

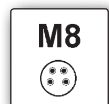
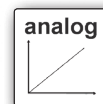
dimensions **20 x 15 x 42mm**

diff. reflection sensors (analog)	detection range	20 ... 200mm
diff. reflection sensors (digital)	detection range	10 ... 200mm
retro-reflective sensors	detection range	0 ... 200mm

- ✓ very small angle of beam spread
- ✓ contactless and accurate detection
- ✓ measuring range and sensing range / range can be taught in by means of teach-in input
- ✓ no dead zone in detection range of the ultrasonic retro-reflective sensor



**switching or analog output
comfortable teach-in function**



description

These **ipf** ultrasonic sensors are used for position checking or distance measurement. This distance is determined contactlessly using the echo propagation time process.

The devices detect objects with widely different properties - liquid, solid, powder and even transparent – and surfaces: rough or smooth, clean or soiled, wet or dry. They are insensitive to external influences such as light or temperature and are especially reliable in changing or difficult environmental conditions.

The sensors include LED displays as setting control for the teach-in function and for monitoring the switching signal or the measuring range.

The desired operating range is taught in by connecting the positive potential of the supply voltage to the teach-in input (pin 2) or by actuating the teach button on the sensor. For the versions with switching output, the sensing range is set with millimeter accuracy with respect to the desired reference object distance. For the ultrasonic sensors with analog output, the measuring range can be set to a range of minimum 5mm. Within the overall detection range (20 to 200mm), this section can be taught in at any point (e.g., measuring range 50 to

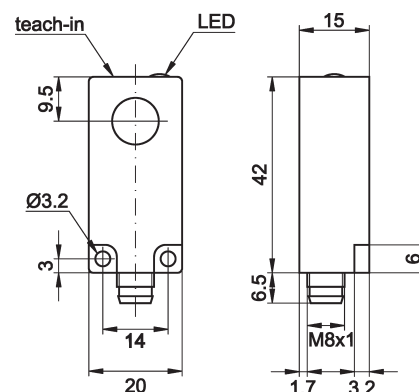
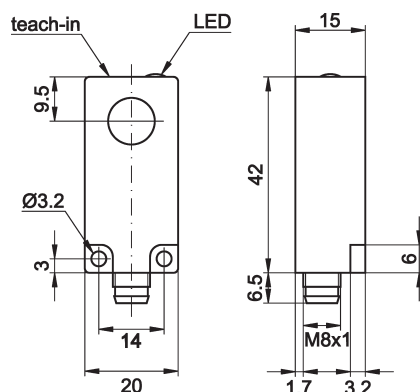
55mm or 90 to 95mm).

The **UT21** diffuse reflection devices have a „dead zone“ directly in front of the sensor head in which no objects can be detected. Thus, the sensor must be mounted set back from the detection range by the length of the „dead zone“. The **UR21** retro-reflective sensor does not have this „dead zone“ since the range is taught in to a sound-reflecting reference surface (reflector min. 30x30mm). Thus, everything is detected that lies in the reflection path between sensor and reference surface and influences it accordingly.

application examples

- ▶ level measurement of bulk materials or liquids
- ▶ measurement of filling levels in very small containers
- ▶ presence checking or distance measurement of clear or transparent objects
- ▶ measurement of object heights on conveying systems
- ▶ winding and unwinding control of any type of foil
- ▶ control of material tension by means of sag measurement
- ▶ detection of thicknesses and diameters

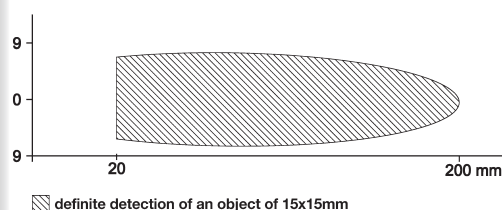
article-no.	UT210070	UT210075
version	dif. reflection sensor	dif. reflection sensor
measuring range	20 ... 200mm	20 ... 200mm
output	4 ... 20mA	0 ... 10V



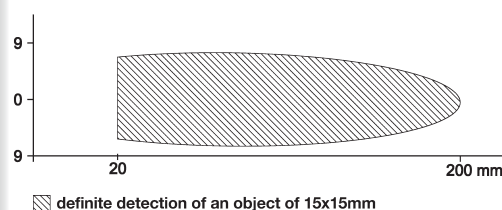
TECHNICAL DATA

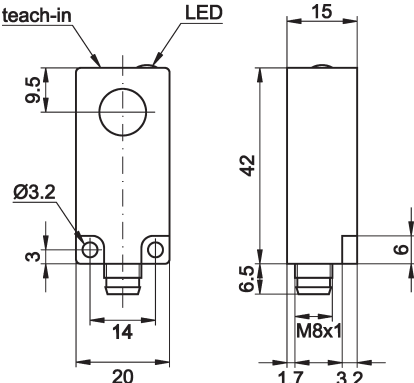
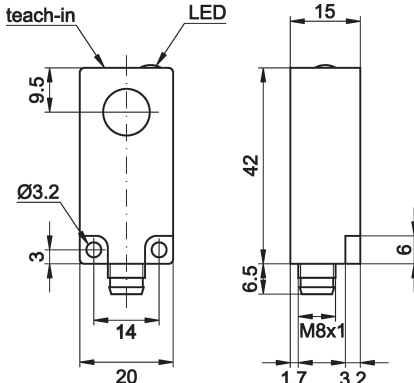
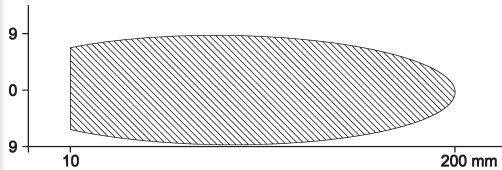
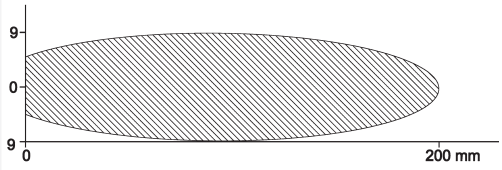
measuring range	20 ... 200mm	20 ... 200mm
teaching range (min.)	5mm	5mm
output signal	analog, 4 ... 20mA (or 20 ... 4mA)	analog, 0 ... 10V (or 10 ... 0V)
sound cone (angle of beam spread)	6°	6°
operating voltage	15 ... 30V DC	15 ... 30V DC
residual ripple	10%	10%
output current (max. load)	20mA	20mA
current consumption (w/o load)	≤ 35mA	≤ 35mA
load resistance	< 400 ohm (at 15V) ... < 1100 ohm (at 30V)	-
carrier frequency	380kHz	380kHz
resolution	≤ 0.3mm	≤ 0.3mm
temperature drift	≤ 2% S (object)	≤ 2% S (object)
repeat accuracy	≤ 0.5mm	≤ 0.5mm
response/decay time	≤ 30ms	≤ 30ms
switching frequency	16Hz	16Hz
display (measuring range)	yellow LED / red LED	yellow LED / red LED
display (teach)	both LEDs flash alternately	both LEDs flash alternately
sensitivity adjustment	teach-in button + teach-input	teach-in button + teach-input
short-circuit protection	+	+
reverse polarity protection	+	+
dimensions	20x15x42mm	20x15x42mm
housing material	plastic (polyester)	plastic (polyester)
operating temperature	-10 ... +60°C	-10 ... +60°C
degree of protection (EN 60529)	IP67	IP67
connection	M8-connector, 4-pin	M8-connector, 4-pin
connection accessories	e.g. VK200375	e.g. VK200375
mounting accessories (universal holder)	AY000116	AY000116

detection range / sound cone



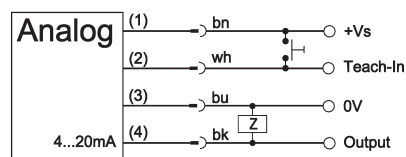
detection range / sound cone



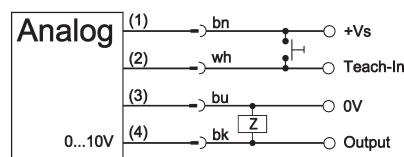
article-no.	UT210170	UR210170
detection range	10 ... 200mm	0 ... 200mm
version	dif. reflection sensor	reflective sensor
output	pnp, no	pnp, no
		
TECHNICAL DATA		
detection range	10 ... 200mm	0 ... 200mm
sensing range/range	30 ... 200mm (reference object distance)	40 ... 200mm (reference surface/reflector)
output signal	digital, pnp, no	digital, pnp, no
sound cone (angle of beam spread)	6°	6°
operating voltage	12 ... 30V DC	12 ... 30V DC
residual ripple	10%	10%
output current (max. load)	200mA	200mA
current consumption (w/o load)	≤ 35mA	≤ 35mA
voltage drop (max. load)	2V DC	2V DC
carrier frequency	380kHz	380kHz
hysteresis	≤ 4% S teach	-
temperature drift	≤ 0.18% S teach/K	≤ 2% S teach
repeat accuracy	≤ 0.5mm	≤ 1.5mm
response/decay time	≤ 10ms	≤ 10ms
switching frequency	50Hz	50Hz
display (signal)	green LED	green LED
display (teach)	LED flashes	LED flashes
setting (switching point)	teach-in button + teach-input	teach-in button + teach-input
short-circuit protection	+	+
reverse polarity protection	+	+
dimensions	20x15x42mm	20x15x42mm
housing material	plastic (polyester)	plastic (polyester)
operating temperature	-10 ... +60°C	-10 ... +60°C
degree of protection (EN 60529)	IP67	IP67
connection	M8-connector, 4-pin	M8-connector, 4-pin
connection accessories	e.g. VK200375	e.g. VK200375
mounting accessories (universal holder)	AY000116	AY000116
	detection range / sound cone  definite detection of an object of 15x15mm	detection range / sound cone  definite detection of an object of 15x15mm

connection

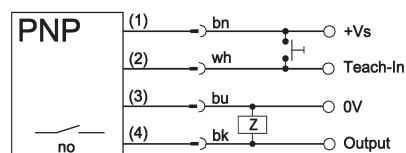
UT210070



UT210075

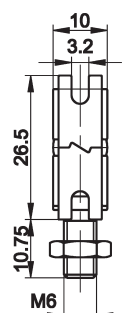
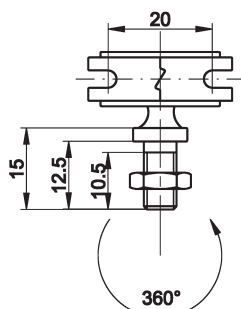
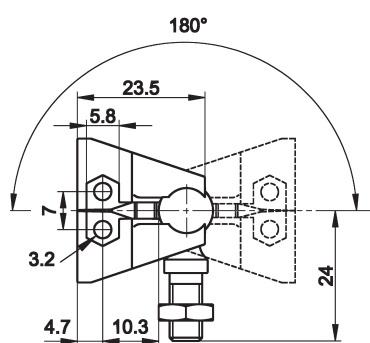
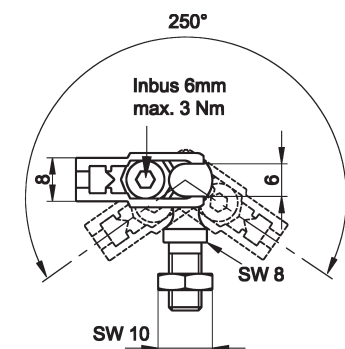


UT210170, UR210170

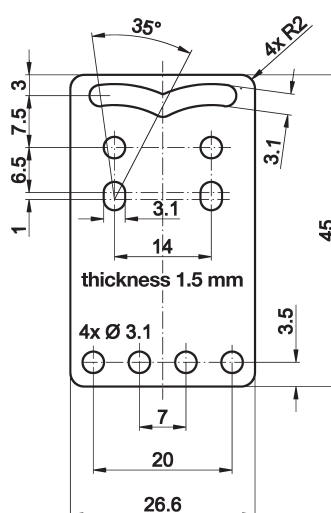


wire colors: bn = brown (1), wh = white (2), bu = blue (3), bk = black (4)

universal mounting AY000116 consisting of base module ...



... and fitting panel



ACCESSORIES

article-no.	description	material
AY000088	base module *	jaw: stainless steel, ball pin galvanized / stainless steel
AY000116	mounting kit for sensors Ux21	stainless steel

* The **AY000088** base module is contained in every mounting kit.
Material of bolts and nuts: galvanized steel

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 (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