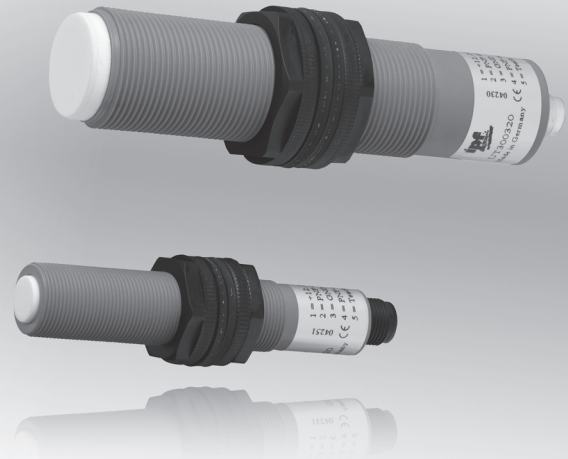


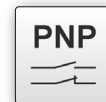
design **M18x1**  
**M30x1.5**

**dif. refl. sensor** sensing range (teachable) **30 ... 400mm**  
**60 ... 500mm**  
**100 ... 800mm**  
**80 ... 1600mm**  
**200 ... 2000mm**  
**300 ... 3500mm**



- ✓ plastic sleeve made of PBT
- ✓ status display and alignment mark by LED
- ✓ high resolution
- ✓ connection with M12-connector

**analog output 0 ... 10V, 4 ... 20mA**  
**2 programmable switching outputs**



### description

*ipf*-ultrasonic sensors operate 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 color and material.

The high sonor frequency makes the ultrasonic sensor insensitive to interference, even in rough industrial environments.

The teach-in input must be connected to GND via a push button to teach in the switching points or the analog output.

A green LED serves as alignment mark. It lights up whenever the sensor receives an echo.

### analog sensors

Any random interval within a measuring range can be taught in for the analog 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 millimeter. The programming of the following functions is possible:

1. standard switching function (no/nc)
2. window function
3. hysteresis function

### application examples

- ▶ filling level measurement of bulk materials and liquids
- ▶ measurement of heights, e.g. packages on conveyor belts 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 and diameters
- ▶ control of material tensioning by means of slack measurement
- ▶ length measurement systems

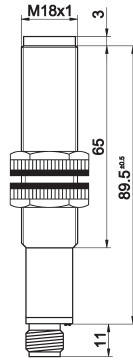
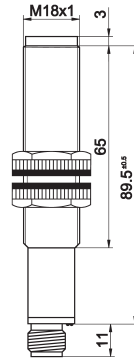
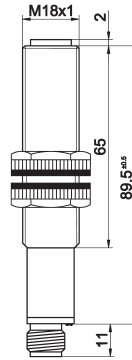
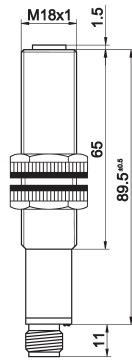
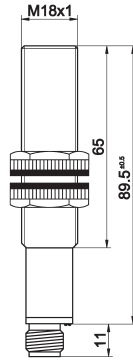
# ultrasonic sensor

## 1300 dif. reflection sensors



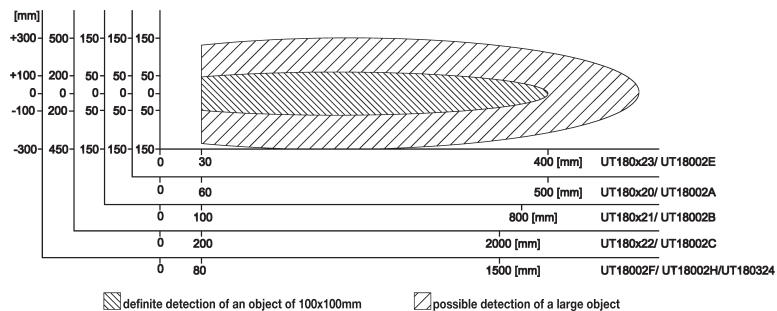
2

article-no.	UT180023	UT180020	UT180021	UT180022	UT18002F
measuring range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
output	4 ... 20mA	4 ... 20mA	4 ... 20mA	4 ... 20mA	4 ... 20mA
article-no.	UT18002E	UT18002A	UT18002B	UT18002C	UT18002H
measuring range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
output	0 ... 10V DC	0 ... 10V DC	0 ... 10V DC	0 ... 10V DC	0 ... 10V DC

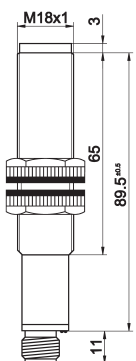
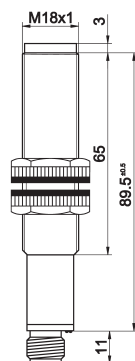
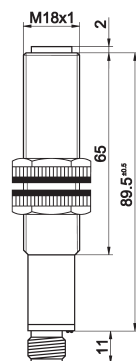
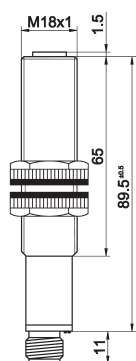
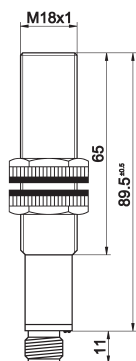


### TECHNICAL DATA

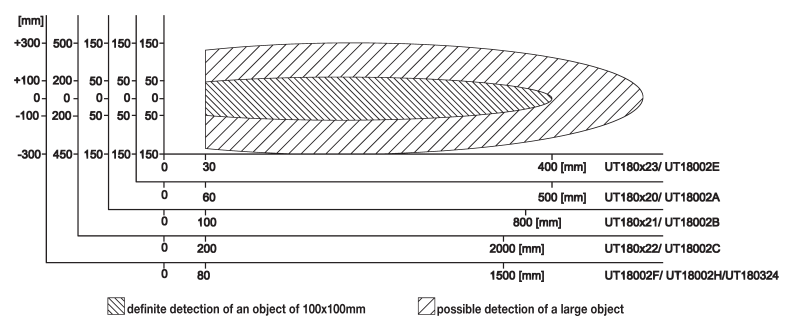
sensing range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
sonic cone angle	8°	8°	8°	8°	8°
resolution	0.125mm	0.25mm	0.25mm	1.0mm	1.0mm
output signal	see above	see above	see above	see above	see above
operating voltage	15 ... 30V DC	15 ... 30V DC	15 ... 30V DC	15 ... 30V DC	15 ... 30V DC
current consumption (w/o load)	≤ 30mA	≤ 30mA	≤ 30mA	≤ 30mA	≤ 30mA
output current (max. load)	-	-	-	-	-
carrier frequency	360kHz	330kHz	300kHz	180kHz	220kHz
repeat accuracy	1mm	1mm	1mm	2mm	2mm
linearity deviation	< 0.5%	< 0.5%	< 0.5%	< 0.5%	< 0.5%
response time	60msec	100msec	100msec	200msec	140msec
sampling frequency	-	-	-	-	-
display (measuring range)	2 x yellow LED	2 x yellow LED	2 x yellow LED	2 x yellow LED	green LED
display (alignment mark)	green LED	green LED	green LED	green LED	green LED
adjustment	teach-in	teach-in	teach-in	teach-in	teach-in
short-circuit protection	+	+	+	+	+
reverse polarity protection	+	+	+	+	+
housing material	PBT	PBT	PBT	PBT	PBT
design	M18x1	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	65 / 100.5mm	65 / 102mm	65 / 102.5mm	65 / 103.5mm	65 / 103.5mm
operating temperature	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C
system of protection (EN 60529)	IP65	IP67	IP67	IP67	IP65
connection	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin
connection accessories	e.g. <b>VK205621</b> 2m, PUR, angular	e.g. <b>VK205621</b> 2m, PUR, angular	e.g. <b>VK205621</b> 2m, PUR, angular	e.g. <b>VK205621</b> 2m, PUR, angular	e.g. <b>VK205621</b> 2m, PUR, angular
mounting accessories (clip)	see page 5	see page 5	see page 5	see page 5	see page 5



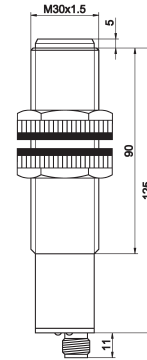
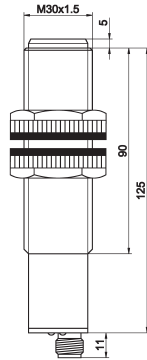
article-no.	UT180323	UT180320	UT180321	UT180322	UT180324
measuring range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
output	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc



TECHNICAL DATA					
sensing range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
sonic cone angle	8°	8°	8°	8°	8°
resolution	0.125mm	0.25mm	1mm	1mm	1mm
output signal	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc
operating voltage	12 ... 30V DC	12 ... 30V DC	12 ... 30V DC	12 ... 30V DC	12 ... 30V DC
output current (max. load)	500mA	500mA	500mA	500mA	500mA
current consumption (w/o load)	≤ 60mA	≤ 60mA	≤ 60mA	≤ 60mA	≤ 60mA
carrier frequency	360kHz	330kHz	300kHz	180kHz	220kHz
repeat accuracy	0.5%	1mm	1mm	2mm	2mm
hysteresis	1%	1%	1%	1%	1%
response time	-	-	-	-	-
sampling frequency	15Hz	10Hz	10Hz	5Hz	6Hz
display (signal)	2 x yellow LED	2 x yellow LED	2 x yellow LED	2 x yellow LED	2 x yellow LED
display (alignment mark)	green LED	green LED	green LED	green LED	green LED
adjustment (switch-point)	teach-in	teach-in	teach-in	teach-in	teach-in
short-circuit protection	+	+	+	+	+
reverse polarity protection	+	+	+	+	+
housing material	PBT	PBT	PBT	PBT	PBT
design	M18x1	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	65 / 100.5mm	65 / 102mm	65 / 102.5mm	65 / 103.5mm	65 / 103.5mm
operating temperature	-15 ... +70°C	-20 ... +70°C	-20 ... +70°C	-15 ... +70°C	-15 ... +70°C
system of protection (EN 60529)	IP65	IP67	IP67	IP67	IP65
connection	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin	M12-connector, 5-pin
connection accessories	e.g. VK205621 2m, PUR, angular	e.g. VK205621 2m, PUR, angular	e.g. VK205621 2m, PUR, angular	e.g. VK205621 2m, PUR, angular	e.g. VK205621 2m, PUR, angular
mounting accessories (clip)	see page 5	see page 5	see page 5	see page 5	see page 5

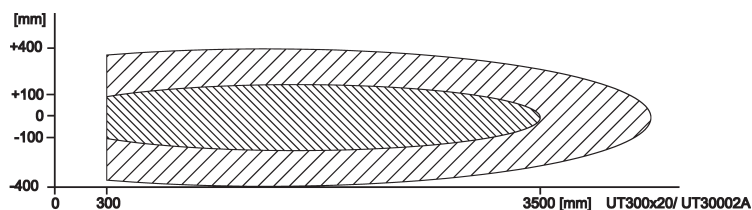


article-no.	UT300020	UT300320
measuring range	300 ... 3500mm	300 ... 3500mm
output	4 ... 20mA	2 x pnp, no / nc
article-no.	UT30002A	-
measuring range	300 ... 3500mm	-
output	0 ... 10V DC	-



### TECHNICAL DATA

sensing range	300 ... 3500mm	300 ... 3500mm
sonic cone angle	8°	8°
resolution	1mm	1mm
output signal	see above	2 x pnp, no / nc
operating voltage	15 ... 30V DC	12 ... 30V DC
current consumption (w/o load)	≤ 30mA	≤ 60mA
output current (max. load)	-	500mA
carrier frequency	130kHz	130kHz
repeat accuracy	2mm	2mm
linearity deviation	< 0.5%	-
hysteresis	-	1%
response time	400msec	-
sampling frequency	-	2.5Hz
display (measuring range)	2 x yellow LED	-
display (signal)	-	2 x yellow LED
alignment mark	green LED	green LED
adjustment	teach-in	teach-in
short-circuit protection	+	+
reverse polarity protection	+	+
housing material	PBT	PBT
design	M30x1.5	M30x1.5
length (thread/complete)	90 / 141mm	90 / 141mm
operating temperature	-20 ... +70°C	-20 ... +70°C
system of protection (EN 60529)	IP67	IP67
connection	M12-connector, 5-pin	M12-connector, 5-pin
connection accessories	e.g. <b>VK205621</b> , 2m, PUR, angular	e.g. <b>VK205621</b> , 2m, PUR, angular
mounting accessories (clip)	see page 5	see page 5

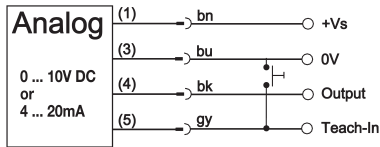


definite detection of an object of 100x100mm

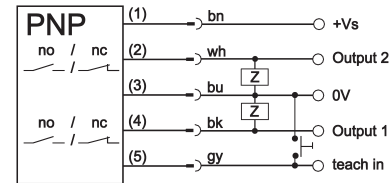
possible detection of a large object

### connection

#### analog devices

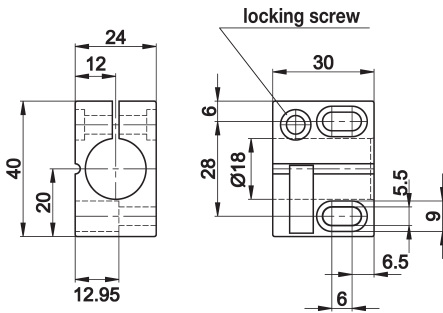


#### switching devices

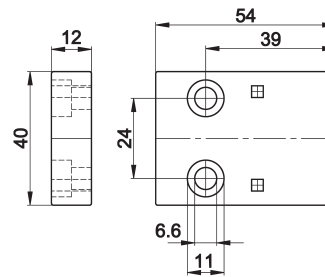


**wire colors:** bn = brown (1), wh = white (2), bu = blue (3), bk = black (4), gy = grey (5)

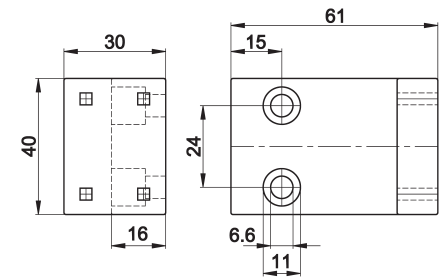
#### AY000051



#### AY000052



#### AY000053



### ACCESSORIES

article-no.	description	notes
AU000002	deflection angle 18, planar 90°	for design 18
AU000001	deflection angle 18, focus 90°	for design 18
AU000003	deflection angle 30, planar 90°	for design 30
AU000004	deflection angle 30, focus 90°	for design 30
AU000012	deflection angle 18, compact	for design 18
AU000010	deflection angle 30, compact	for design 30
AU000013	M12 / M12 teach-in adaptor, plastic	12 ... 30V DC
AY000051	quick clip 18, plastic	for sensor Ø18mm
AY000053	base straight, plastic	for quick clip 12 and 18
AY000054	base angular, plastic	for quick clip 12 and 18

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**

**export division**

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