	Via Teach-in button
Resolution	0.20 mm	Adjustment possibilities	Rising / falling slope via Teach-in button
Repeatability	± 0.15 %[2]		Button lock via Teach-in button
Temperature drift	≤ 2 %		Synchronisation via control input
			Default settings via Teach-in button

Electrical data		Mechanical data	
Operating voltage, $+U_B$	20 … 30 V DC[3]	Dimensions	32 × 23.1 × 12 mm
No-load current, I_0	≤ 25 mA	Enclosure rating	IP 67[4]
Current output	$R_a < 500\ \Omega$	Material, housing	ABS
Voltage output	$R_a > 500\ \Omega$	Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)	Type of connection	(See selection table)
Protection Class	2	Ambient temperature: operation	-25 … +70 °C
Power On Delay	< 300 ms	Ambient temperature: storage	-40 … +85 °C
Analogue output	0 … 10 V / 4 … 20 mA (see selection table)	Weight	10 g
Response time	30 ms	Vibration and impact resistance	EN 60947-5-2
Connection, WH	Sync.		

[1] After 30 minutes settling time [2] From end-value of limit scanning distance [3] Max. 10 % ripple, within U_B [4] With connected IP 67 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
50 … 240 mm	0 … 10 V	Metal plug, M8x1, 4-pin	UT 20-240-AUM4	693-11006
50 … 240 mm	4 … 20 mA	Metal plug, M8x1, 4-pin	UT 20-240-AIM4	693-11007

Plual connection

```
12          3.2   Teach-in   LEDs
                  4.2
32                24
17.6
3.8               4
M8x1              2.6
                  10.7
                  23.1
```

Connection, 4-pin

```
1   BN   +U_B
2   WH   SYNC
4   BK   OUT
         Ra
3   BU   -U_B
```

Sound cone

Synchronisation / triggering

```
       sensor inactive          sensor inactive
+U_B
                    start measurement
-U_B
       t > 150 µs    8 ms < t_p < 1 s
```

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t_p = 8 ms … 1 s.
A high level, +U_B at Sync input deactivates the sensor.

Accessories

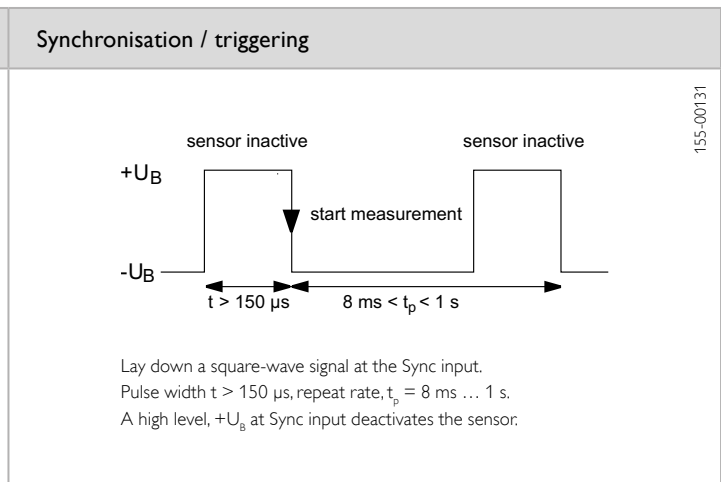|	
Connection cables	From Page A-38
Brackets	From Page A-4

UT 20-700
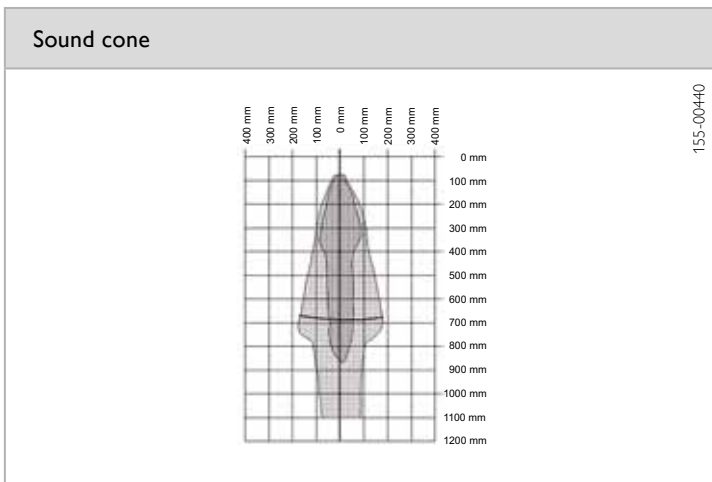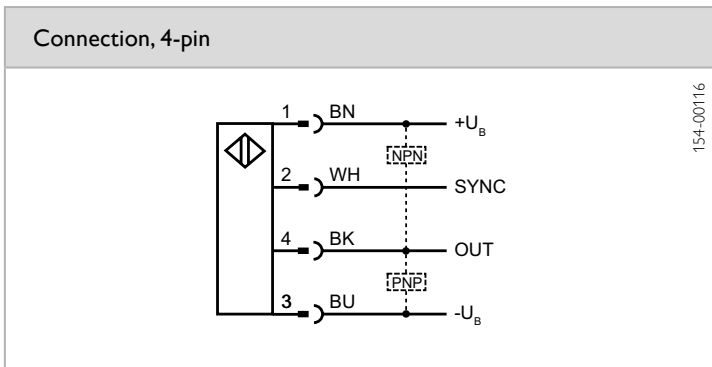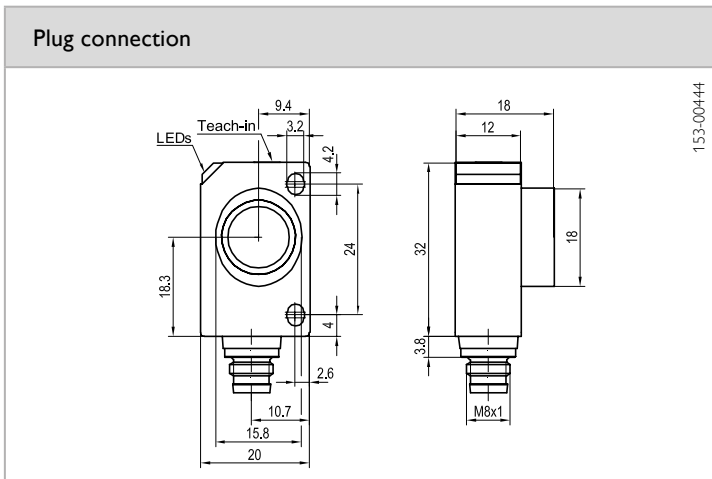
Ultrasonic sensor with switching output

CE

IP 67

PRODUCT HIGHLIGHTS

- Long scanning distance of 700 mm with small and compact housing
- Ideal for monitoring filling levels, e.g. of liquids
- Detection regardless of object colour and surface
- Synchronisation input – simultaneous operation of several sensors in highly limited spaces

Sensor data	
Limit scanning distance	1000 mm
Operating scanning distance	120 … 700 mm
Ultrasonic frequency	~ 300 kHz
Resolution	0.20 mm
Repeatability	± 0.15 %[1]
Hysteresis	2 mm
Temperature drift	0.17 % / °C

Functions	
Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Scanning distance adjustment	Via Teach-in button
Teach-in modes	Mode 1: set switching point Mode 2: set window operation Mode 3: set two-way / retroflective sensor
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Synchronisation via control input Default settings via Teach-in button
Default settings	Max. sensitivity and N.O.

Electrical data	
Operating voltage, $+U_B$	20 … 30 V DC[2]
No-load current, I_0	≤ 35 mA
Output current, Ie	200 mA
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)
Protection Class	2
Power On Delay	< 300 ms
Switching output, Q	PNP / NPN (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	14 Hz
Response time	42 ms
Connection, WH	Sync.

Mechanical data	
Dimensions	32 × 20 × 18 mm
Enclosure rating	IP 67[3]
Material, housing	ABS
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	10 g
Vibration and impact resistance	EN 60947-5-2

[1] From end-value of limit scanning distance   [2] Max. 10 % ripple, within U_B [3] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
120 … 700 mm	PNP	Metal plug, M8×1, 4-pin	UT 20-700-PSM4	693-11008
120 … 700 mm	NPN	Metal plug, M8×1, 4-pin	UT 20-700-NSM4	693-11009

Plug connection

153-00444

LEDs
Teach-in
9.4
3.2
4.2
18.3
24
32
18
4
2.6
10.7
15.8
20
18
12
3.8
M8x1

Connection, 4-pin

154-00116

1	BN	+U$_B$
2	WH	SYNC
4	BK	OUT
3	BU	-U$_B$

NPN

PNP

Sound cone

155-00440

400 mm 300 mm 200 mm 100 mm 0 mm 100 mm 200 mm 300 mm 400 mm

0 mm
100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm
800 mm
900 mm
1000 mm
1100 mm
1200 mm

Synchronisation / triggering

155-00131

sensor inactive   sensor inactive

+U$_B$

start measurement

-U$_B$

t > 150 µs   8 ms < t$_p$ < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t$_p$ = 8 ms … 1 s.
A high level, +U$_B$ at Sync input deactivates the sensor.

10

Accessories

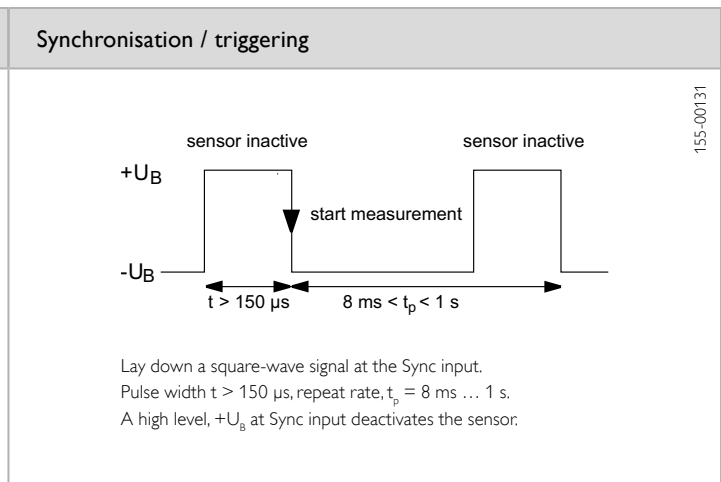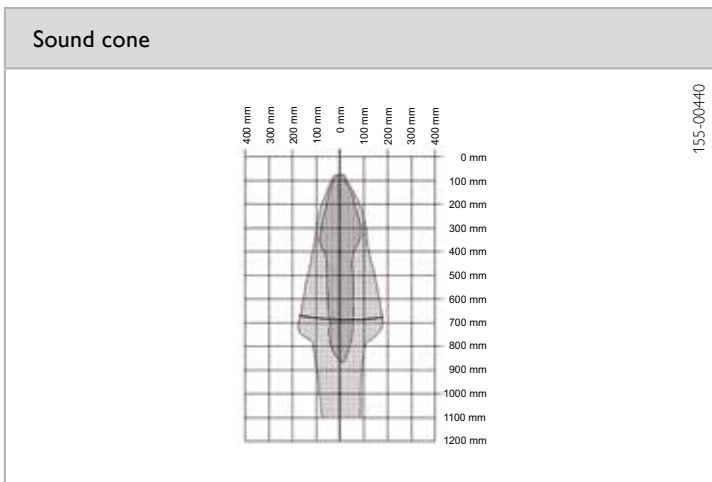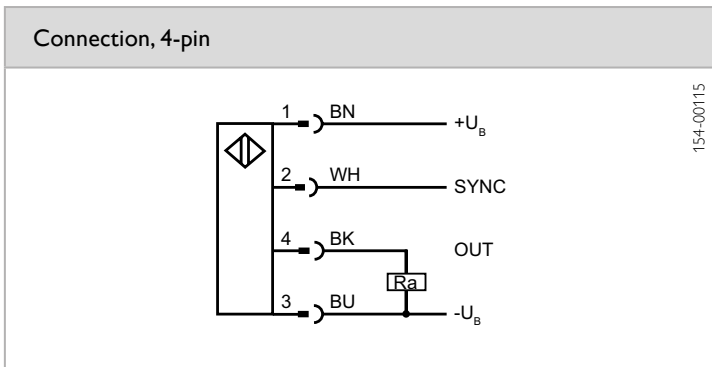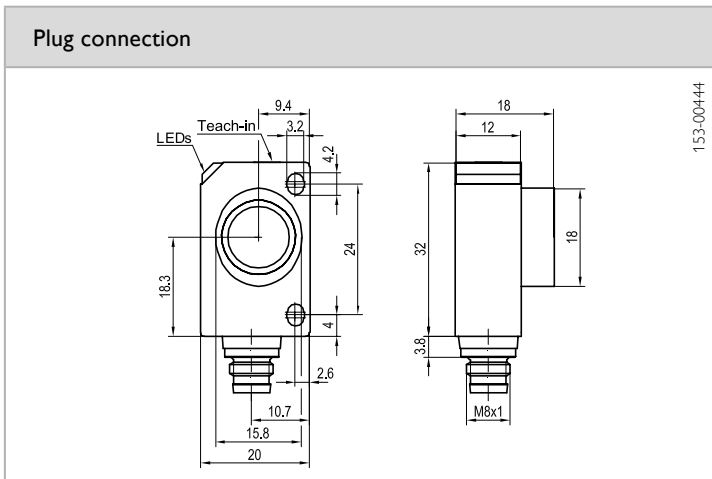| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |

UT 20-700-A

Ultrasonic sensor with analogue output

PRODUCT HIGHLIGHTS

- Long scanning distance of 700 mm with small and compact housings

- Analogue output: 0 … 10 V or 4 … 20 mA

- Ideal for monitoring filling levels, e.g. of liquids

- Detection regardless of object colour and surface

Sensor data[1]		Functions	
Limit scanning distance	1000 mm	Indicator LED, green	Operating voltage indicator
Operating scanning distance	120 … 700 mm	Indicator LED, yellow	Switching output indicator
Ultrasonic frequency	~ 300 kHz	Set characteristic analogue curve	Via Teach-in button
Resolution	0.20 mm	Adjustment possibilities	Rising/falling edge via Teach-in button
Repeatability	± 0.15 %[2]		Button lock via Teach-in button
Temperature drift	≤ 2 %		Synchronisation via control input
			Default settings via Teach-in button

Electrical data		Mechanical data	
Operating voltage, $+U_B$	20 … 30 V DC[2]	Dimensions	32 × 20 × 18 mm
No-load current, I_0	≤ 35 mA	Enclosure rating	IP 67[3]
Current output	R_a < 500 Ω	Material, housing	ABS
Voltage output	R_a > 500 Ω	Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)	Type of connection	(See selection table)
Protection Class	2	Ambient temperature: operation	-25 … +70 °C
Power On Delay	< 300 ms	Ambient temperature: storage	-40 … +85 °C
Analogue output	0 … 10 V / 4 … 20 mA (see selection table)	Weight	10 g
		Vibration and impact resistance	EN 60947-5-2
Response time	30 ms		
Connection, WH	Sync.		

[1] After 30 minutes settling time   [2] Max. 10 % ripple, within U_B [3] With connected IP 67 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
120 … 700 mm	0 … 10 V	Metal plug, M8x1, 4-pin	UT 20-700-AUM4	693-11010
120 … 700 mm	4 … 20 mA	Metal plug, M8x1, 4-pin	UT 20-700-AIM4	693-11011

Plug connection

153-00444

LEDs

Teach-in

9.4
3.2
4.2
24
4
2.6
18.3
10.7
15.8
20

18
12
32
18
3.8
M8x1

Connection, 4-pin

154-00115

1	BN	+U$_B$
2	WH	SYNC
4	BK	OUT
3	BU	-U$_B$

Ra

Sound cone

155-00440

400 mm 300 mm 200 mm 100 mm 0 mm 100 mm 200 mm 300 mm 400 mm

0 mm
100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm
800 mm
900 mm
1000 mm
1100 mm
1200 mm

Synchronisation / triggering

155-00131

10

sensor inactive   sensor inactive

+U$_B$

start measurement

-U$_B$

t > 150 µs   8 ms < t$_p$ < 1 s

Lay down a square-wave signal at the Sync input.
Pulse width t > 150 µs, repeat rate, t$_p$ = 8 ms … 1 s.
A high level, +U$_B$ at Sync input deactivates the sensor.

Accessories

| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |

UT 12-370-P

Ultrasonic sensor with switching output
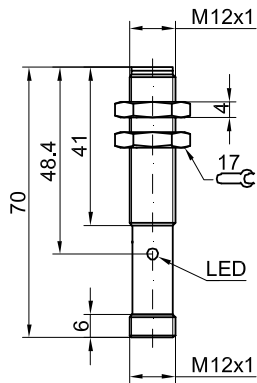

CE

PRODUCT HIGHLIGHTS

- Robust M12 metal housing for harsh operating conditions
- Detection regardless of object colour and surface
- Simple sensor adjustment via control input

Sensor data	
Operating scanning distance	30 … 400 mm
Adjustment range	50 … 400 mm
Ultrasonic frequency	~ 310 kHz
Hysteresis	1 %[1]
Temperature drift	± 1.5 %[2]
Repeatability	≤ 1 %

Functions	
Indicator LED, yellow	Switching output indicator
Indicator LED, red	Fault indicator
Scanning distance adjustment	Via control input
Teach-in modes	Mode 1: set switching point (N.O. / N.C.) Mode 2: set window operation (N.O. / N.C.)
Default settings	Switching point 1 = 50 mm, Switching point 2 = 400 mm

Electrical data	
Operating voltage, $+U_B$	10 … 30 V DC[3]
No-load current, I_0	≤ 30 mA
Output current, le	100 mA
Voltage drop, U_D	≤ 3 V
Protective circuits	Short-circuit protection (Q) / overload protection
Switching output, Q	PNP
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	≤ 8 Hz
Response time	≤ 50 ms
Control input, WH	- U_B = switching point 1 + U_B = switching point 2

Mechanical data	
Dimensions	M12 x 70 mm
Enclosure rating	IP 67[4]
Material, housing	Nickel-plated brass
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	25 g

[1] Relating to set switching distance   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
30 … 400 mm	PNP	Plug, M12x1, 4-pin	UT 12-370-PSL4	690-10100

Plug connection

153-00583
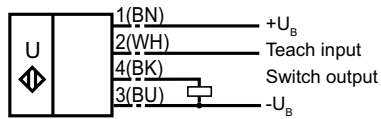
M12x1

70
48.4
41
4
17
LED
6
M12x1

Connection, 4-pin

154-00470

U

1(BN) — +U$_B$
2(WH) — Teach input
4(BK) — Switch output
3(BU) — -U$_B$

Sound cone

155-00663

Distance Y [mm]

300
200
100
0
-100
-200
-300

0   100   200   300   400   500   600   700   800

Distance X [mm]

Y
X

Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm
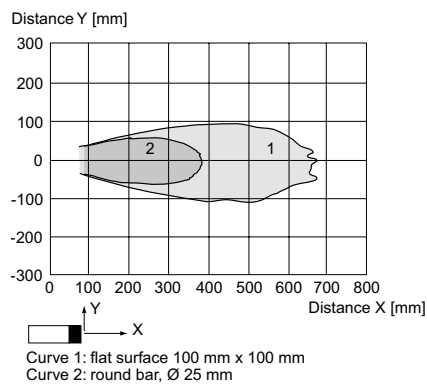
Accessories

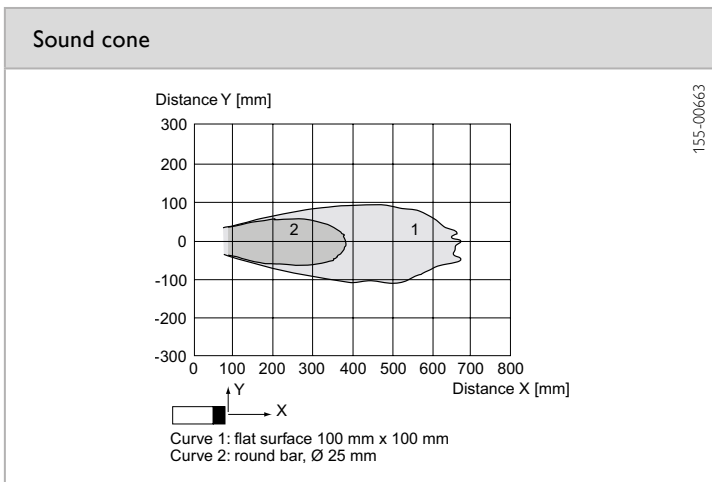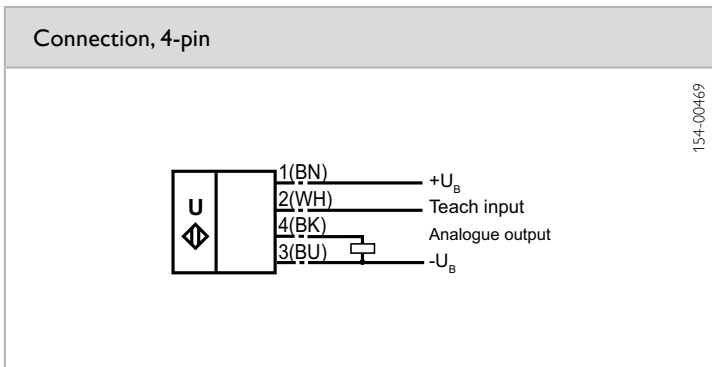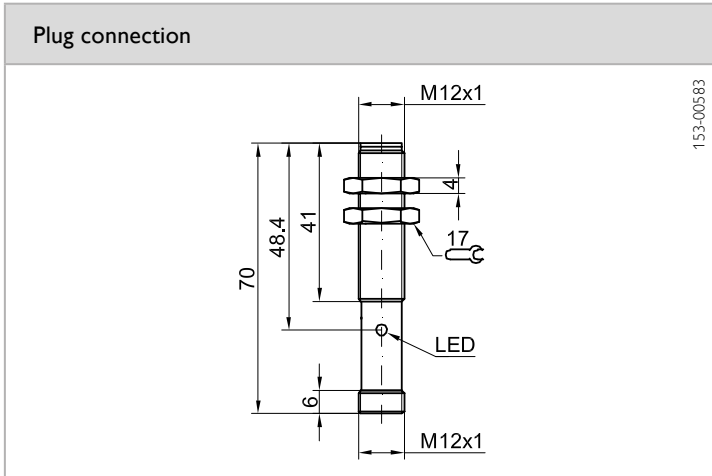|	
Connection cables	From Page A-38
Brackets	From Page A-4

UT 12-370-A

Ultrasonic sensor with analogue output

CE

PRODUCT HIGHLIGHTS

- Robust M12 metal housing for harsh operating conditions
- Analogue output: 4 … 20 mA
- Simple sensor adjustment via control input

Sensor data	
Operating scanning distance	30 … 400 mm
Adjustment range	50 … 400 mm
Ultrasonic frequency	~ 310 kHz
Resolution	0.40 mm[1]
Temperature drift	± 1.5 %[2]
Repeatability	± 0.5 %[2]

Functions	
Indicator LED, yellow	Switching output indicator
Indicator LED, red	Fault indicator
Set characteristic analogue curve	Via control input
Adjustment possibilities	Rising / falling slope via control input
Default settings	Evaluation limit 1 = 50 mm Evaluation limit 2 = 400 mm

Electrical data	
Operating voltage, $+U_B$	10 … 30 V DC[3]
No-load current, I_0	≤ 30 mA
Current output	R_a < 300 Ω
Protective circuits	Short-circuit protection (Q) / overload protection
Analogue output	4 … 20 mA
Response time	≤ 50 ms
Control input, WH	- U_B = lower evaluation limit + U_B = upper evaluation limit

Mechanical data	
Dimensions	M12 x 70 mm
Enclosure rating	IP 67[4]
Material, housing	Nickel-plated brass
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	25 g

[1] With max. detection range   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 67 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
30 … 400 mm	4 … 20 mA	Plug, M12x1, 4-pin	UT 12-370-A-IL4	690-10101

Version: 01/2021. Subject to changes; diagrams similar

Plug connection

153-00583

M12x1

48,4
70
41
4
17
LED
6
M12x1

Connection, 4-pin

154-00469

U ◇

1(BN) — +U$_B$
2(WH) — Teach input
4(BK) — Analogue output
3(BU) — -U$_B$

Sound cone

155-00663

Distance Y [mm]

300
200
100
0
-100
-200
-300

2   1

0 100 200 300 400 500 600 700 800
Distance X [mm]

Y
X

Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UT 18-270-P

Ultrasonic sensor with switching output
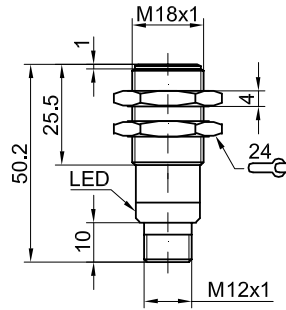
CE

PRODUCT HIGHLIGHTS

- Robust M18 metal housing for harsh operating conditions
- Detection regardless of object colour and surface
- Adjustable window mode
- Selectable N.O. / N.C.

Sensor data

Operating scanning distance	35 … 300 mm
Adjustment range	50 … 300 mm
Ultrasonic frequency	~ 390 kHz
Hysteresis	1 %[1]
Temperature drift	± 1.5 %[2]
Repeatability	≤ 1 %

Functions

Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Indicator LED, red	Fault indicator
Scanning distance adjustment	Via control input
Teach-in modes	Mode 1: set switching point (N.O. / N.C.) Mode 2: set window operation (N.O. / N.C.)
Default settings	Switching point 1 = 50 mm Switching point 2 = 300 mm

Electrical data

Operating voltage, $+U_B$	10 … 30 V DC[3]
No-load current, I_0	≤ 20 mA
Output current, Ie	200 mA
Voltage drop, U_D	≤ 3 V
Protective circuits	Short-circuit protection (Q) / overload protection
Switching output, Q	PNP
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	≤ 13 Hz
Response time	≤ 30 ms
Control input, WH	$- U_B$ = switching point 1 $+ U_B$ = switching point 2

Mechanical data

Dimensions	M18 x 50.2 mm
Enclosure rating	IP 65[4]
Material, housing	Nickel-plated brass
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	25 g

[1] Relating to set switching distance   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 65 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
30 … 300 mm	PNP	Plug, M12x1, 4-pin	UT 18-270-PSL4	690-10102
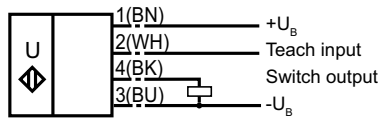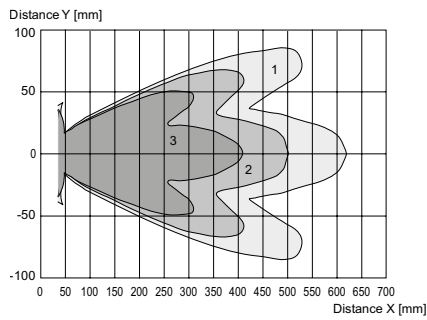
Version: 01/2021. Subject to changes; diagrams similar

Plug connection

M18x1

1

25.5

50.2

4

24

LED

10

M12x1

Connection, 4-pin

U

1(BN)   +U$_B$
2(WH)   Teach input
4(BK)   Switch output
3(BU)   -U$_B$

Sound cone

Distance Y [mm]

100

50

0

-50

-100

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

Distance X [mm]

1

3

2

Curve 1: flat surface 100 mm x 100 mm
Curve 2: flat surface 10 mm x 10 mm
Curve 3: round bar, Ø 25 mm

Y
X

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UT 18-270-A

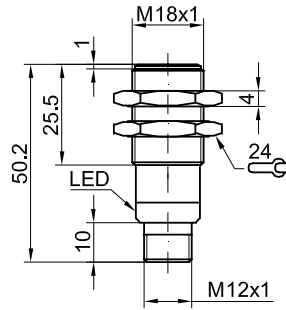Ultrasonic sensor with analogue output

CE

PRODUCT HIGHLIGHTS

- Robust M18 metal housing for harsh operating conditions
- Detection regardless of object colour and surface
- Analogue output: 4 … 20 mA
- Rising/falling output characteristic adjustable

Sensor data	
Operating scanning distance	35 … 300 mm
Adjustment range	50 … 300 mm
Ultrasonic frequency	~ 390 kHz
Resolution	0.40 mm[1]
Temperature drift	± 1.5 %[2]
Repeatability	± 0.5 %[2]

Functions	
Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Indicator LED, red	Fault indicator
Set characteristic analogue curve	Via control input
Adjustment possibilities	Rising / falling slope via control input
Default settings	Evaluation limit 1 = 50 mm
	Evaluation limit 2 = 300 mm

Electrical data	
Operating voltage, $+U_B$	10 … 30 V DC[3]
No-load current, I_0	≤ 20 mA
Current output	R_a < 300 Ω
Protective circuits	Short-circuit protection (Q) / overload protection
Analogue output	4 … 20 mA
Response time	≤ 30 ms
Control input, WH	- U_B = lower evaluation limit
	+ U_B = upper evaluation limit

Mechanical data	
Dimensions	M18 × 50.2 mm
Enclosure rating	IP 65[4]
Material, housing	Nickel-plated brass
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	25 g

[1] With max. detection range   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 65 plug
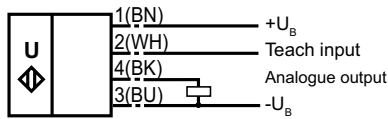
Operating scanning distance	Analogue output	Type of connection	Part number	Article number
30 … 300 mm	4 … 20 mA	Plug, M12x1, 4-pin	UT 18-270-A-IL4	690-10103

Plug connection
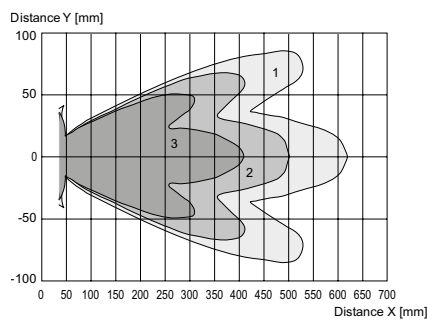
M18x1

1

25.5

50.2

4

24

LED

10

M12x1

Connection, 4-pin

U

1(BN) —————— $+U_B$
2(WH) —————— Teach input
4(BK) —————— Analogue output
3(BU) —————— $-U_B$

Sound cone

Distance Y [mm]

100

50

1

0

3

2

-50

-100

0   50 100 150 200 250 300 350 400 450 500 550 600 650 700

Distance X [mm]

Curve 1: flat surface 100 mm x 100 mm
Curve 2: flat surface 10 mm x 10 mm
Curve 3: round bar, Ø 25 mm

Y

X
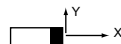
Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UT 18-750-P

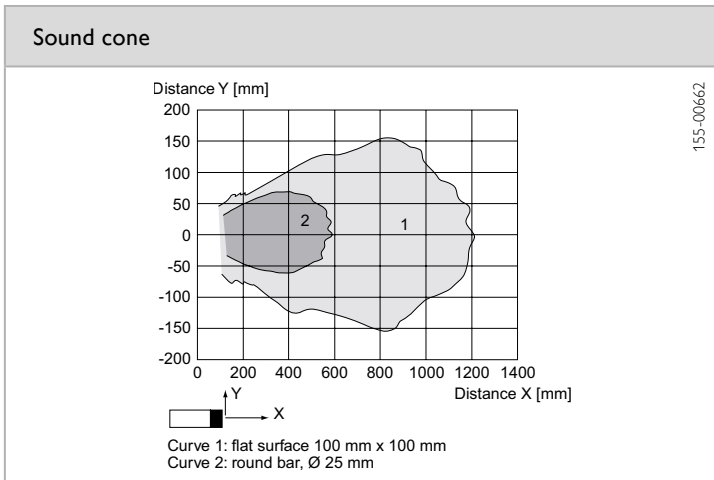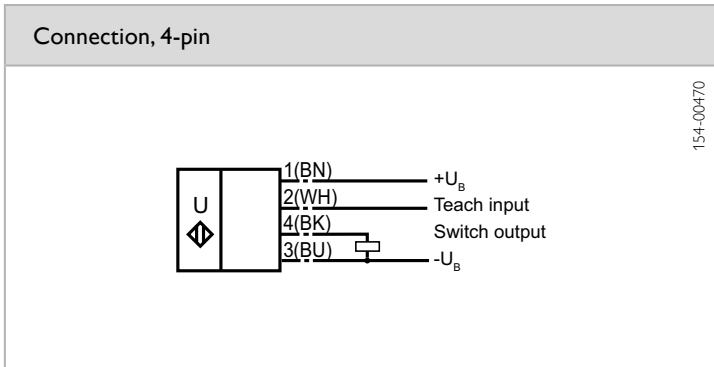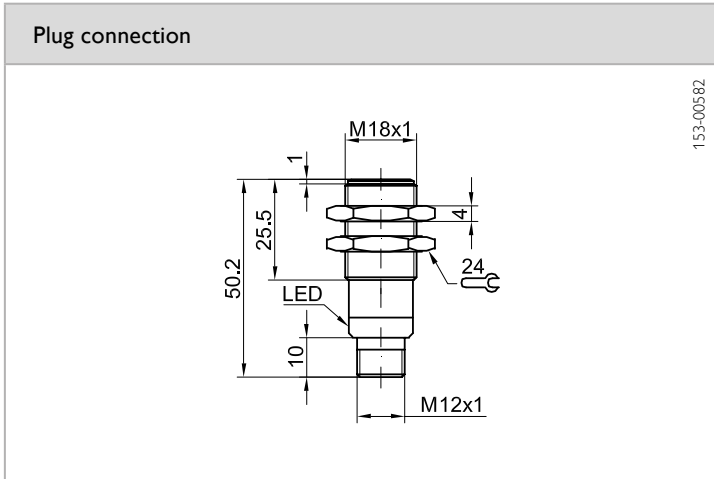## Ultrasonic sensor with switching output

CE

PRODUCT HIGHLIGHTS

- Long operating scanning distance of 800 mm
- Robust M18 metal housing for harsh operating conditions
- Simple sensor adjustment via control input
- Window mode adjustable
- N.O. / N.C. selectable

Sensor data	
Operating scanning distance	50 … 800 mm
Adjustment range	70 … 800 mm
Ultrasonic frequency	~ 205 kHz
Hysteresis	1 %[1]
Temperature drift	± 1.5 %[2]
Repeatability	≤ 1 %

Functions	
Indicator LED, green	Operating voltage indicator
Indicator LED, yellow	Switching output indicator
Indicator LED, red	Fault indicator
Scanning distance adjustment	Via control input
Teach-in modes	Mode 1: set switching point (N.O. / N.C.) Mode 2: set window operation (N.O. / N.C.)
Default settings	Switching point 1 = 70 mm Switching point 2 = 800 mm

Electrical data	
Operating voltage, +U_B	10 … 30 V DC[3]
No-load current, I_0	≤ 20 mA
Output current, Ie	200 mA
Voltage drop, U_D	≤ 3 V
Protective circuits	Short-circuit protection (Q) / overload protection
Switching output, Q	PNP
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)	≤ 4 Hz
Response time	≤ 100 ms
Control input, WH	- U_B = switching point 1 + U_B = switching point 2

Mechanical data	
Dimensions	M18 × 50.2 mm
Enclosure rating	IP 65[4]
Material, housing	Nickel-plated brass
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Type of connection	(See selection table)
Ambient temperature: operation	-25 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	25 g

[1] Relating to set switching distance   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 65 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
50 … 800 mm	PNP	Plug, M12x1, 4-pin	UT 18-750-PSL4	690-10104

Plug connection

M18x1

1
25.5
50.2
4
24
LED
10
M12x1

Connection, 4-pin

U

1(BN) — +U_B
2(WH) — Teach input
4(BK) — Switch output
3(BU) — -U_B

Sound cone

Distance Y [mm]

200
150
100
50
0
-50
-100
-150
-200

2   1

0   200 400 600 800 1000 1200 1400
Distance X [mm]

Y
X

Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

10

UT 18-750-A

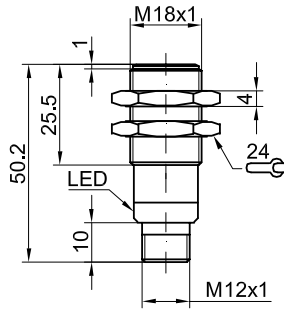Ultrasonic sensor with analogue output

CE

PRODUCT HIGHLIGHTS

- Long operating scanning distance of 800 mm
- Robust M18 metal housing for harsh operating conditions
- Analogue output: 4 … 20 mA
- Rising / falling output characteristic adjustable

Sensor data		Functions	
Operating scanning distance	50 … 800 mm	Indicator LED, green	Operating voltage indicator
Adjustment range	70 … 800 mm	Indicator LED, yellow	Switching output indicator
Ultrasonic frequency	~ 205 kHz	Indicator LED, red	Fault indicator
Resolution	0.40 mm[1]	Set characteristic analogue curve	Via control input
Temperature drift	± 1.5 %[2]	Adjustment possibilities	Rising / falling slope via control input
Repeatability	± 0.5 %[2]	Default settings	Evaluation limit 1 = 70 mm
			Evaluation limit 2 = 800 mm

Electrical data		Mechanical data	
Operating voltage, $+U_B$	10 … 30 V DC[3]	Dimensions	M18 × 50.2 mm
No-load current, I_0	≤ 20 mA	Enclosure rating	IP 65[4]
Current output	$R_a < 300\ \Omega$	Material, housing	Nickel-plated brass
Protective circuits	Short-circuit protection (Q) / overload protection	Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content, PBT (lid)
Analogue output	4 … 20 mA	Type of connection	(See selection table)
Response time	≤ 100 ms	Ambient temperature: operation	-25 … +70 °C
Control input, WH	- U_B = lower evaluation limit +U_B = upper evaluation limit	Ambient temperature: storage	-40 … +85 °C
		Weight	25 g

[1] With max. detection range   [2] From end-value   [3] Max. 10 % ripple, within U_B [4] With connected IP 65 plug

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
50 … 800 mm	4 … 20 mA	Plug, M12x1, 4-pin	UT 18-750-A-IL4	690-10105
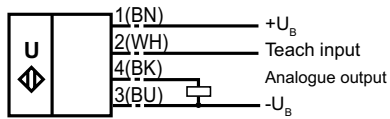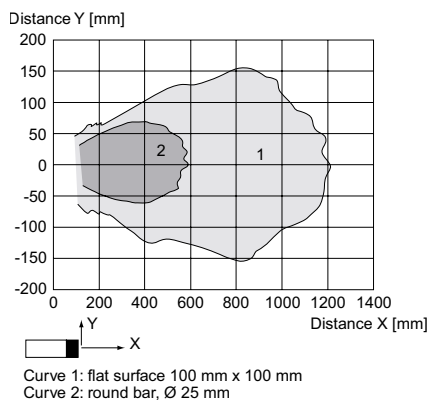
Version: 01/2021. Subject to changes; diagrams similar

Plug connection

M18x1

1

25.5

50.2

4

24

LED

10

M12x1

Connection, 4-pin

$$U \diamondsuit$$

1(BN) — $+U_B$
2(WH) — Teach input
4(BK) — Analogue output
3(BU) — $-U_B$

Sound cone

Distance Y [mm]

200
150
100
50
0
-50
-100
-150
-200

0   200   400   600   800   1000   1200   1400

Distance X [mm]

2   1

Y
X

Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

10

UM 18-60/250

Ultrasonic sensor with switching output

$C\epsilon$

PRODUCT HIGHLIGHTS

- Robust M18 metal housings for harsh operating conditions
- Optional brass or stainless steel housings
- Operating scanning distance either 60 mm or 250 mm
- Simple sensor settings via control input

Sensor data	
Limit scanning distance	350 mm
Operating scanning distance	30 … 250 mm
Ultrasonic frequency	~ 320 kHz
Resolution	0.36 mm
Repeatability[1]	< 1 mm
Hysteresis	2 mm
Temperature drift	0.17 % / K

Functions	
Adjustment possibilities	Operating scanning distance 60 mm / 250 mm via control input

Electrical data	
Operating voltage, $+U_B$	10 … 30 V DC[2]
No-load current, I_0	≤ 30 mA
Output current, Ie	500 mA
Voltage drop, Ud	< 2.4 V DC
Protective circuits	Reverse polarity protection, U_B / short-circuit protection (Q)
Switching output, Q	PNP
Output function	N.O.
Switching frequency, f (ti/tp 1:1)	25 Hz
Control input, WH	$+ U_B$ = operating scanning distance 250 mm - U_B / open = operating scanning distance 60 mm

Mechanical data	
Dimensions	M18 x 95 mm
Enclosure rating	IP 65[3]
Material, housing	(See selection table)
Type of connection	(See selection table)
Ambient temperature: operation	-20 … +70 °C
Ambient temperature: storage	-40 … +85 °C
Weight	80 g

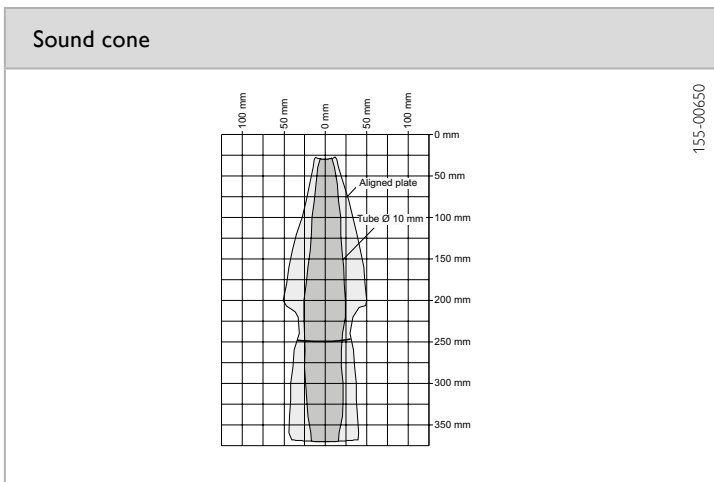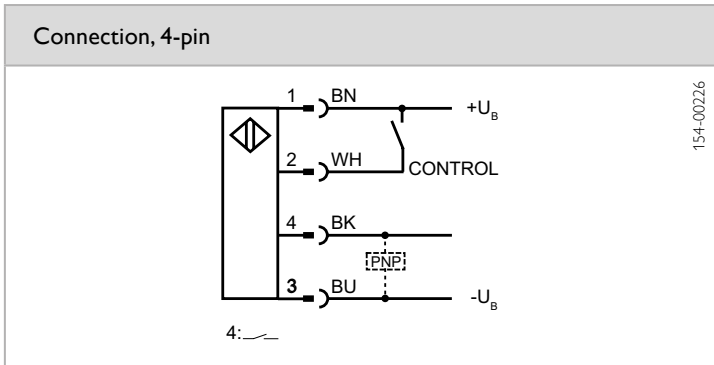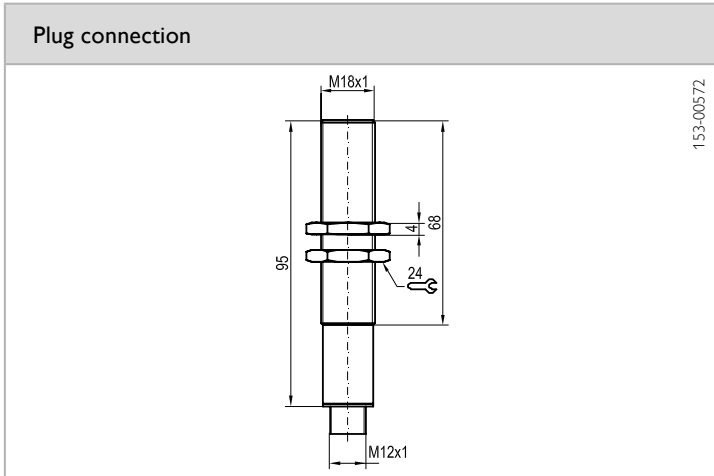[1] With constant ambient conditions   [2] Max. 10 % ripple, within U_B [3] With connected IP 65 plug

Operating scanning distance	Switching output	Housing material	Type of connection	Part number	Article number
30 … 250 mm	PNP	Nickel-plated brass	Plug, M12x1, 4-pin	UM 18-60/250-CD-HP	690-51541
30 … 250 mm	PNP	Stainless steel	Plug, M12x1, 4-pin	UM 18-60/250-CD-HP-E	690-51542

Plug connection

153-00572

M18x1

95

68

4

24

M12x1

Connection, 4-pin

154-00226

1	BN	+U_B
2	WH	CONTROL
4	BK	
3	BU	-U_B

PNP

4:

Sound cone

155-00650

| 100 mm | 50 mm | 0 mm | 50 mm | 100 mm |

0 mm
50 mm
Aligned plate
Tube Ø 10 mm — 100 mm
150 mm
200 mm
250 mm
300 mm
350 mm

10

Accessories

| Connection cables | From Page A-38 |
| Brackets | From Page A-4 |

UMT 30-350

Ultrasonic sensor with switching output

CE
IP 67

PRODUCT HIGHLIGHTS

- Ideal for monitoring the filling levels of liquids such as fats and oils
- With one or two switching outputs as option
- Easy pre-setting of sensor via digital display – sensor immediately ready for operation
- Synchronisation of up to 10 devices in restricted spaces
- Additional features with numerous supplementary functions

Sensor data	
Limiting scanning distance	600 mm
Operating scanning distance	65 … 350 mm
Ultrasonic frequency	~ 400 kHz
Resolution	0.025 mm
Repeatability	± 0.15 %[1]
Hysteresis[2]	5 mm
Accuracy[2]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions	
Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Scanning distance adjustment	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set switching point Mode 2: set Window Mode Mode 3: set two-way reflex switch
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Hysteresis – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings[3]	Measurement range: limit scanning distance Switching distances: scanning distance Switching output: N.O.
Default settings[4]	Measurement range: limit scanning distance Switching distances: scanning distance and half scanning distance Switching output: N.O.

Electrical data	
Operating voltage, +U_B	9 … 30 V DC[5]
No-load current, I_0	≤ 80 mA
Output current, le	200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Switching output, Q	1 × PNP / 2 × PNP (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)[2]	8 Hz[3] / 12 Hz[4]
Response time[2]	70 ms[3] / 64 ms[4]
Connection, GY	Sync. / Com.

Mechanical data	
Dimensions	M30 × 84 mm
Enclosure rating	IP 67[6]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight (plug device)	150 g
Vibration and impact resistance	EN 60947-5-2

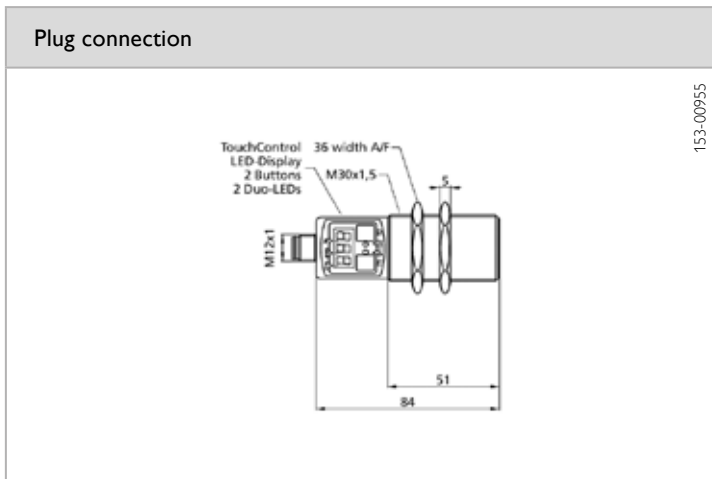[1] Related to current measurement value   [2] Parameterisable via control panel   [3] 1 × PNP   [4] 2 × PNP   [5] Max. 10 % ripple, within U_B [6] With connected IP 67 plug

Version: 01/2021. Subject to changes; diagrams similar

Operating scanning distance	Switching output	Type of connection	Part number	Article number
65 … 350 mm	1 × PNP	Plug, M12x1, 5-pin	UMT 30-350-PSD-L5	690-51560
65 … 350 mm	2 × PNP	Plug, M12x1, 5-pin	UMT 30-350-2PSD-L5	690-51561

Plug connection

153-00955

TouchControl 36 width A/F
LED-Display
2 Buttons M30x1,5
2 Duo-LEDs

M12x1

5

51

84

Connection, 5-pin (1 x PNP)

154-00322

1 — +U_B
2
4 — Q (PNP)
5 — Sync/Com
3 — -U_B

U

1 PNP switched output

154-00306

		colour
1	+U_B	brown
3	-U_B	blue
4	Q	black
2	-	white
5	Sync/Com.	grey

Connection, 5-pin (2 x PNP)

154-00323

1 — +U_B
2 — Q1 (PNP)
4 — Q2 (PNP)
5 — Sync/Com
3 — -U_B

U

2 PNP switched outputs

154-00307

		colour
1	+U_B	brown
3	-U_B	blue
4	Q2	black
2	Q1	white
5	Sync/Com.	grey

10

Sound cone

155-01561

100 mm 0 mm 100 mm

0 mm
100 mm
Aligned Plate
200 mm
Tube ø 27 mm
300 mm
350 mm
400 mm
500 mm
600 mm

Synchronisation / multiplex

155-01580

A ≤ 0.40 m

B ≤ 2.50 m

Mounting distances below which synchronisation / multiplex should be used.

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UMT 30-350-A

Ultrasonic sensor with analogue output

PRODUCT HIGHLIGHTS

- Automatic selection to current or voltage output
- Easy pre-setting of sensor via digital display – sensor immediately ready for operation
- Synchronisation of up to 10 devices in restricted spaces
- Additional features with numerous supplementary functions

Sensor data

Limiting scanning distance	600 mm
Operating scanning distance	65 … 350 mm
Ultrasonic frequency	~ 400 kHz
Resolution [1]	0.025 ... 0.17 mm
Repeatability	± 0.15 %[2]
Accuracy[3]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions

Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Set analogue characteristic	Via Teach-in button and numerically via 7-segment display
Teach-in modes	Mode 1: set window limits Mode 2: rising / falling output characteristics
Adjustment possibilities	Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Indicator Mode – Current or voltage output selection – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings	Measurement range: limit scanning distance Window limits, analogue signal: blind zone and scanning distance Switching output: rising analogue characteristic

Electrical data

Operating voltage, +U_B	9 … 30 V DC[4]
No-load current, I_0	≤ 80 mA
Current output	R_L ≤ 100 Ω with 9 V ≤ U_B ≤ 20 V R_L ≤ 500 Ω with U_B ≥ 20 V
Voltage output	R_L ≥ 100 kΩ with U_B ≥ 15 V
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Analogue output	0 … 10 V / 4 … 20 mA
Response time[3]	64 ms
Connection, GY	Sync. / Com.

Mechanical data

Dimensions	M30 x 84 mm
Enclosure rating	IP 67[5]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	150 g
Vibration and impact resistance	EN 60947-5-2

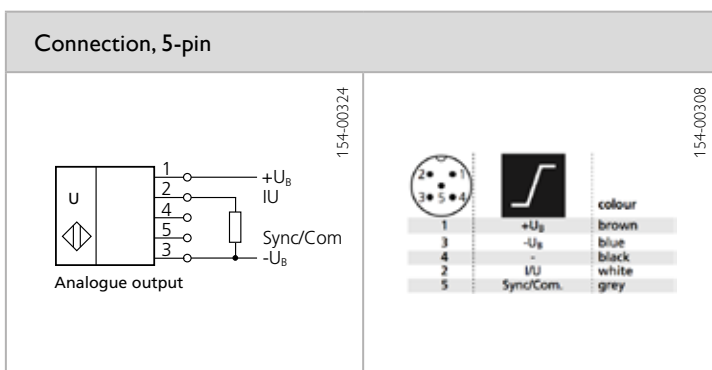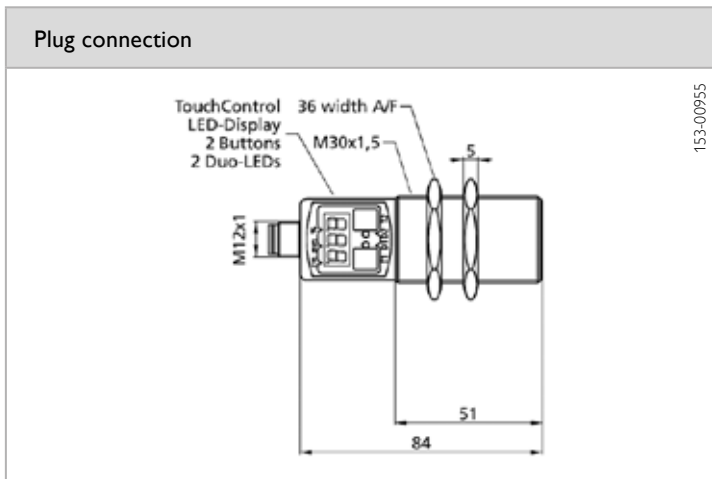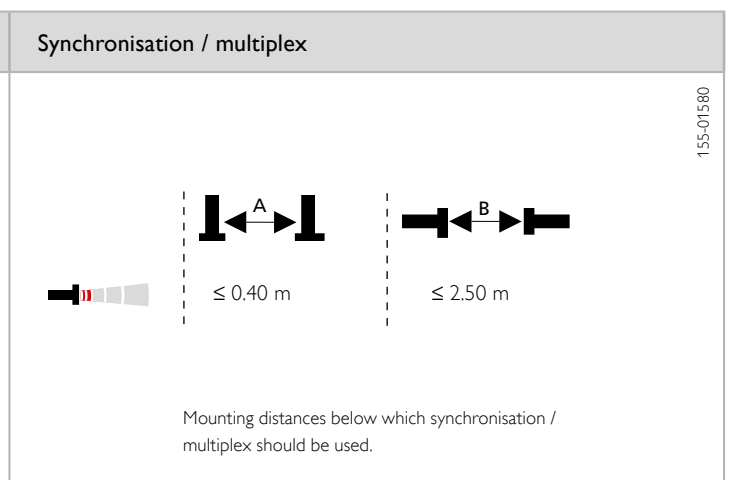[1] depending on the set analogue window   [2] Related to current measurement value   [3] Parameterisable via control panel   [4] Max. 10 % ripple, within U_B [5] With connected IP 67 plug
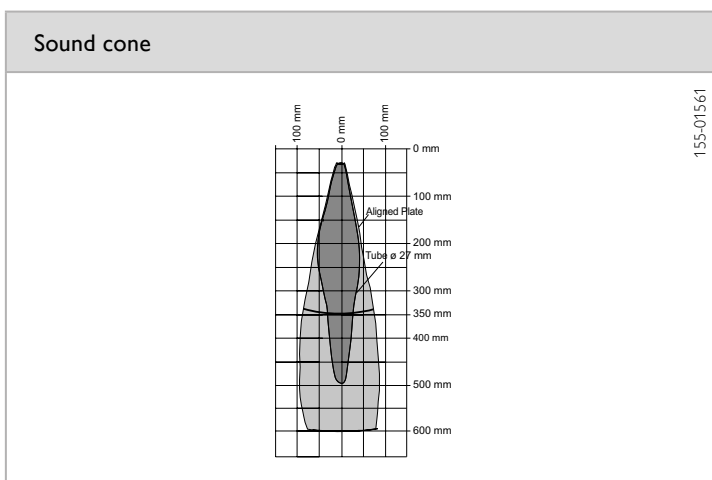
Operating scanning distance	Analogue output	Type of connection	Part number	Article number
65 … 350 mm	0 … 10 V / 4 … 20 mA	Plug, M12×1, 5-pin	UMT 30-350-A-IUD-L5	690-51572

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs

36 width A/F

M30x1,5

M12x1

5

51

84

153-00955

Connection, 5-pin

1 +U$_B$
2 IU
4
5 Sync/Com
3 -U$_B$

U

Analogue output

154-00324

	colour
1 +U$_B$	brown
3 -U$_B$	blue
4 -	black
2 I/U	white
5 Sync/Com.	grey

154-00308

Sound cone

100 mm   0 mm   100 mm

0 mm
100 mm
200 mm
300 mm
350 mm
400 mm
500 mm
600 mm

Aligned Plate
Tube ø 27 mm

155-01561

Synchronisation / multiplex

A   ≤ 0.40 m

B   ≤ 2.50 m

Mounting distances below which synchronisation / multiplex should be used.

155-01580

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

10

UMT 30-1300

Ultrasonic sensor with switching output

CE

IP 67

PRODUCT HIGHLIGHTS

- Ideal for monitoring the filling levels of liquids such as fats and oils
- With one or two switching outputs as option
- Sensor adjustment via teach-in or numerically via 7-segment display
- Synchronisation of up to 10 devices in restricted spaces
- Additional features with numerous supplementary functions

Sensor data

Limiting scanning distance	2000 mm
Operating scanning distance	200 … 1300 mm
Ultrasonic frequency	~ 200 kHz
Resolution	0.18 mm
Repeatability	± 0.15 %[1]
Hysteresis[2]	20 mm
Accuracy[2]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions

Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Scanning distance adjustment	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set switching point Mode 2: set Window Mode Mode 3: set two-way reflex switch
Adjustment possibilities	N.O. / N.C. via teach-in button Button lock via teach-in button Default settings via teach-in button
Supplementary functions	– Energy-saving Mode – Hysteresis – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings[3]	Measurement range: limit scanning distance Switching distances: scanning distance Switching output: N.O.
Default settings[4]	Measurement range: limit scanning distance Switching distances: scanning distance and half scanning distance Switching output: N.O.

Electrical data

Operating voltage, $+U_B$	9 … 30 V DC[5]
No-load current, I_0	≤ 80 mA
Output current, Ie	200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Switching output, Q	1 × PNP / 2 × PNP (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)[2]	6 Hz[3] / 8 Hz[4]
Response time[2]	110 ms[3] / 92 ms[4]
Connection, GY	Sync. / Com.

Mechanical data

Dimensions	M30 x 84 mm
Enclosure rating	IP 67[6]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	150 g
Vibration and impact resistance	EN 60947-5-2

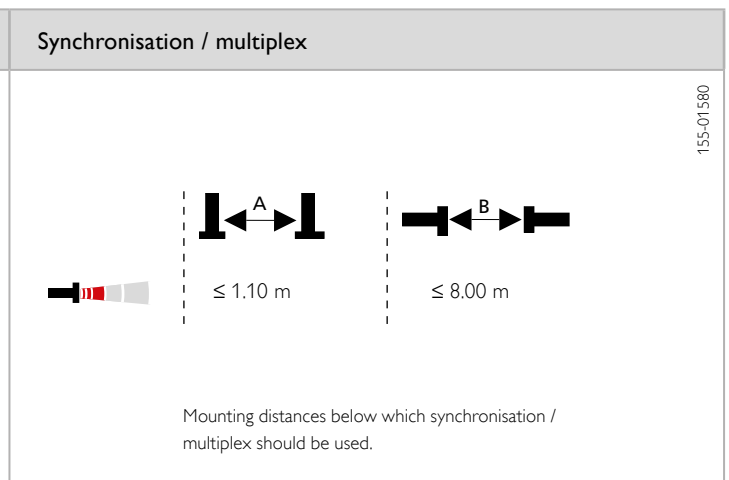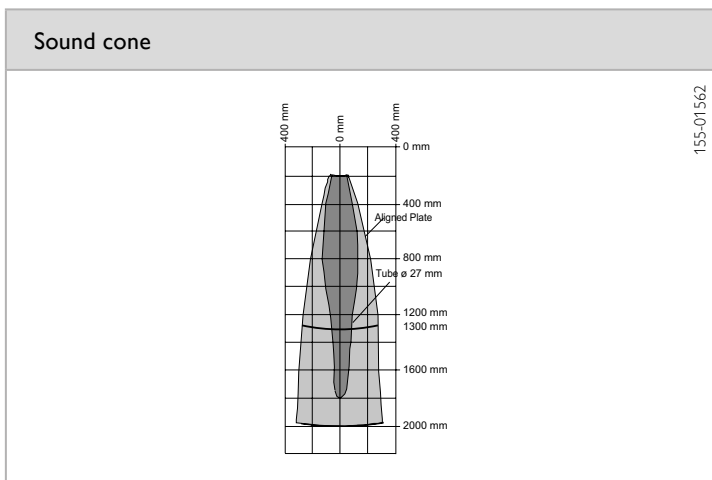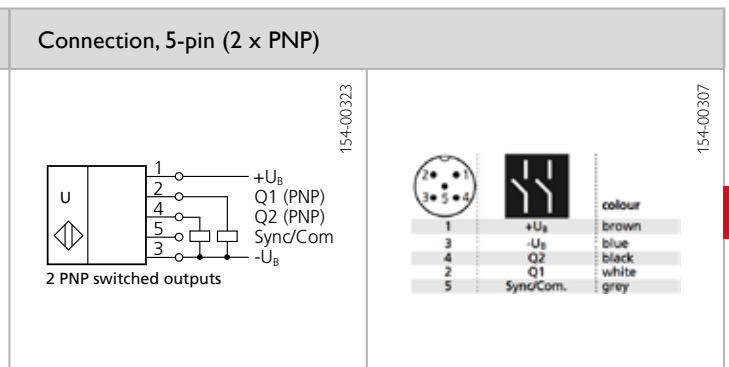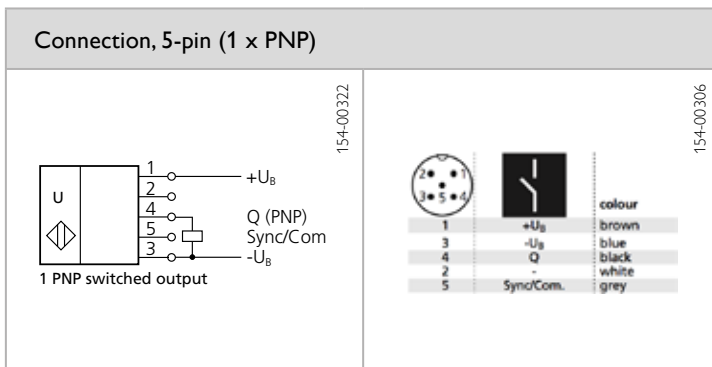[1] Related to current measurement value   [2] Parameterisable via control panel   [3] 1 × PNP   [4] 2 × PNP   [5] Max. 10 % ripple, within U_B [6] With connected IP 67 plug

Version: 01/2021. Subject to changes; diagrams similar

Operating scanning distance	Switching output	Type of connection	Part number	Article number
200 … 1300 mm	1 × PNP	Plug, M12×1, 5-pin	UMT 30-1300-PSD-L5	690-51563
200 … 1300 mm	2 × PNP	Plug, M12×1, 5-pin	UMT 30-1300-2PSD-L5	690-51564

Plug connection

TouchControl — 36 width A/F
LED-Display
2 Buttons — M30x1,5
2 Duo-LEDs

M12x1

5

51

84

153-00952

Connection, 5-pin (1 x PNP)

154-00322

1
2
4
5
3

+U_B
Q (PNP)
Sync/Com
-U_B

1 PNP switched output

154-00306

		colour
1	+U_B	brown
3	-U_B	blue
4	Q	black
2	-	white
5	Sync/Com.	grey

Connection, 5-pin (2 x PNP)

154-00323

1
2
4
5
3

+U_B
Q1 (PNP)
Q2 (PNP)
Sync/Com
-U_B

2 PNP switched outputs

154-00307

		colour
1	+U_B	brown
3	-U_B	blue
4	Q2	black
2	Q1	white
5	Sync/Com.	grey

10

Sound cone

155-01562

400 mm   0 mm   400 mm

0 mm
400 mm Aligned Plate
800 mm
Tube ø 27 mm
1200 mm
1300 mm
1600 mm
2000 mm

Synchronisation / multiplex

155-01580

A   B

≤ 1.10 m   ≤ 8.00 m

Mounting distances below which synchronisation / multiplex should be used.

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UMT 30-1300-A

Ultrasonic sensor with analogue output

CE
IP 67

PRODUCT HIGHLIGHTS

- Ideal for monitoring the filling levels of liquids such as fats and oils

- Automatic selection to current or voltage output

- Easy pre-setting of sensor via digital display – sensor immediately ready for operation

- Synchronisation of up to 10 devices in restricted spaces

- Additional features with numerous supplementary functions

Sensor data	
Limiting scanning distance	2000 mm
Operating scanning distance	200 … 1300 mm
Ultrasonic frequency	~ 200 kHz
Resolution [1]	0.18 ... 0.57 mm
Repeatability	± 0.15 %[2]
Accuracy[3]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions	
Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Set analogue characteristic	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set window limits Mode 2: rising / falling output characteristics
Adjustment possibilities	Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Indicator Mode – Current or voltage output selection – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings	Measurement range: limit scanning distance Window limits, analogue signal: blind zone and scanning distance Switching output: rising analogue characteristic

Electrical data	
Operating voltage, +U_B	9 … 30 V DC[4]
No-load current, I_0	≤ 80 mA
Current output	R_L ≤ 100 Ω with 9 V ≤ U_B ≤ 20 V; R_L ≤ 500 Ω with U_B ≥ 20 V
Voltage output	R_L ≥ 100 kΩ with U_B ≥ 15V
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Analogue output	0 … 10 V / 4 … 20 mA
Response time[3]	92 ms
Connection, GY	Sync. / Com.

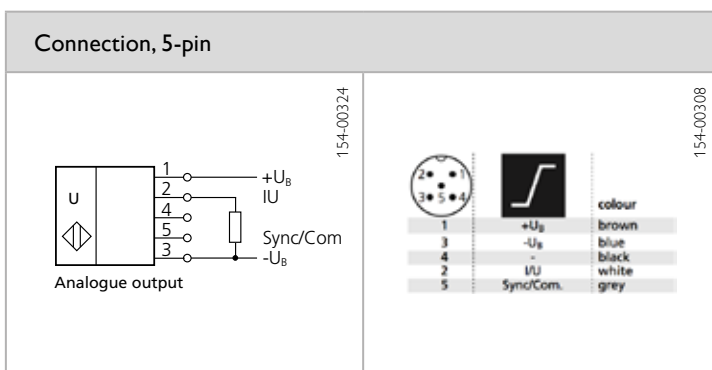| Mechanical data	
Dimensions	M30 x 84 mm
Enclosure rating	IP 67[5]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	150 g
Vibration and impact resistance	EN 60947-5-2

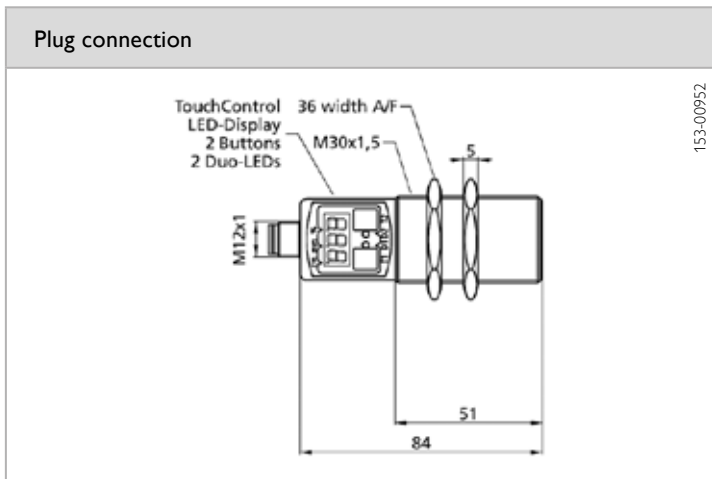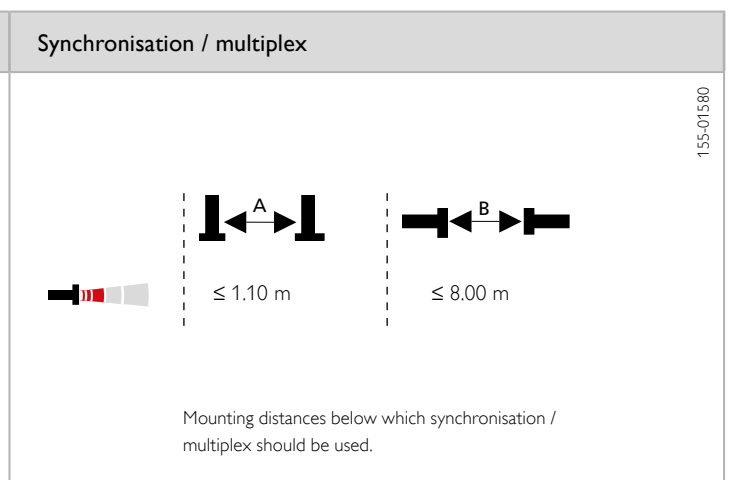[1] depending on the set analogue window   [2] Related to current measurement value   [3] Parameterisable via control panel   [4] Max. 10 % ripple, within U_B [5] With connected IP 67 plug
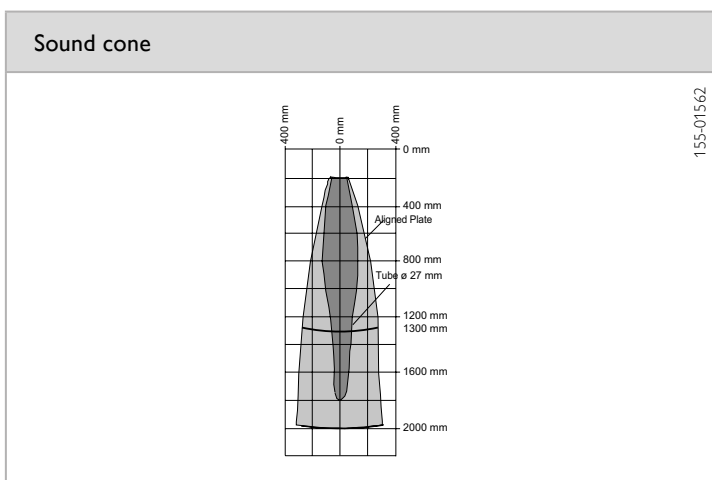
Operating scanning distance	Analogue output	Type of connection	Part number	Article number
200 … 1300 mm	0 … 10 V / 4 … 20 mA	Plug, M12x1, 5-pin	UMT 30-1300-A-IUD-L5	690-51562

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs
36 width A/F
M30x1,5
M12x1
5
51
84
153-00952

Connection, 5-pin

1   +U$_B$
2   IU
4
5   Sync/Com
3   -U$_B$
Analogue output
154-00324

		colour
1	+U$_B$	brown
3	-U$_B$	blue
4	-	black
2	I/U	white
5	Sync/Com.	grey

154-00308

Sound cone

400 mm   0 mm   400 mm
0 mm
400 mm Aligned Plate
800 mm
Tube ø 27 mm
1200 mm
1300 mm
1600 mm
2000 mm
155-01562

Synchronisation / multiplex

A   ≤ 1.10 m
B   ≤ 8.00 m

Mounting distances below which synchronisation / multiplex should be used.

155-01580

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

10

UMT 30-3400

Ultrasonic sensor with switching output

CE

IP 67

Sensor data

Limiting scanning distance	5000 mm
Operating scanning distance	350 … 3400 mm
Ultrasonic frequency	~ 120 kHz
Resolution	0.18 mm
Repeatability	± 0.15 %[1]
Hysteresis[2]	50 mm
Accuracy[2]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions

Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Scanning distance adjustment	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set switching point Mode 2: set Window Mode Mode 3: set two-way reflex switch
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Hysteresis – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings[3]	Measurement range: limit scanning distance Switching distances: scanning distance Switching output: N.O.
Default settings[4]	Measurement range: limit scanning distance Switching distances: scanning distance and half scanning distance Switching output: N.O.

Electrical data

Operating voltage, $+U_B$	9 … 30 V DC[5]
No-load current, I_0	≤ 80 mA
Output current, Ie	200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Switching output, Q	1 × PNP / 2 × PNP (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)[2]	3 Hz[3] / 4 Hz[4]
Response time[2]	180 ms[3] / 172 ms[4]
Connection, GY	Sync. / Com.

Mechanical data

Dimensions	M30 × 102 mm
Enclosure rating	IP 67[6]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	210 g
Vibration and impact resistance	EN 60947-5-2

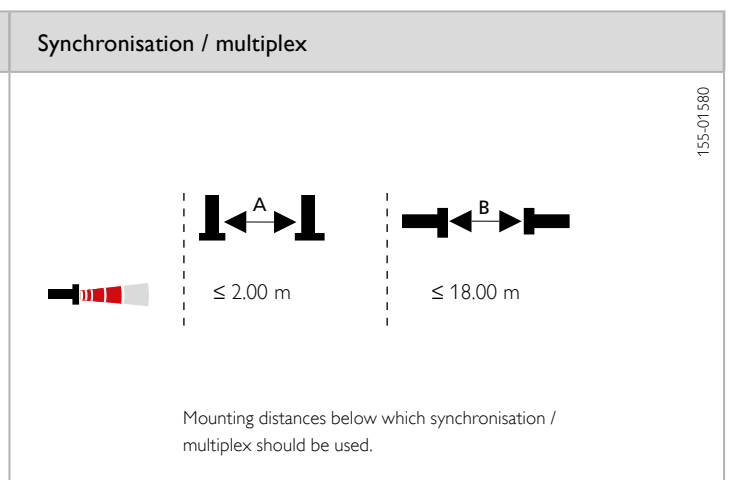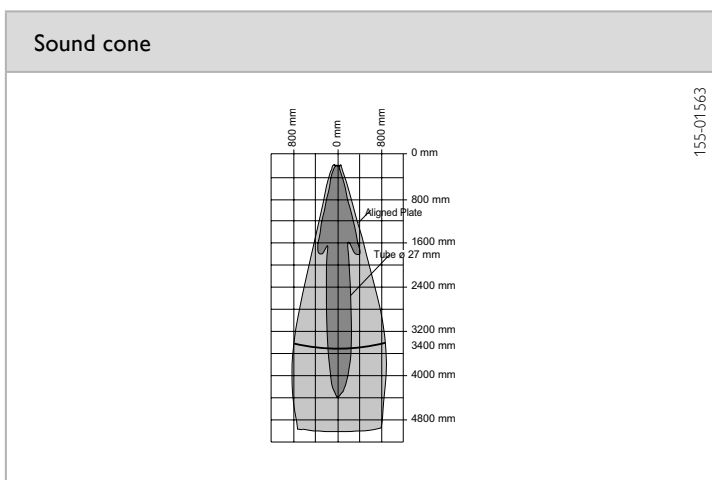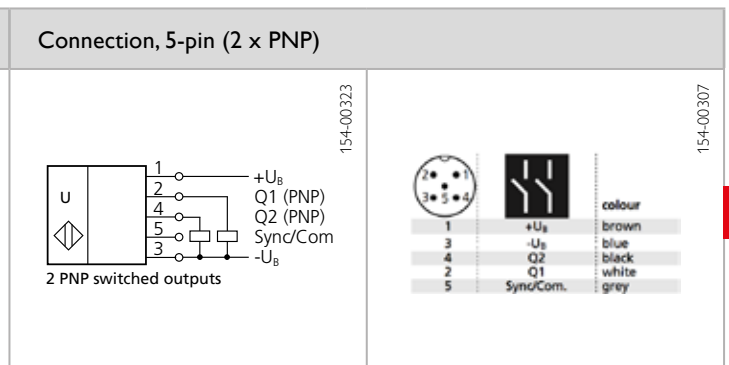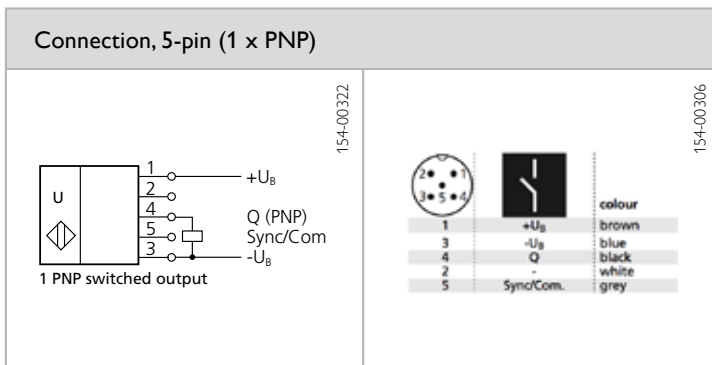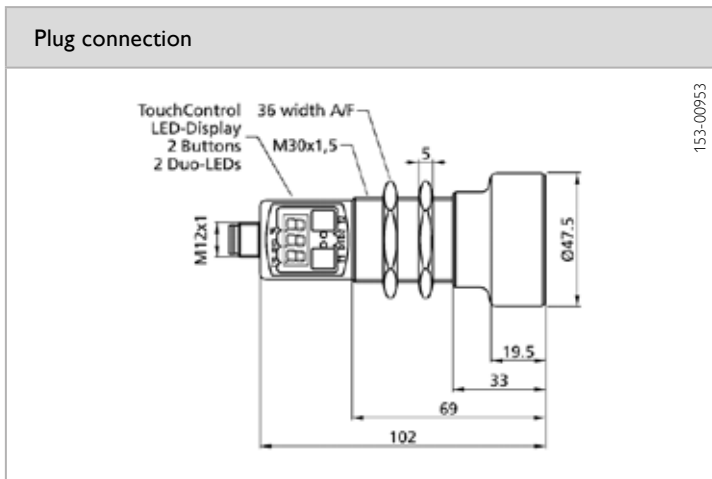[1] Related to current measurement value   [2] Parameterisable via control panel   [3] 1 × PNP   [4] 2 × PNP   [5] Max. 10 % ripple, within U_B [6] With connected IP 67 plug

Operating scanning distance	Switching output	Type of connection	Part number	Article number
350 … 3400 mm	1 × PNP	Plug, M12×1, 5-pin	UMT 30-3400-PSD-L5	690-51567
350 … 3400 mm	2 × PNP	Plug, M12×1, 5-pin	UMT 30-3400-2PSD-L5	690-51568

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs
36 width A/F
M30x1,5
M12x1
5
Ø47.5
19.5
33
69
102

153-00953

Connection, 5-pin (1 x PNP)

154-00322

1
2
4
5
3
U
+U_B
Q (PNP)
Sync/Com
-U_B

1 PNP switched output

154-00306

		colour
1	+U_B	brown
3	-U_B	blue
4	Q	black
2	-	white
5	Sync/Com.	grey

Connection, 5-pin (2 x PNP)

154-00323

1
2
4
5
3
U
+U_B
Q1 (PNP)
Q2 (PNP)
Sync/Com
-U_B

2 PNP switched outputs

154-00307

		colour
1	+U_B	brown
3	-U_B	blue
4	Q2	black
2	Q1	white
5	Sync/Com.	grey

10

Sound cone

155-01563

800 mm
0 mm
800 mm
0 mm
800 mm
Aligned Plate
1600 mm
Tube ∅ 27 mm
2400 mm
3200 mm
3400 mm
4000 mm
4800 mm

Synchronisation / multiplex

155-01580

A
≤ 2.00 m

B
≤ 18.00 m

Mounting distances below which synchronisation / multiplex should be used.

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UMT 30-3400-A

Ultrasonic sensor with analogue output

CE

IP 67

PRODUCT HIGHLIGHTS

- Automatic selection to current or voltage output
- Easy pre-setting of sensor via digital display – sensor immediately ready for operation
- Synchronisation of up to 10 devices in restricted spaces
- Additional features with numerous supplementary functions
- Choice of brass or stainless steel housings

Sensor data

Limiting scanning distance	5000 mm
Operating scanning distance	350 … 3400 mm
Ultrasonic frequency	~ 120 kHz
Resolution[1]	0.18 ... 1.5 mm
Repeatability	± 0.15 %[2]
Accuracy[3]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions

Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Set analogue characteristic	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set window limits Mode 2: rising / falling output characteristics
Adjustment possibilities	Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Indicator Mode – Current or voltage output selection – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings	Measurement range: limit scanning distance Window limits, analogue signal: blind zone and scanning distance Switching output: rising analogue characteristic

Electrical data

Operating voltage, +U_B	9 … 30 V DC[4]
No-load current, I_0	≤ 80 mA
Current output	R_L ≤ 100 Ω with 9 V ≤ U_B ≤ 20 V; R_L ≤ 500 Ω with U_B ≥ 20 V
Voltage output	R_L ≥ 100 kΩ with U_B ≥ 15 V
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Analogue output	0 … 10 V / 4 … 20 mA
Response time[3]	172 ms
Connection, GY	Sync. / Com.

Mechanical data

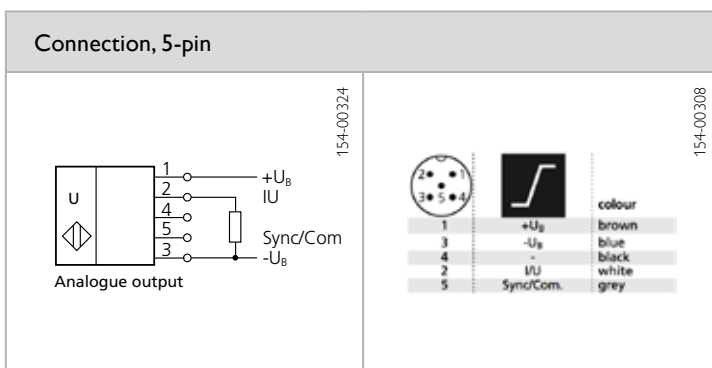|	
Dimensions	M30 x 102 mm
Enclosure rating	IP 67[5]
Material, housing	(See selection table) Plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	210 g
Vibration and impact resistance	EN 60947-5-2

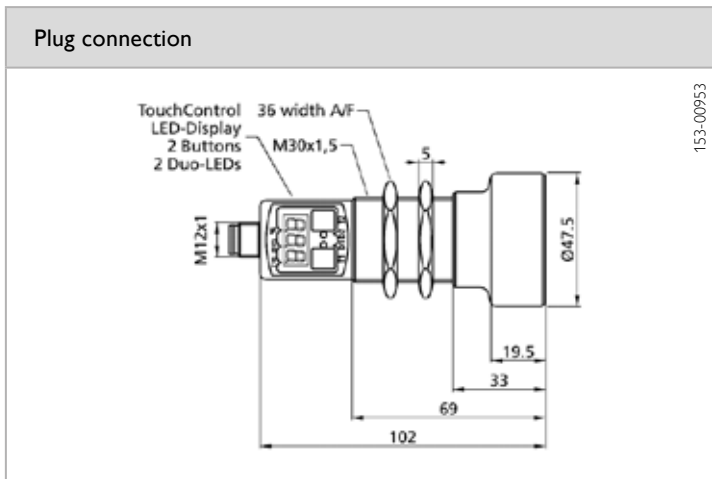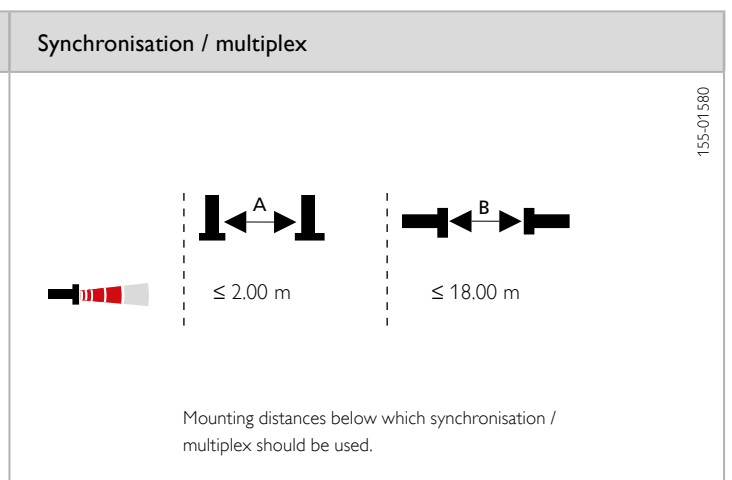[1] depending on the set analogue window   [2] Related to current measurement value   [3] Parameterisable via control panel   [4] Max. 10 % ripple, within U_B [5] With connected IP 67 plug
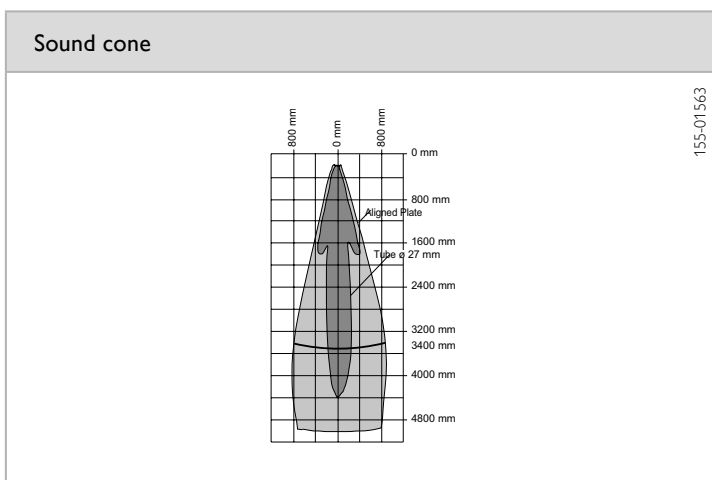
Operating scanning distance	Analogue output	Material, housing	Type of connection	Part number	Article number
350 … 3400 mm	0 … 10 V / 4 … 20 mA	Brass, nickel-plated	Plug, M12×1, 5-pin	UMT 30-3400-A-IUD-L5	690-51565
350 … 3400 mm	0 … 10 V / 4 … 20 mA	Stainless steel, 1.4571	Plug, M12×1, 5-pin	UMT 30-3400-AE-IUD-L5	690-51566

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs
36 width A/F
M30x1,5
M12x1
Ø47.5
5
19.5
33
69
102
153-00953

Connection, 5-pin

U
1 +U$_B$
2
4 IU
5
3 Sync/Com
-U$_B$
Analogue output
154-00324

	colour
1 +U$_B$	brown
3 -U$_B$	blue
4 -	black
2 I/U	white
5 Sync/Com.	grey

154-00308

Sound cone

800 mm 0 mm 800 mm
0 mm
800 mm
Aligned Plate
1600 mm
Tube Ø 27 mm
2400 mm
3200 mm
3400 mm
4000 mm
4800 mm
155-01563

Synchronisation / multiplex

A ≤ 2.00 m
B ≤ 18.00 m

Mounting distances below which synchronisation / multiplex should be used.

155-01580

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

10

UMT 30-6000

Ultrasonic sensor with switching output

CE

IP 67

PRODUCT HIGHLIGHTS

- Long scanning range of 6 m

- With one or two switching outputs as option

- Sensor adjustment via teach-in or numerically via 7-segment display

- Additional features with numerous supplementary functions

Sensor data	
Limiting scanning distance	8000 mm
Operating scanning distance	600 … 6000 mm
Ultrasonic frequency	~ 80 kHz
Resolution	0.18 mm
Repeatability	± 0.15 %[1]
Hysteresis[2]	100 mm
Accuracy[2]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions	
Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Scanning distance adjustment	Via Teach-in buttons and numerically via 7-segment display
Teach-in modes	Mode 1: set switching point Mode 2: set Window Mode Mode 3: set two-way reflex switch
Adjustment possibilities	N.O. / N.C. via Teach-in button Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Hysteresis – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings[3]	Measurement range: limit scanning distance Switching distances: scanning distance Switching output: N.O.
Default settings[4]	Measurement range: limit scanning distance Switching distances: scanning distance and half scanning distance Switching output: N.O.

Electrical data	
Operating voltage, $+U_B$	9 … 30 V DC[5]
No-load current, I_0	≤ 80 mA
Output current, Ie	200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Switching output, Q	1 × PNP / 2 × PNP (see selection table)
Output function	N.O. / N.C.
Switching frequency, f (ti/tp 1:1)[2]	2 Hz[3] / 3 Hz[4]
Response time[2]	240 ms
Connection, GY	Sync. / Com.

Mechanical data	
Dimensions	M30 × 105 mm
Enclosure rating	IP 67[6]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	270 g
Vibration and impact resistance	EN 60947-5-2

[1] Related to current measurement value   [2] Parameterisable via control panel   [3] 1 × PNP   [4] 2 × PNP   [5] Max. 10 % ripple, within U_B [6] With connected IP 67 plug
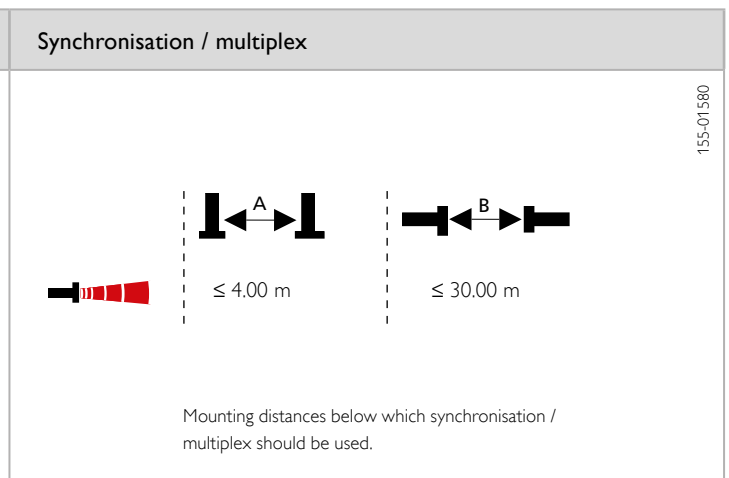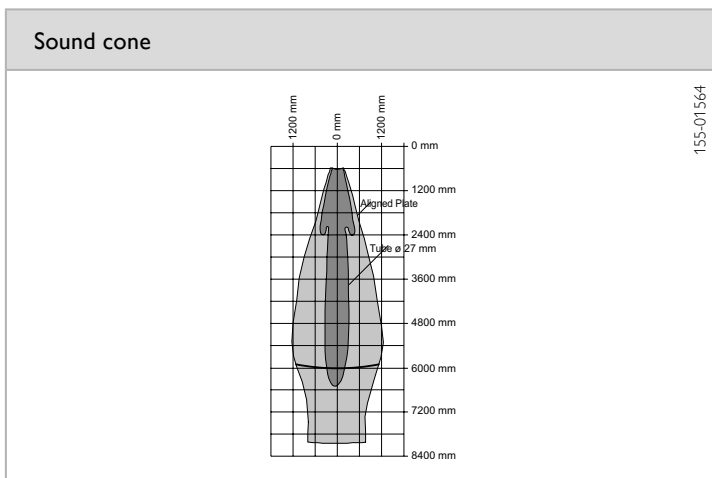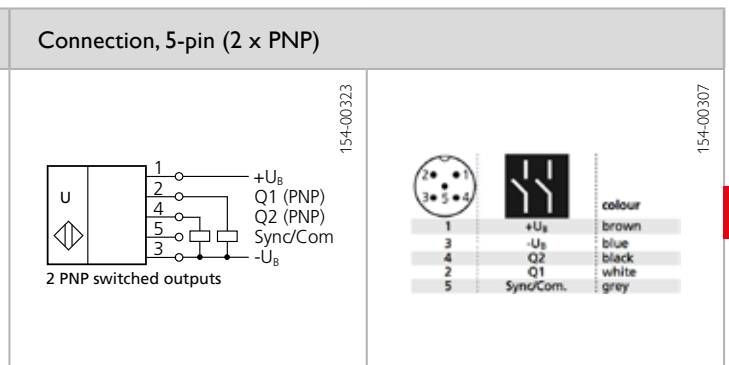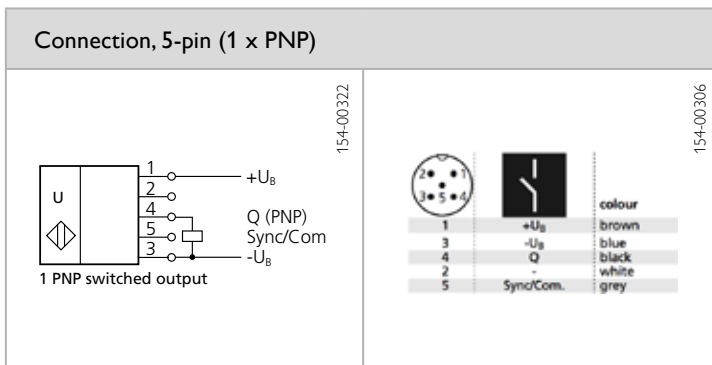
Version: 01/2021. Subject to changes; diagrams similar

Operating scanning distance	Switching output	Type of connection	Part number	Article number
600 … 6000 mm	1 × PNP	Plug, M12×1, 5-pin	UMT 30-6000-PSD-L5	690-51570
600 … 6000 mm	2 × PNP	Plug, M12×1, 5-pin	UMT 30-6000-2PSD-L5	690-51571

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs
36 width A/F
M30x1,5
M12x1
Ø65
5
22.5
36
72
105

153-00954

Connection, 5-pin (1 x PNP)

1 PNP switched output

154-00322

	colour
1	+U_B	brown
3	-U_B	blue
4	Q	black
2	-	white
5	Sync/Com.	grey

154-00306

Connection, 5-pin (2 x PNP)

2 PNP switched outputs

154-00323

	colour
1	+U_B	brown
3	-U_B	blue
4	Q2	black
2	Q1	white
5	Sync/Com.	grey

154-00307

Sound cone

155-01564

Synchronisation / multiplex

≤ 4.00 m ≤ 30.00 m

Mounting distances below which synchronisation / multiplex should be used.

155-01580

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

UMT 30-6000-A

Ultrasonic sensor with analogue output

CE

IP 67

PRODUCT HIGHLIGHTS

- Long scanning range of 6 m
- Automatic selection to current or voltage output
- Easy pre-setting of sensor via digital display – sensor immediately ready for operation
- Synchronisation of up to 10 devices in restricted spaces
- Additional features with numerous supplementary functions

Sensor data	
Limiting scanning distance	8000 mm
Operating scanning distance	600 … 6000 mm
Ultrasonic frequency	~ 80 kHz
Resolution[1]	0.18 ... 2.4 mm
Repeatability	± 0.15 %[2]
Accuracy[3]	± 1 % (Temperature drift internal compensated, may be deactivated, 0.17 % / K without compensation)

Functions	
Display	Parameterisation
LED indicator 1	Switching output indicator
LED indicator 2	Switching output indicator
Set analogue characteristic	Via Teach-in button and numerically via 7-segment display
Teach-in modes	Mode 1: set window limits Mode 2: rising / falling output characteristics
Adjustment possibilities	Button lock via Teach-in button Default settings via Teach-in button
Supplementary functions	– Energy-saving Mode – Indicator Mode – Current or voltage output selection – Measurement value filter – Filter strength – Response delay – Foreground suppression – Multiplex Mode, device address – Multiplex Mode, highest address – Measurement range – Calibration display – Detection range, sensitivity
Default settings	Measurement range: limit scanning distance Window limits, analogue signal: blind zone and scanning distance Switching output: rising analogue characteristic

Electrical data	
Operating voltage, +U_B	9 … 30 V DC[4]
No-load current, I_0	≤ 80 mA
Current output	R_L ≤ 100 Ω with 9 V ≤ U_B ≤ 20 V; R_L ≤ 500 Ω with U_B ≥ 20 V
Voltage output	R_L ≥ 100 kΩ with U_B ≥ 15 V
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection (Q)
Power On Delay	< 300 ms
Analogue output	0 … 10 V / 4 … 20 mA
Response time[3]	240 ms
Connection, GY	Sync. / Com.

Mechanical data	
Dimensions	M30 × 105 mm
Enclosure rating	IP 67[5]
Material, housing	Brass, nickel-plated, plastic content: PBT, TPU
Material, ultrasonic converter	Polyurethane foam, epoxy resin with glass content
Type of connection	(See selection table)
Ambient temperature, operation	-25 … +70 °C
Ambient temperature, storage	-40 … +85 °C
Weight	270 g
Vibration and impact resistance	EN 60947-5-2

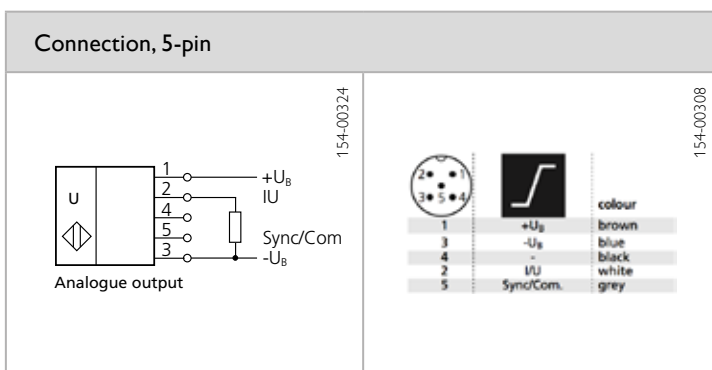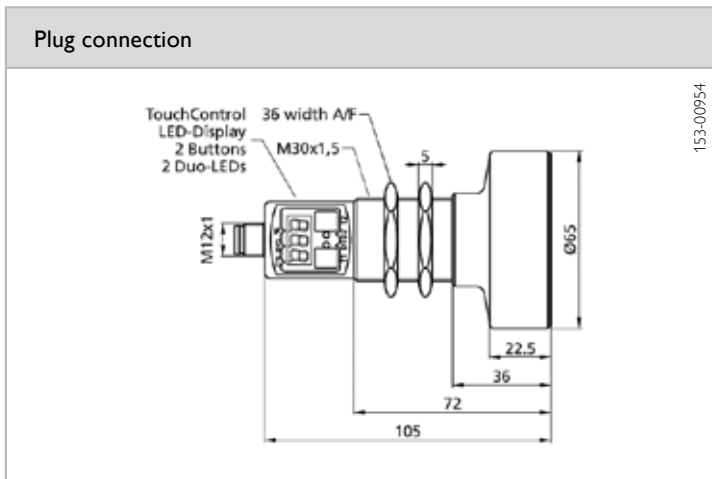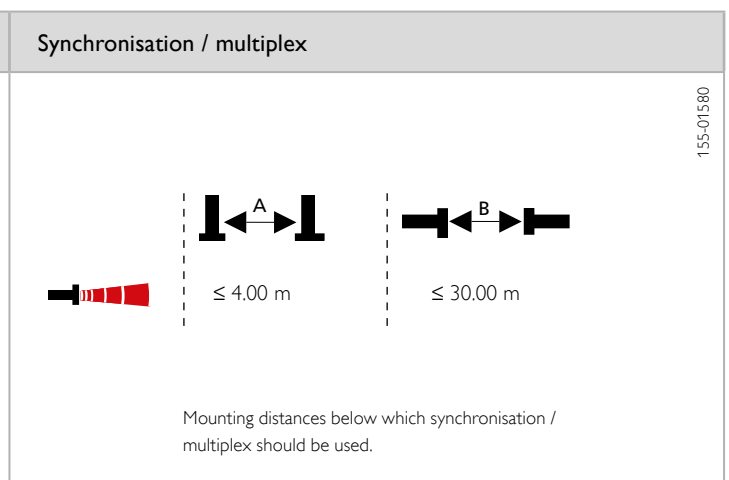[1] depending on the set analogue window   [2] Related to current measurement value   [3] Parameterisable via control panel   [4] Max. 10 % ripple, within U_B [5] With connected IP 67 plug

Version: 01/2021. Subject to changes; diagrams similar

Operating scanning distance	Analogue output	Type of connection	Part number	Article number
600 … 6000 mm	0 … 10 V / 4 … 20 mA	Plug, M12×1, 5-pin	UMT 30-6000-A-IUD-L5	690-51569

Plug connection

TouchControl
LED-Display
2 Buttons
2 Duo-LEDs

36 width A/F

M30x1,5

M12x1

Ø65

5

22.5

36

72

105

153-00954

Connection, 5-pin

154-00324

U	1	+U_B
	2	IU
	4	
	5	Sync/Com
	3	-U_B

Analogue output

154-00308

		colour
1	+U_B	brown
3	-U_B	blue
4	-	black
2	I/U	white
5	Sync/Com.	grey

Sound cone

1200 mm | 0 mm | 1200 mm

0 mm
1200 mm
Aligned Plate
2400 mm
Tube ø 27 mm
3600 mm
4800 mm
6000 mm
7200 mm
8400 mm

155-01564

Synchronisation / multiplex

A

≤ 4.00 m

B

≤ 30.00 m

Mounting distances below which synchronisation / multiplex should be used.

155-01580

Accessories

Connection cables	From Page A-38
Brackets	From Page A-4

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