► ultrasonic sensor

PRODUCT: devices with thread: plastic
                 diffuse reflection sensor (analogue/digital)

DESIGN: 18   M18x1
                 30   M30x1.5

analogue output 0-10V, 4-20mA 2 programmable switching outputs

- PBTP plastic sleeve
- devices with thread to EURONORM
- status display by LED and alignment mark
- short-circuit and reverse polarity protection
- 2 switch-points or teach-in analogue output
- connection with M12-connector
- delivery in storage box
- 2 year warranty

Function
ipf-ultrasonic sensors operate contactless as non-contacting position switches determining distances by the echo-propagation time process. The temperature compensated propagation time measurement enables a very exact sensing of position over a wide temperature range for sound reflecting objects of any colour and material.
The high sonor frequency makes the ultrasonic sensor insensitive to interference.
The teach-in input must be connected to GND (0 Volt) via a diffuse reflection sensor to teach in the switching points or the analogue output.

Applications:
- Filling level measurement of bulk materials and liquids
- Measurement of heights, e.g. packages on conveyor belt or pallets
- Distance measurement, e.g. detection of materials that are impossible to recognize optically

- Measurement of stacking heights on loading and unloading equipment
- Winding and unwinding control for any type of film
- Detection of thickness und diameters
- Control of material tensioning by means of slack measurement
- Length measurement systems

Analogue sensors
Any random interval within a measuring range can be taught in for the analogue output
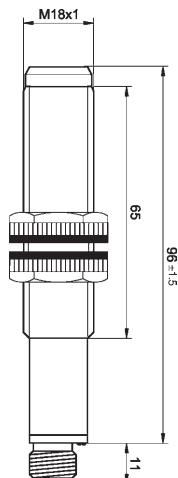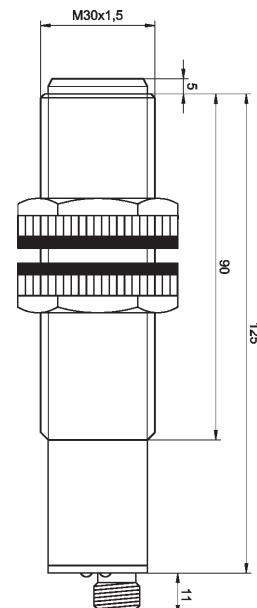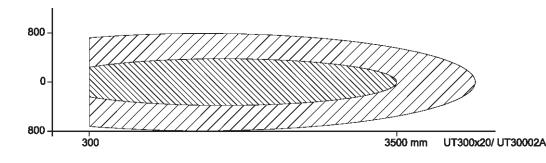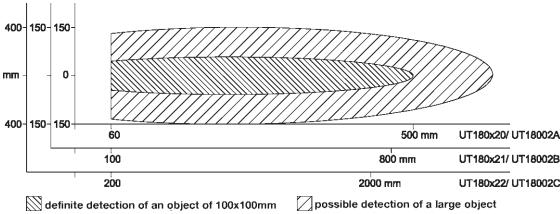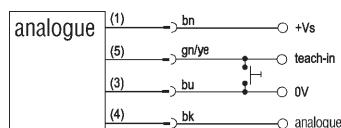
Switching sensors
The position and characteristics of the two switching outputs can be taught in via the teach-in input to an accuracy of one millimetre.

1. standard switching function
2. window function
3. hysteresis function

Technical data and list of articles
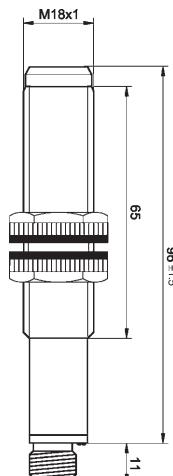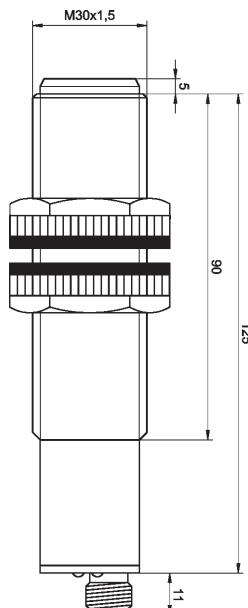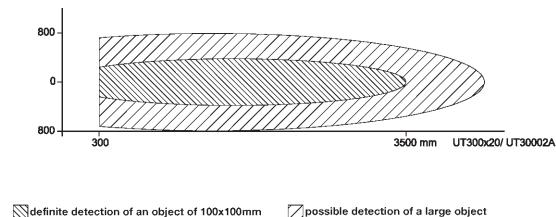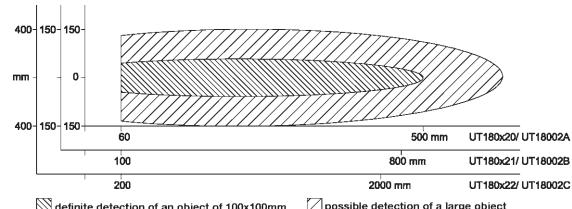
|	UT180020	UT180021	UT180022	UT300020
analogue output 4-20mA	**UT180020**	**UT180021**	**UT180022**	**UT300020**
analogue output 0-10V DC	**UT18002A**	**UT18002B**	**UT18002C**	**UT30002A**
detection range	60 to 500mm	100 to 800mm	200 to 2000mm	300 to 3500mm
carrier frequency	330kHz	300kHz	180kHz	130kHz
repeat accuracy	± 2mm / ± 0.2%	± 2mm / ± 0.2%	± 2mm / ± 0.2%	± 2mm / ±0.4%
linearity error	< 0.3%	< 0.3%	< 0.3%	< 0.5%
response time 90% of the accumulated value	100msec	100msec	250msec	400msec UT30002A: 700msec
current consumption	< 40mA	< 40mA	< 40mA	< 35mA
figure	1	1	1	2
operating voltage	15V to 30V DC			
sonic cone angle	8°			
alignment mark	green LED			
measuring range status	2 yellow LEDs			
ambient temperature	-15 to +70°C			
housing	PTBT			
system of protection	IP67 to EN 60529			
connection	M12-connector 5 pins			
matching cable socket	2m: **VK200621**, 5m: **VK500621**, 10m: **VKA00621**			

Fig. 1 **Fig. 2** **Sensing ranges of the ultrasonic sensor**

definite detection of an object of 100x100mm / possible detection of a large object

Connection

wire colours: bn = brown(1), bu = blue (3), bk = black (4), gn/ye = green/yellow (5)

▶ ultrasonic sensor

ipf electronic
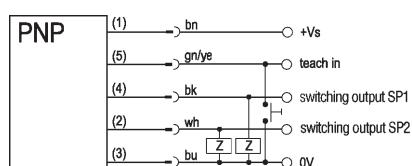
Technical data and list of articles

switching output	UT180320	UT180321	UT180322	UT300320
detection range	60 to 500mm	100 to 800mm	200 to 2000mm	300 to 3500mm
carrier frequency	330kHz	300kHz	180kHz	130kHz
sampling frequency	4.7Hz	4.7Hz	2.2Hz	0.5Hz
hysteresis	1%	1%	1%	1%
current consumption	< 35mA	< 35mA	< 35mA	< 80mA
figure	1	1	1	2
operating voltage	12V to 30V DC			
sonic cone angle	8°			
switching output	2 x pnp			
current rating	500mA			
alignment mark	green LED			
switching status display	2 yellow LEDs			
ambient temperature	-15 to +70°C			
housing	PTBT			
system of protection	IP67 to EN 60529			
connection	M12-connector 5 pins			
matching cable socket	2m: **VK200621**, 5m: **VK500621**, 10m: **VKA00621**			

Fig. 1

M18x1

65
96 ±1,5
11

Fig. 2

M30x1,5

5
90
125
11

Sensing ranges of the ultrasonic sensors

60	500 mm	UT180x20/ UT18002A
100	800 mm	UT180x21/ UT18002B
200	2000 mm	UT180x22/ UT18002C

▨ definite detection of an object of 100x100mm ▨ possible detection of a large object

| 300 | 3500 mm | UT300x20/ UT30002A |

▨ definite detection of an object of 100x100mm ▨ possible detection of a large object

Connection

PNP

(1)	bn	+Vs
(5)	gn/ye	teach in
(4)	bk	switching output SP1
(2)	wh	switching output SP2
(3)	bu	0V

wire colours: bn = brown(1), wh = white (2), bu = blue (3), bk = black (4), gn/ye = green/yellow (5)

PRODUCT devices with thread, design 18,30

article-no.	design	description	comment	length	housing	voltage	output	current	sn	connection	fig.
UT180020	M18x1	teach in	analogue	104	plastic	15-30V DC	4-20mA		60-500	M12-conn. 5pin	1
UT180021	M18x1	teach in	analogue	104	plastic	15-30V DC	4-20mA		100-800	M12-conn. 5pin	1
UT180022	M18x1	teach in	analogue	104	plastic	15-30V DC	4-20mA		200-2000	M12-conn. 5pin	1
UT18002A	M18x1	teach in	analogue	104	plastic	15-30V DC	0-10V		60-500	M12-conn. 5pin	1
UT18002B	M18x1	teach in	analogue	104	plastic	15-30V DC	0-10V		100-800	M12-conn. 5pin	1
UT18002C	M18x1	teach in	analogue	104	plastic	15-30V DC	0-10V		200-2000	M12-conn. 5pin	1
UT180320	M18x1	teach in	4.7Hz	104	plastic	12-30V DC	2xpnp	500mA	60-500	M12-conn. 5pin	1
UT180321	M18x1	teach in	4.7Hz	104	plastic	12-30V DC	2xpnp	500mA	100-800	M12-conn. 5pin	1
UT180322	M18x1	teach in	4.7Hz	104	plastic	12-30V DC	2xpnp	500mA	200-2000	M12-conn. 5pin	1
UT300020	M30x1.5	teach in	analogue	141	plastic	15-30V DC	4-20mA		300-3500	M12-conn. 5pin	2
UT30002A	M30x1.5	teach in	analogue	141	plastic	15-30V DC	0-10V		300-3500	M12-conn. 5pin	2
UT300320	M30x1.5	teach in	4.7Hz	141	plastic	12-30V DC	2xpnp	500mA	300-3500	M12-conn. 5pin	2

The list of articles contains the available DC-(pnp) and analogue versions only. Kindy request the avalability of other output functions.

We will be pleased to supply the matching cable socket for your devices with connector, e.g. **VK200621**. Please refer to the list in chapter 14 of our catalogue, data sheet "**ipf**-*SENSORFLEX*® cable sockets".

Fig. 3

Fig. 4

Fig. 5

PRODUCT: accessories

article-no.	description 1	description 2	fig.
AU000002	reflector 18, level 90° (deflection angle)	for design 18	w/o
AU000003	reflector 18, focussing 90° (deflection angle)	for design 18	w/o
AU000010	reflector 30, compact	for design 30	w/o
AY000051	sensor quick clip Ø18, plastic	sensor Ø18 clip	3
AY000053	sensor base straight, plastic	for quick clip Ø12 and Ø18	4
AY000054	sensor base angular, plastic	for quick clip Ø12 and Ø18	5

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