

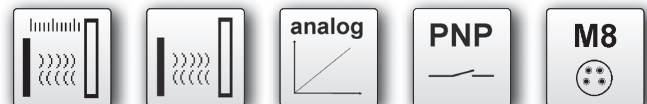
diffuse reflection, retro-reflective sensors 1800

design	20 x 15 x 42mm	
dif. reflection sensor (analog)	detection range	20 ... 200mm
dif. reflection sensor (digital)	detection range	10 ... 200mm
retro-reflective sensor	detection range	0 ... 200mm



- ✓ very small sonic cone angle
- ✓ contactless and exact detection
- ✓ measuring range and sensing range / operating distance teachable via teach input
- ✓ no dead-zone in the detection range of the ultrasonic retro-reflective sensor

**switching or analog output
comfortable teach function**



description

These *ipf* ultrasonic sensors serve to check positions or to measure distances. The distance is determined contactless according to the echo propagation time process.

The devices detect objects with different properties (fluid, solid, powder as well as transparent) and surfaces: rough or smooth, clean or soiled, wet or dry. They are resistant to external effects such as light or temperature, and are especially reliable in the case of changing or difficult environmental conditions.

The sensors have LED displays as a setting control with regard to the teach-in function and for checking the switching signal and/or measuring range.

The 'teach-in' of the desired operational range takes place 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. In the case of the variants with a switching output, the setting of the sensing range is accurate to the nearest millimeter (based on the distance to the desired reference object). In the case of ultrasonic sensors with an analog output, the measuring range can be set to a minimum span of 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** sensing devices have a 'dead zone' directly in front of the sensor head in which no objects are detected. Therefore, the sensor has to be mounted with a recess of the length of the 'dead zone', set back from the detection range. The **UR21** retro-reflective sensor does not have this 'dead zone', as on a sound-reflecting reference surface (reflector min. 30x30mm) this range is taught-in. This way, everything is detected which is located in the path of the reflection between the sensor and the reference surface and which correspondingly influences it.

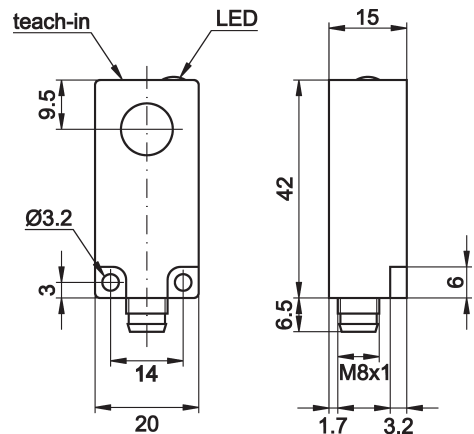
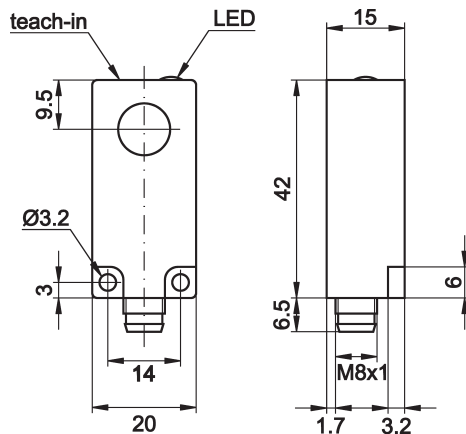
application examples

- ▶ filling level measurement of bulk materials and liquids
- ▶ measurement of filling levels in very small vessels
- ▶ detection and distance measurement of clear-sightedly or transparent objects
- ▶ measurement of object heights on conveying systems
- ▶ winding and unwinding control of any foils
- ▶ control of material tensioning by means of slack measurement
- ▶ detection of thickness and diameters

article-no.
version
output

UT210070
diffuse reflection sensor
4 ... 20mA

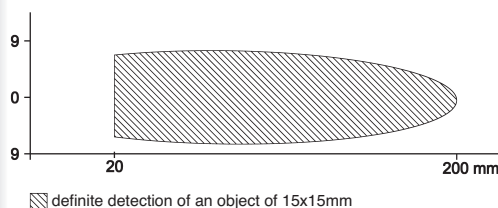
UT210075
diffuse reflection sensor
0 ... 10V



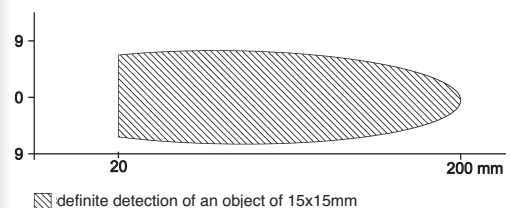
TECHNICAL DATA

detection range	20 ... 200mm	20 ... 200mm
measuring range (S teach)	20 ... 200mm (reference object distance)	20 ... 200mm (reference object distance)
sonic cone angle	6°	6°
teaching range (min.)	5mm	5mm
output signal	analog, 4 ... 20mA (or 20 ... 4mA)	analog, 0 ... 10V (or 10 ... 0V)
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	< 400Ω (at 15V) ... < 1100Ω (at 30V)	-
carrier frequency	380kHz	380kHz
resolution	≤ 0.3mm	≤ 0.3mm
temperature drift	≤ 2% S (objekt)	≤ 2% S (objekt)
repeat accuracy	≤ 0.5mm	≤ 0.5mm
response / decay time	≤ 30msec	≤ 30msec
display (measuring range)	yellow LED / red LED	yellow LED / red LED
display (teach)	both LEDs are flashing alternately	both LEDs are flashing alternately
switch-point adjustment	teach-in button + teach input	teach-in button + teach input
short-circuit protection	+	+
reverse polarity protection	+	+
design	20x15x42mm	20x15x42mm
housing material	plastic (polyester)	plastic (polyester)
operating temperature	-10 ... +60°C	-10 ... +60°C
system of protection (EN 60529)	IP67	IP67
connection	M8-connector, 4-pin	M8-connector, 4-pin
connection accessories	e.g. VK200371 , 2m, angular, PUR	e.g. VK200371 , 2m, angular, PUR
mounting accessories	universal mounting AY000092	universal mounting AY000092

detection range / sonic cone



detection range / sonic cone

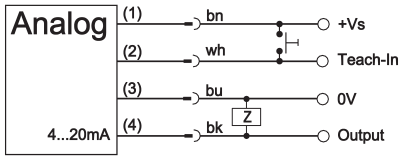


diffuse reflection, retro-reflective sensors 1800

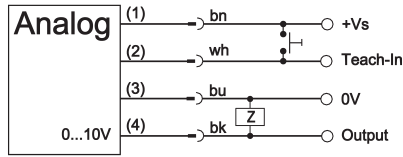
article-no.	UT210170	UR210170
version	diffuse reflection sensor	retro-reflective sensor
output	pnp, no	pnp, no
TECHNICAL DATA		
detection range	10 ... 200mm	0 ... 200mm
measuring range (S teach)	30 ... 200mm (reference object distance)	40 ... 200mm (reference face / reflector)
sonic cone angle	6°	6°
adjustment range reference face	-	norm.: +/- 2.5% S teach max.: +/- 5% S teach
output signal	digital, pnp, no	digital, pnp, no
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	≤ 10msec	≤ 10msec
display (signal)	green LED	green LED
display (teach)	the LED flashes	the LED flashes
switch-point adjustment	teach-in button + teach input	teach-in button + teach input
short-circuit protection	+	+
reverse polarity protection	+	+
design	20x15x42mm	20x15x42mm
housing material	plastic	plastic
operating temperature	-10 ... +60°C	-10 ... +60°C
system of protection (EN 60529)	IP67	IP67
connection	M8-connector, 4-pin	M8-connector, 4-pin
connection accessories	e.g. VK200371 , 2m, angular, PUR	e.g. VK200371 , 2m, angular, PUR
mounting accessories	universal mounting AY000092	universal mounting AY000092
	<p>detection range / sonic cone</p> <p>definite detection of an object of 15x15mm</p>	<p>detection range / sonic cone</p> <p>definite detection of an object of 15x15mm</p>

connection

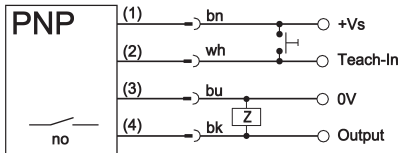
UT210070



UT210075



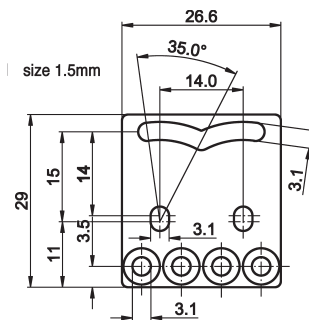
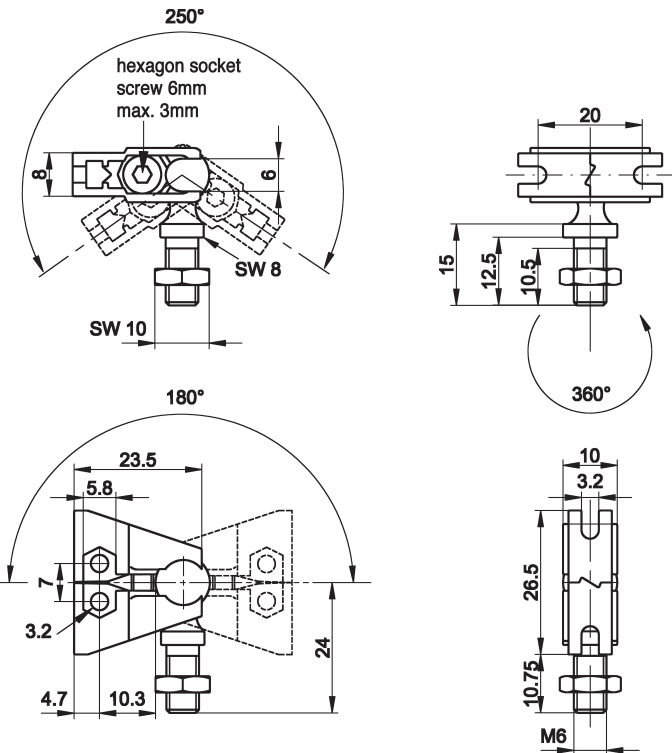
UT210170, UR210170



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

universal mounting AY000092 composed of base module

... and fitting panel



ACCESSORIES

article-no.	description	material
AY000092	universal mounting, fixture kit: base module / fitting panel	flanges: stainless steel, galvanized ball pin / stainless steel

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.