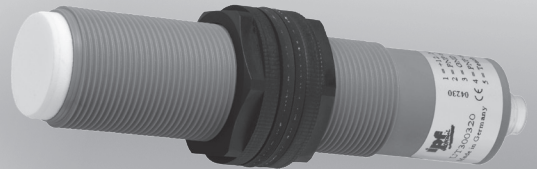
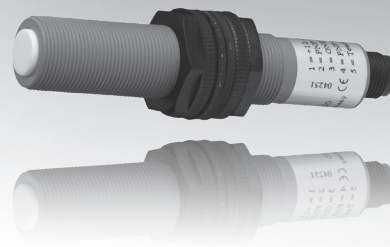


dimensions      **M18x1**  
                         **M30x1.5**

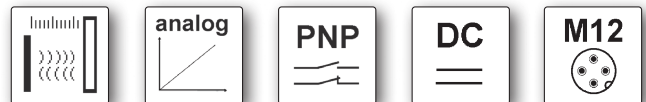
<b>dif. reflection sensors</b>	sensing range (teachable)	<b>30 ... 400mm</b>
		<b>60 ... 500mm</b>
		<b>100 ... 800mm</b>
		<b>80 ... 1600mm</b>
		<b>200 ... 2000mm</b>
		<b>300 ... 3500mm</b>



- ✓ **plastic sleeve made of PBT**
- ✓ **LED switching state display and alignment aid**
- ✓ **high resolution**
- ✓ **connection with M12-connector**



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



**description**

*ipf* ultrasonic sensors operate as contactless and non-contacting position switches or as position meters. The distances are determined using the echo propagation time process. The propagation time measurement is temperature compensated and makes possible very accurate position detection of sound-reflecting objects of any color and material over a large temperature range.

Thanks to the high sound frequency, the ultrasonic sensor is insensitive to interference even in harsh industrial environments. To teach-in the switching points or the analog output, the teach-in input is to be connected to GND via a push button.

Serving as an alignment aid is a green LED that lights up only if the sensor receives an echo.

**analog sensors**

Any interval within the measuring range can be taught in for the analog output.

**switching sensors**

The position and characteristics of the two switching out-

puts can be taught in via the teach-in input with millimeter accuracy. The following functions can be programmed:

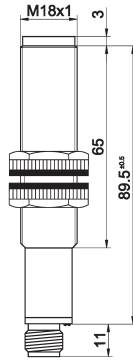
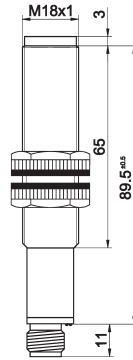
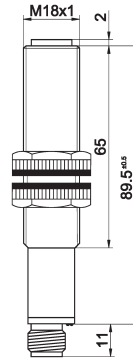
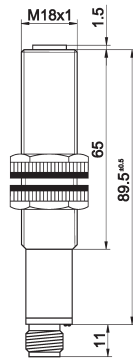
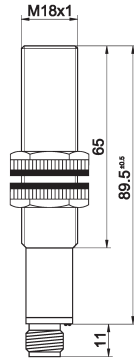
1. normal switching function (no/nc)
2. window function
3. hysteresis function

**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 optically undetectable materials
- ▶ measurement of stacking heights on loading and unloading devices
- ▶ winding and unwinding control of any type of foil
- ▶ detection of thicknesses and diameters
- ▶ control of material tension by means of sag measurement
- ▶ length measurement systems

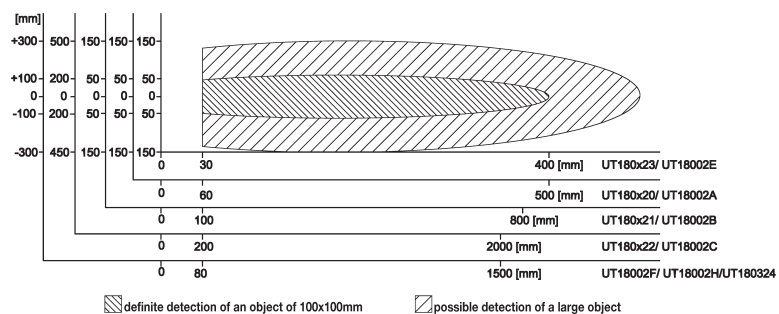


article-no.	UT180023	UT180020	UT180021	UT180022	UT18002F
measuring range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
output	4 ... 20mA	4 ... 20mA	4 ... 20mA	4 ... 20mA	4 ... 20mA
article-no.	UT18002E	UT18002A	UT18002B	UT18002C	UT18002H
measuring range	30 ... 400mm	60 ... 500mm	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 ... 1600m
opening of the sound cone	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	60ms	100ms	100ms	200ms	140ms
switching frequency	-	-	-	-	-
display (measuring range)	2 x yellow LED	2 x yellow LED	2 x yellow LED	2 x yellow LED	green LED
display (alignment aid)	green LED	green LED	green LED	green LED	green LED
setting	teach-in	teach-in	teach-in	teach-in	teach-in
short-circuit protection	+	+	+	+	+
reverse polarity protection	+	+	+	+	+
housing material	PBT	PBT	PBT	PBT	PBT
dimensions	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
degree 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. VK205625	e.g. VK205625	e.g. VK205625	e.g. VK205625	e.g. VK205625



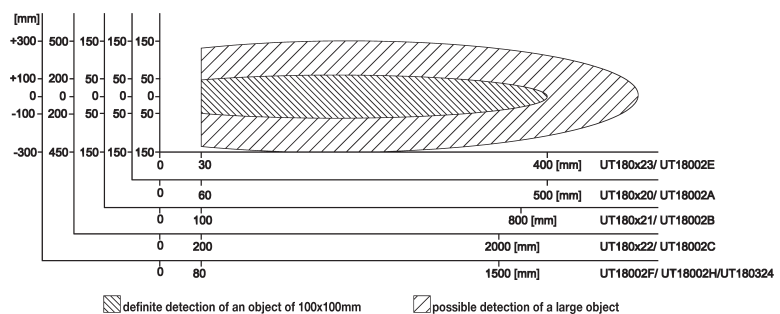
article-no.	UT180323	UT180320	UT180321	UT180322	UT180324
detection range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
output	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc	2 x pnp, no / nc

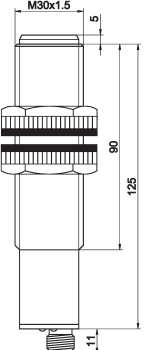
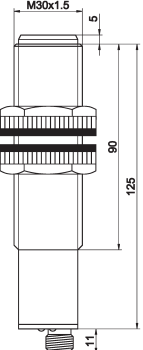
  

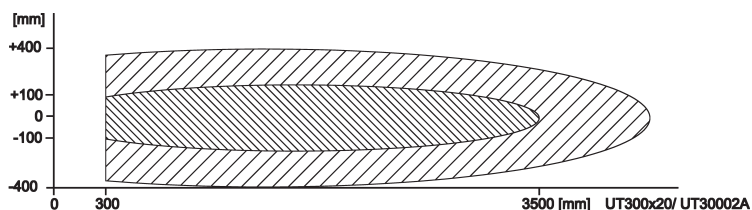
**TECHNICAL DATA**


sensing range	30 ... 400mm	60 ... 500mm	100 ... 800mm	200 ... 2000mm	80 ... 1600mm
opening of the sound cone	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	-	-	-	-	-
switching 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 aid)	green LED	green LED	green LED	green LED	green LED
setting (switching point)	teach-in	teach-in	teach-in	teach-in	teach-in
short-circuit protection	+	+	+	+	+
reverse polarity protection	+	+	+	+	+
housing material	PBT	PBT	PBT	PBT	PBT
dimensions	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	-15 ... +70°C	-15 ... +70°C
degree 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>VK205625</b>	e.g. <b>VK205625</b>	e.g. <b>VK205625</b>	e.g. <b>VK205625</b>	e.g. <b>VK205625</b>

9



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	-
		
<b>TECHNICAL DATA</b>		
sensing range	300 ... 3500mm	300 ... 3500mm
opening of the sound cone	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	400ms	-
switching frequency	-	2.5Hz
display (measuring range)	2 x yellow LED	-
display (signal)	-	2 x yellow LED
alignment aid	green LED	green LED
setting	teach-in	teach-in
short-circuit protection	+	+
reverse polarity protection	+	+
housing material	PBT	PBT
dimensions	M30x1.5	M30x1.5
length (thread/complete)	90 / 141mm	90 / 141mm
operating temperature	-20 ... +70°C	-20 ... +70°C
degree of protection (EN 60529)	IP67	IP67
connection	M12-connector, 5-pin	M12-connector, 5-pin
connection accessories	e.g. VK205625	e.g. VK205625

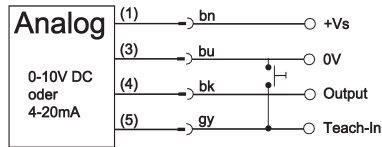


 definite detection of an object of 100x100mm

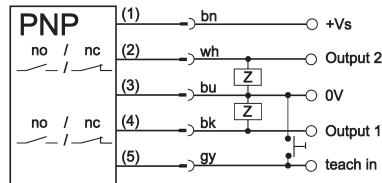
 possible detection of a large object

**connection**

analog devices

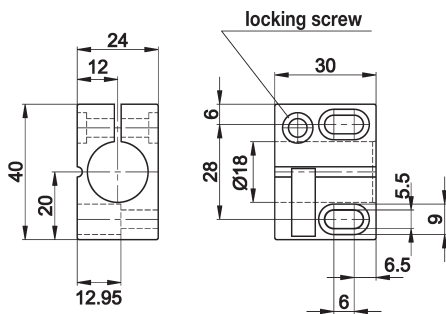


switching devices

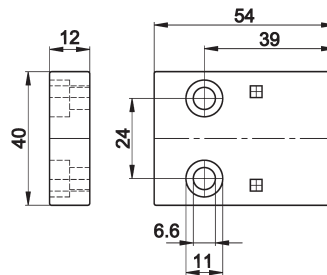


wire colors: brown (1), wh = white (2), bu = blue (3), bk = black (4), gy = gray (5)

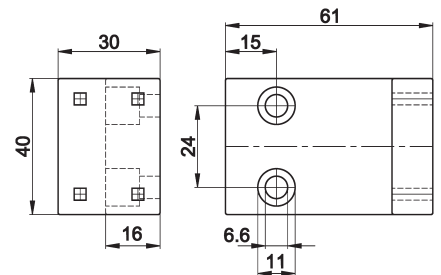
AY000051



AY000052



AY000053



**ACCESSORIES**

article-no.	description	note
AU000002	deflection angle 18, plan 90°	for design 18
AU000001	deflection angle 18, focus 90°	for design 18
AU000003	deflection angle 30, plan 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 adapter, plastic	12-30V DC
AY000051	quick clip 18, plastic	for sensor 18mm, round
AY000053	base, straight, plastic	for quick clip 12 and 18
AY000054	base, angular, plastic	for quick clip 12 and 18



This data sheet only contains the available standard variants. For other output / connection variants, we kindly ask that you contact us.

We are happy to supply the right cable socket for the plug equipment. You will find a list in the “accessories” section of the catalog under **ipf-SENSORFLEX**® “cable sockets” or in the search window on our homepage [www.ipf-electronic.com](http://www.ipf-electronic.com) (using the search term “VK”).

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

You also find this data sheet, as well as contact details under [www.ipf-electronic.com](http://www.ipf-electronic.com)

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**NOTES**

A large grid area for taking notes, consisting of 20 columns and 40 rows of small squares.