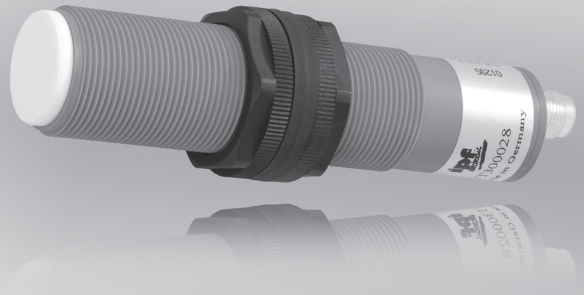design **M30x1.5**

dif. refl. sensors   measuring / sensing range   **150 ... 3500mm**

✓ **large measuring range**

✓ **current or voltage output and 2 switching outputs**

✓ **easy setting via teach-in button and LED-displays**

✓ **high sound intensity**

✓ **selectable normally open and normally closed function**

teachable analog output range as well as 2 PNP switching outputs

M12 DC

description

ipf ultrasonic sensors operate as non-contact position switches and/or position meters. The distances are determined by the echo-propagation time process. The temperature compensated propagation time measurement enables a very exact detection of position over a wide temperature range for sound reflecting objects of any color or material.

The use of a microprocessor makes the ultrasonic sensor insensitive to interference.

The devices have an analog voltage output (0 ... 10V) or a current output (4 ... 20mA) and two additional pnp outputs, their switch-points can be chosen freely.

The start and end of the analog range is defined by the teach-in process of the two corresponding switch-points, depending on whether the characteristic line should be positive or negative. The switching characteristic of the normally closed (nc) or normally open contact (no) can also be programmed in this way.
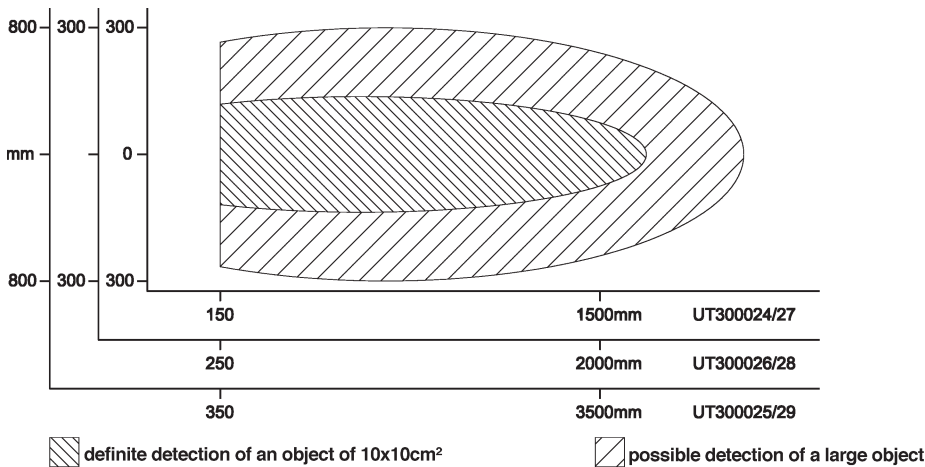
The start and the end of the analog range can be set independently of each other using a teach-in button. These endpoints define the position of the switch-points. Three LED displays facilitate simple programming.
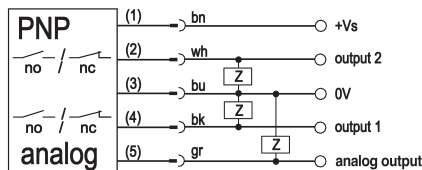
application examples

▶ filling level measurement of bulk materials and liquids
▶ measurement of heights, e.g. packages on conveyer belts, pallets or piles
▶ distance measurement, e.g. for driverless vehicles
▶ detection of optically non-recognizable materials
▶ cloth width or foil winding and unwinding control
▶ detection of thicknesses and diameters
▶ regulation of material tension by way of slack measurement
▶ goods positioning in automatic storage systems
▶ linear measurement systems for several objects

ultrasonic sensors

1400 diffuse reflection sensors

article-no.	UT300024	UT300026	UT300025
operating range	**150 ... 1500mm**	**250 ... 2000mm**	**350 ... 3500mm**
output	**4 ... 20mA / 2x pnp no/nc**	**4 ... 20mA / 2x pnp no/nc**	**4 ... 20mA / 2x pnp no/nc**
article-no.	**UT300027**	**UT300028**	**UT300029**
operating range	**150 ... 1500mm**	**250 ... 2000mm**	**350 ... 3500mm**
output	**0 ... 10V / 2x pnp no/nc**	**0 ... 10V / 2x pnp no/nc**	**0 ... 10V / 2x pnp no/nc**

TECHNICAL DATA

measuring range/sensing range	150mm ... 1500mm	250mm ... 2000mm	350mm ... 3500mm
sonic cone angle	8°	8°	8°
resolution	1mm	1mm	1mm
output signal	analog (see above) - 2x PNP no/nc	analog (see above) - 2x PNP no/nc	analog (see above) - 2x PNP no/nc
operating voltage	19 ... 30V DC	19 ... 30V DC	19 ... 30V DC
current consumption (w/o load)	≤ 45mA	≤ 45mA	≤ 45mA
output current (max. load)	100mA	100mA	100mA
carrier frequency	200kHz	180kHz	130kHz
linearity deviation	0.5%	0.5%	0.5%
hysteresis	1%	1%	1%
repeat accuracy	0.4% / > 2mm	0.4% / > 2mm	0.4% / > 2mm
sampling frequency	2Hz	2Hz	1Hz
response time	300msec	300msec	300msec
display (measuring range)	2x yellow LED	2x yellow LED	2x yellow LED
display (alignment mark)	green LED	green LED	green LED
adjustment	teach-in button	teach-in button	teach-in button
temperature compensation	0 ... +50°C	0 ... +50°C	0 ... +50°C
short-circuit protection	+	+	+
reverse polarity protection	+	+	+
design	M30x1.5	M30x1.5	M30x1.5
length (thread/complete)	90mm / 136mm	90mm / 140mm	90mm / 141mm
housing material	plastic	plastic	plastic
operating temperature	-15 ... +70°C	-15 ... +70°C	-15 ... +70°C
system of protection (EN 60529)	IP65	IP65	IP65
connection	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin
connection accessories	e.g. **VK205621**, 2m, PUR angular, shielded	e.g. **VK205621**, 2m, PUR angular, shielded	e.g. **VK205621**, 2m, PUR angular, shielded
mounting accessories (clip)	quick clip **AY000061**	quick clip **AY000061**	quick clip **AY000061**
further accessories	90° deflect. reflector **AU000010**	90° deflect. reflector **AU000010**	90° deflect. reflector **AU000010**

* observe the distance between
mounting clip and sensor head

detection ranges of the ultrasonic sensors
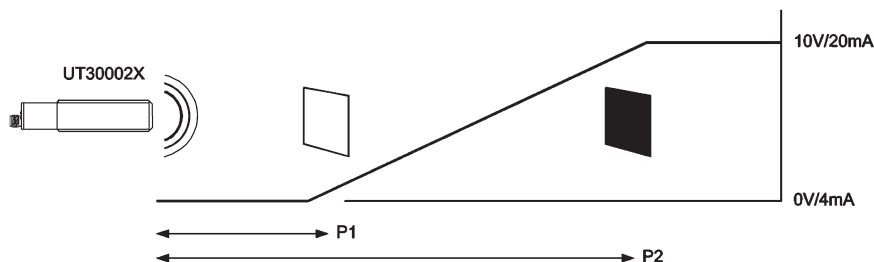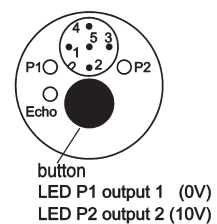
150	1500mm	UT300024/27
250	2000mm	UT300026/28
350	3500mm	UT300025/29

▨ definite detection of an object of 10x10cm²   ▨ possible detection of a large object

connection

PNP

no / nc

analog

no / nc

(1)	bn	+Vs
(2)	wh	output 2
(3)	bu	0V
(4)	bk	output 1
(5)	gr	analog output

wire colors: bn = brown (1), wh = white (2), bu = blue (3), bk = black (4), gr = grey (5)

analog characteristic curve

UT30002X

10V/20mA

0V/4mA

P1

P2

The response curve is invertible when teaching the sensor.

operator's controls

4 5 3
1 2

P1 ○   ○ P2

○
Echo

button
LED P1 output 1   (0V)
LED P2 output 2 (10V)

This data sheet contains the standard versions only. Kindly request the availability of other output- and connection functions.

We will be pleased to supply the matching cable socket for your devices with connector. Please refer to the list in catalog chapter "accessories" under "cable sockets **ipf**-*SENSORFLEX*®" or search our website for "VK".

Warning: Never use these devices in applications where the safety of a person depends on their functionality.

notes

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