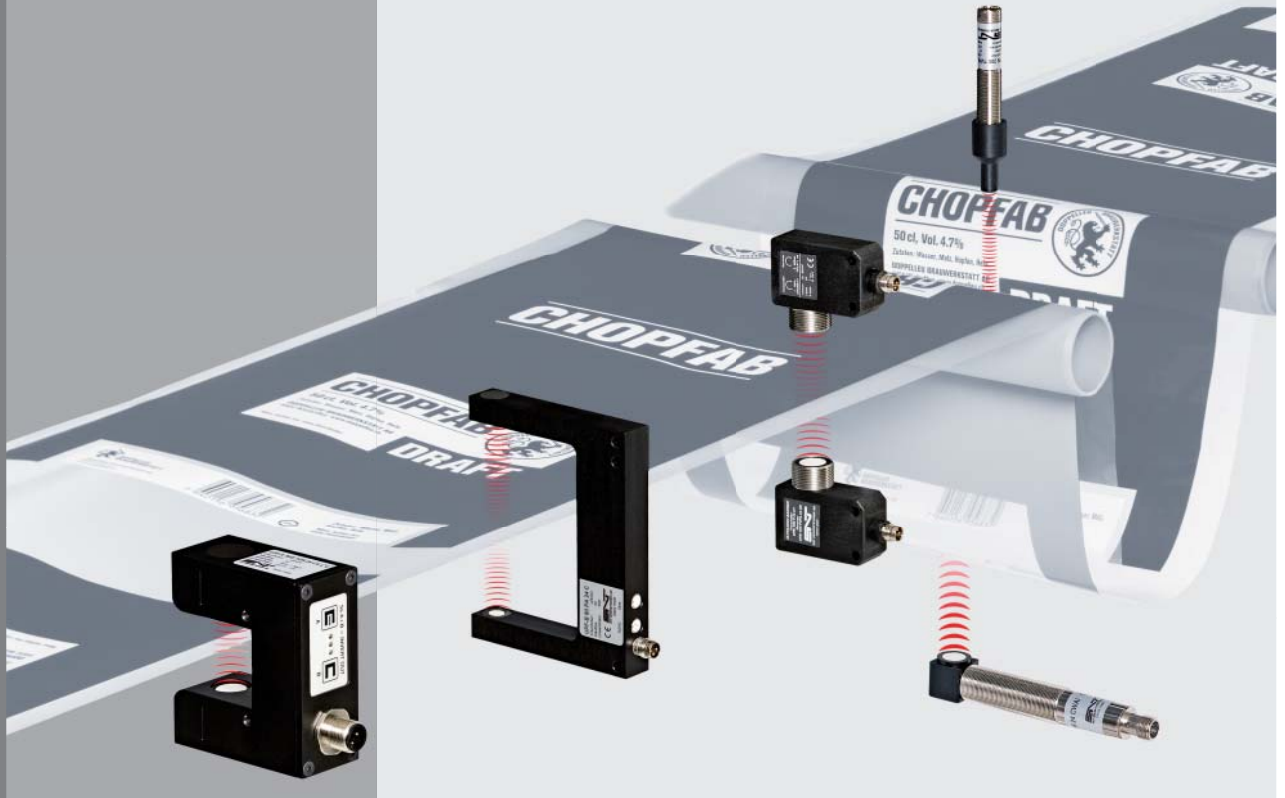


Ultra sonic Sensors



- Proximity / distance sensor
- Through beam sensor
- Fork sensor
- Retroreflective barrier

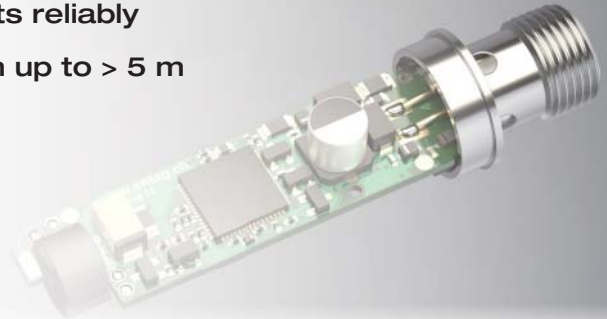
When other sensors give up!



Ultrasonic Sensors

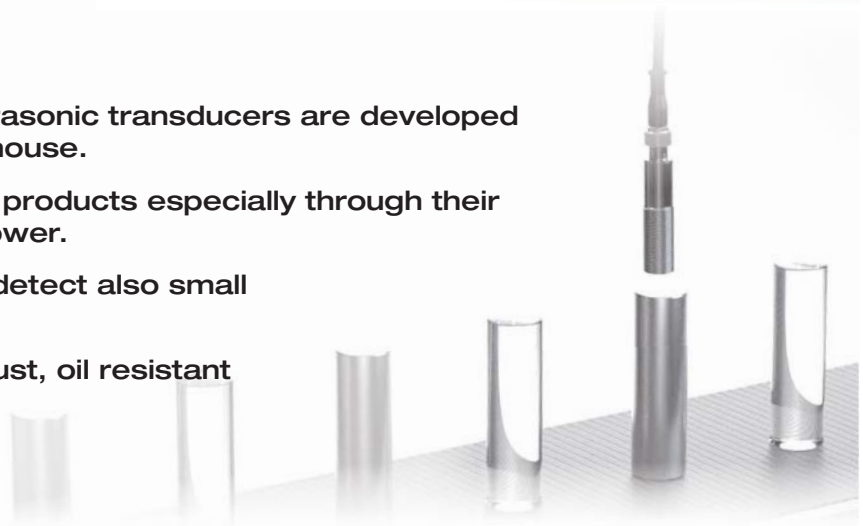
Why ultrasonic sensors?

- Independent of material, surface, color and size of target
- Work under dust, dirt, fog, bright light
- Detect transparent and shining objects reliably
- Wide measuring ranges from few mm up to > 5 m
- Safe background suppression
- No correction factors (such as for inductive sensors)



Particularities

- The SONARANGE® ultrasonic transducers are developed and manufactured in house.
- They differ from other products especially through their high emitted sound power.
- This enables them to detect also small and moving objects.
- Waterproof, IP67, robust, oil resistant



Applications

Level Control

- Level measurement in containers and processes
- Monitoring of feed hoppers
- Checking for tailbacks on conveyors

Process Control

- Controlling belt tension or sag
- Web guide control
- Detecting material feed

Counting / Detection

- Counting and detection of parts, vehicles, persons and animals
- Detection of objects with "difficult" surface
- Detection of full and empty containers and pallets

Scanning of Dimensions

- Height sensing
- Volume measurement
- Roll diameter measurement



Ultrasonic Sensors

General

Ultrasonic sensors are mainly used in machine manufacturing and process control for distance measurement, as proximity switch and for room supervision.

They work after the principle of time of flight measurement of sound. The time of flight in air – back and forth – is approx. 6 ms per meter. The innovative ultrasonic edge sensors however are working based on analysis of sound intensity.

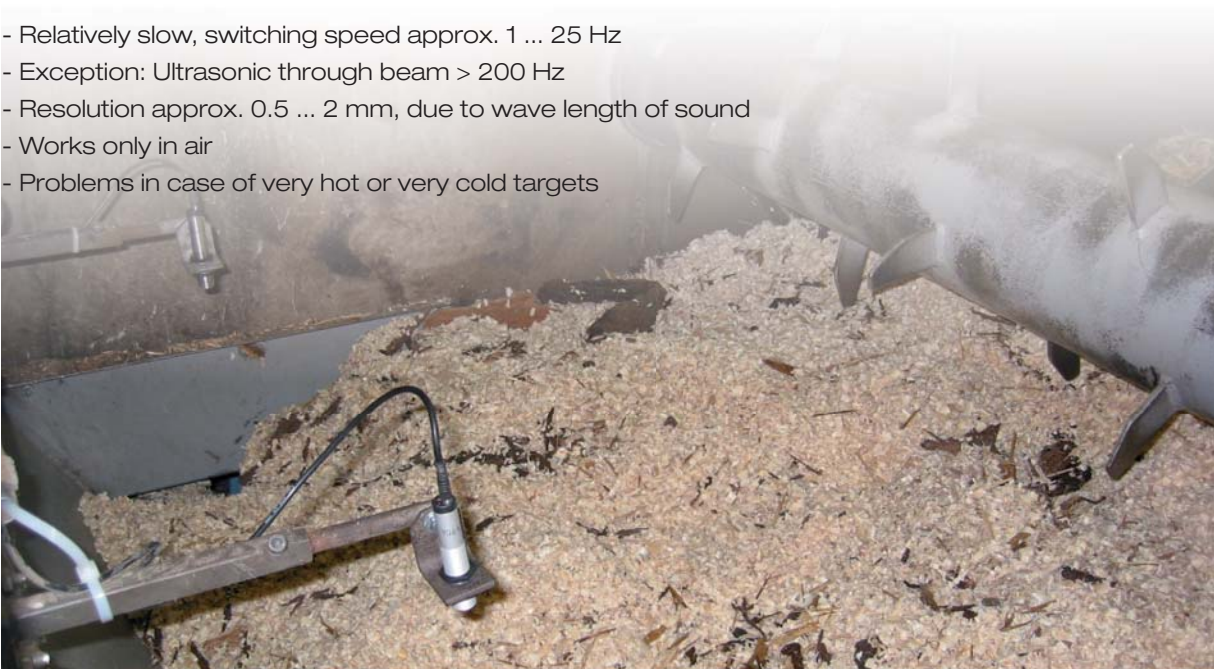
Ultrasound is very robust compared to other measuring principles. It passes dirty environment as well. Furthermore, it is reflected by almost all surfaces. Thus it makes independent of material, color and surface structure of the target to be detected.

Terms / Definitions

- The binary switching output (PNP or NPN transistor) of the sensor is activated when a scanned object falls below a preset distance value or exceeds it (NO or NC).
- Sensors with analog output (0 ... 10 V or 4 ... 20 mA) measure the distance to the object.
- The detection beam of an ultrasonic sensor generally has the shape of a cone. The size depends on the target and its sound reflecting characteristics. Small and less reflective objects result in a smaller cone (narrower and shorter). Larger objects and those with surfaces which are not perpendicular to the central axis can expand the cone. The beams shown on pages 14/15 are typical shapes. The exact cone shape and size can be determined only at the object itself.
- No disturbing objects must be between the sensor and the target within the cone. Otherwise the sensor would detect the disturbing object instead of the desired target.
- The near range corresponds to the so called blind range, which is typical for ultrasonic sensors. In the blind range no measurement is possible.

Limits of ultrasonic sensors

- Relatively slow, switching speed approx. 1 ... 25 Hz
- Exception: Ultrasonic through beam > 200 Hz
- Resolution approx. 0.5 ... 2 mm, due to wave length of sound
- Works only in air
- Problems in case of very hot or very cold targets



Ultrasonic Fork Sensors

edge detection

	Web Guiding Control	Fork Sensor
Output function		
Connections		
	<p>A</p>	
	<p>B</p>	
	<p>BN = Brown BK = Black</p> <p>BU = Blue WH = White</p>	

Technical Specs	UPF-A 30(60)/8 TOR 24 CA	UPF-A 40(70)/13 TOR 24 CA	UPF-B 80 PA 24 C
Detection width approx.	approx. 8 mm (± 4)	approx. 13 mm (± 6,5)	-
Setting	Teach-In		Potentiometer
Fork width	30 mm / 60 mm	40 mm / 70 mm	80 mm
Sampling frequency	500 Hz	285 Hz	500 Hz
Ultrasonic frequency	180 kHz	130 kHz	350 kHz
Power supply voltage	8 ... 30 VDC		18 ... 30 VDC
Ripple of supply voltage	10 %		
Current consumption	35 mA		40 mA
Analog- / Binary output	0 ... 10 VDC		PNP (NO o. NC); max. 100 mA
Linearity at 10 - 90 % cov.	≤ 2 % Sn max.	≤ 4 % Sn max.	-
Hysteresis	-		~ 1 mm
Reproducibility	-		~ 0,1 mm
Resolution	~ 0,1 mm at 20 ... 80 % covered ~ 0,15 mm at 0 ... 100 % covered		Smallest object ~ 3 ... 10 mm
Temperature range	0 °C to + 60 °C		
Temperature stability	± 5% (0 ... 60 °C)		-
Protection class	IP67		
Housing material	Aluminum, black anodized		
Electrical connection	Connector: M12x1; 4-pin		Connector: M8x1; 3-pin
Specification	CE		

Ordering Code

Version	Type	Connection	Article No.
Analog output 0 ... 10 VDC; Web guide control 8 mm	UPF-A 30/8 TOR 24 CA	B	11182
Analog output 0 ... 10 VDC; Web guide control 8 mm	UPF-A 60/8 TOR 24 CA	B	11184
Analog output 0 ... 10 VDC; Web guide control 13 mm	UPF-A 40/13 TOR 24 CA	B	11183
Analog output 0 ... 10 VDC; Web guide control 13 mm	UPF-A 70/13 TOR 24 CA	B	11185
Fork sensor 80 mm; PNP (NO o.NC)	UPF-B 80 PA 24 C	A	13976

Ultrasonic Through Beam

up to 2500 mm

Through beam	up to 2500 mm
Output function	
Connections	
 BN = Brown BU = Blue BK = Black WH = White	 Sender: Leistung Transmitter: Intensity Empfänger / Receiver: L_on LED


Technical Specs (at +20 °C; 24 VDC)	Transmitter: UPB 1500 (2500) P 24 CT	Receiver: UPB 1500 (2500) ...
Detection range	0 ... 1500 mm (2500)	
Setting	Potentiometer	
Transmitting power	0,5 ... 100 % adjustable	-
Switching frequency	200 Hz	
Response time	-	3 ... 400 ms adjustable
Release time	-	< 3 ms
Operating frequency	180 kHz	
Power supply voltage	18 ... 30 VDC	
Ripple of supply voltage	< 10 %	
Current consumption	max. 55 mA	max. 20 mA
Binary output	-	PNP (NO o. NC); max. 100 mA
Temperature range	0 °C to +50 °C	
Pressure range	~900 ... 1100mbar _{abs}	
Protection class	IP67	
Housing material	Polyamid; V2A	
Electrical connection	Connector: M8x1; 3-pin	
Specification	CE	

Ordering Code			
Version	Distance 0 ... 1500 mm / 0 ... 2500 mm	Connection	Article No.
Transmitter: 1,5 m	UPB 1500 P 24 CT	A	6482
Transmitter: 2,5 m	UPB 2500 P 24 CT	A	15949
Receiver: PNP (NO) 1,5 m	UPB 1500 PVPS 24 CR	B	6480
Receiver: PNP (NC) 1,5 m	UPB 1500 PVPO 24 CR	B	10190
Receiver: PNP (NO) 2,5 m	UPB 2500 PVPS 24 CR	B	15950
Receiver: PNP (NC) 2,5 m	UPB 2500 PVPO 24 CR	B	15951



Ultrasonic Proximity Switch

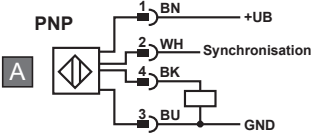
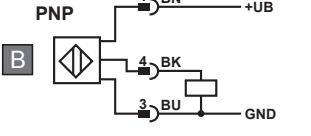
compact

Proximity switch

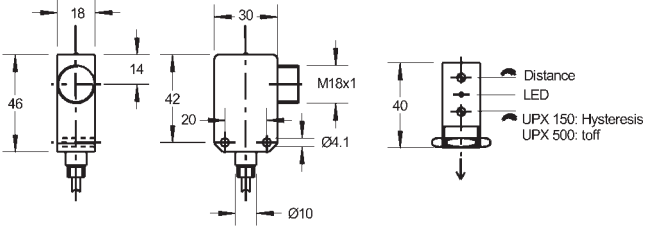
Output function 

Connections

BN = Brown BU = Blue
 BK = Black WH = White







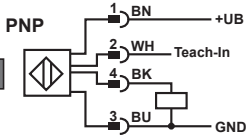
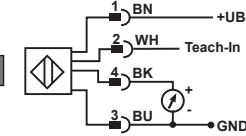
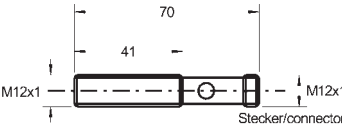
Distance
 LED
 UPX 150: Hysteresis
 UPX 500: Ioff

Technical Specs (at +20 °C; 24 VDC)	UPX 150 ...	UPX 500 ...
Detection range	60 ... 150 mm	120 ... 500 mm
Setting	Potentiometer	
Switching frequency	~ 12 Hz	~ 2 Hz
Response time	< 5 ms	< 10 ms
Release time	< 40 ms	0,4 ... 8 sec. adjustable
Operating frequency	350 kHz	180 kHz
Power supply voltage	12 ... 28 VDC	
Ripple of supply voltage	< 10 %	
Current consumption	~ 45 mA	~ 55 mA
Binary output	PNP (NO); max. 100 mA	(NC) on request
Hysteresis	10 ... 40 % adjustable	~ 10 %
Temperature range	0 °C to +50 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Housing material	Polyamid; V2A	
Electrical connection	cable: 2 m / connector: M8x1; 3-/4-pin	
Specification	CE	

Ordering Code			
Version	Distance 60 ... 150 mm	Connection	Article No.
PNP (NO); cable: 2 m; PVC; 3-wire	UPX 150 PVPS 24	B	4419
PNP (NO); connector: M8x1; 3-pin	UPX 150 PVPS 24 C	B	4540
Version	Distance 120 ... 500 mm	Connection	Article No.
PNP (NO); cable: 2 m; PVC; 3-wire	UPX 500 PVPS 24	B	7450
PNP (NO); connector: M8x1; 3-pin	UPX 500 PVPS 24 C	B	6769
PNP (NO); Syncr.; connector: M8x1, 4-pin	UPX 500 PVPS 24 Y	A	4891

Ultrasonic Distance Sensors

miniature

Distance sensors			
Output function			
Connections			
<p>A</p>  <p>B</p>  <p>BN = Brown BU = Blue BK = Black WH = White</p>			




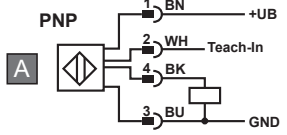
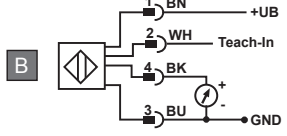
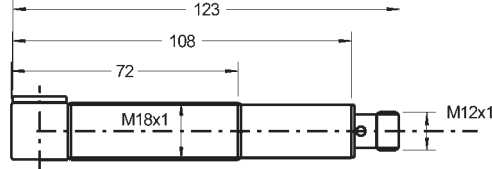
Technical Specs	UPS...C (PNP)	UPS...CA (0-10V)	UPS...CI (4-20mA)
Detection range		20 ... 200 mm (standard) 0 ... 150 mm (focus device) 20 ... 150 mm (resistant against chemicals)	
Setting		Teach-In with Pin 2	
Sampling frequency	13 Hz	-	-
Response time	~ 30 ms	-	-
Power supply voltage	10 ... 30 VDC	15 ... 30 VDC	10 ... 30 VDC
Ripple of supply voltage		< 10 %	
Operating frequency		400 kHz	
Current consumption		~ 30 mA	
Binary output	PNP (NO or NC); max. 100 mA	-	-
Analog output	-	0 ... 10 V	4 ... 20 mA
Linearity	-	< 1 % / Sn max.	
Load resistance	-	> 1 kΩ	< 300 Ω
Hysteresis, axial	< 1 %	-	
Reproducibility		< 0,5 % / Sn max.	
Temperature range		0 °C to +70 °C	
Protection class		IP 67	
Housing material		nickel plated brass; PVDF or PA	
Electrical connection		connector: M12x1; 4-pin	
Specification		CE	

Ordering Code			
Version: PNP	Distance 200 mm	Connection	Article No.
PNP (NO or NC)	UPS 200 TVPA 24 C	A	10019
Analog version 0 ... 10 VDC	UPS 200 TOR 24 CA	B	9539
Analog version 4 ... 20 mA	UPS 200 TOR 24 CI	B	10293
Version focus device	Distance 150 mm	Connection	Article No.
PNP (NO or NC)	UPS 150 FB TVPA 24 C	A	10419
Analog version 0 ... 10 VDC	UPS 150 FB TOR 24 CA	B	11189
Analog version 4 ... 20 mA	UPS 150 FB TOR 24 CI	B	15953
Version chem. resistant	Distance 150 mm	Connection	Article No.
PNP (NO or NC)	UPS 150 CP TVPA 24 C	A	10687
Analog version 0 ... 10 VDC	UPS 150 CP TOR 24 CA	B	15952
Analog version 4 ... 20 mA	UPS 150 CP TOR 24 CI	B	10765

Ultrasonic Distance Sensors - Retroreflective barrier

programmable

Distance sensors, Retroreflective barrier, proximity switch

Output function		
Connections		
<p>A</p>  <p>B</p>  <p>BN = Brown BU = Blue BK = Black WH = White</p>		

Technical Specs	UPR-A 1500 TVPA 24 CW	UPR-A 1500 TOR 24 CWAI
Detection range	120 ... 1500 mm	
Setting	Teach-In with Pin 2	
Speed	~ 5 Hz	~ 30 Hz
Power supply voltage	11 ... 30 VDC	
Ripple of supply voltage	10 %	
Ultrasonic frequency	180 kHz	
Current consumption	~ 45 mA	~ 65 mA
Binary output	PNP (NO or NC); max. 100 mA	-
Analog output	-	0 ... 10 V / 4 ... 20 mA (auto detection)
Linearity	-	< 1 % / Sn max.
Load resistance	-	> 10 kΩ at U-out < 400 Ω at I-out
Hysteresis, axial	4 mm	-
Resolution	0,5 mm	
Temperature range	0 °C to +60 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Housing material	nickel plated brass; PA	
Electrical connection	Connector: M12x1; 4-pin	
Specification	CE	

UPR-A Ultrasonic Sensors

with selectable beam size


Ordering Code

Version: Standard	Distance 1500 mm	Connection	Article No.
PNP (NO o. NC)	UPR-A 1500 TVPA 24 CW	A	13979
Analog out 0 ... 10 VDC / 4 ... 20 mA	UPR-A 1500 TOR 24 CWAI	B	13980


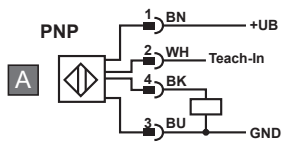
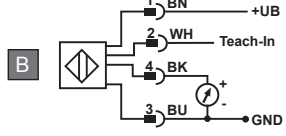
Ultrasonic Distance Sensors - Retroreflective barrier

programmable

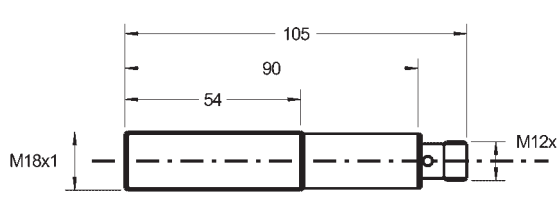
Distance sensors, Retroreflective barrier, proximity switch

Output function 

Connections


BN = Brown BU = Blue
BK = Black WH = White



Technical Specs	UPR-A 1500 TVPA 24 C	UPR-A 1500 TOR 24 CAI
Detection range	120 ... 1500 mm	
Setting	Teach-In with Pin 2	
Speed	~ 5 Hz	~ 30 Hz
Power supply voltage	11 ... 30 VDC	
Ripple of supply voltage	10 %	
Ultrasonic frequency	180 kHz	
Current consumption	~ 45 mA	~ 65 mA
Binary output	PNP (NO or NC); max. 100 mA	-
Analog output	-	0 ... 10 V; 4 ... 20 mA (auto detection)
Linearity	-	< 1 % / Sn max.
Load resistance	-	> 10 kΩ (U), < 400 Ω (I)-load
Hysteresis, axial	4 mm	-
Resolution	0,5 mm	
Temperature range	0 °C bis +60 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Housing material	nickel plated brass	
Option: for ATEX zone 2+22 :	Ex tc IIIC T60°C Dc 0°C ≤ Ta ≤ +60°C Ex nA IIC T6 Gc 0°C ≤ Ta ≤ +60°C	
Further options	stainless steel housing 1.4571 (V4A), Version resistant against chemicals	
Electrical connection	Connector: M12x1; 4-pin	
Specification	CE	

UPR-A Ultrasonic Sensors

with selectable beam size



Ordering Code

Version: Standard / V4A	Distance 1500 mm	Connection	Article No.
PNP (NO o. NC)	UPR-A 1500 TVPA 24 C SC	A	13977 15954
Analog out 0 ... 10 VDC / 4 ... 20 mA	UPR-A 1500 TOR 24 CAI SCAI	B	13978 15955
Version: ATEX 2/22			
PNP (NO o. NC)	UPR-A 1500 TVPA 24 C Ex	A	15862
Analog out 0 ... 10 VDC / 4 ... 20 mA	UPR-A 1500 TOR 24 CAI Ex	B	12271

Ultrasonic Distance Sensors

multiple outputs

Distance Sensors

Output function

Connections

BN = Brown BU = Blue
BK = Black WH = White

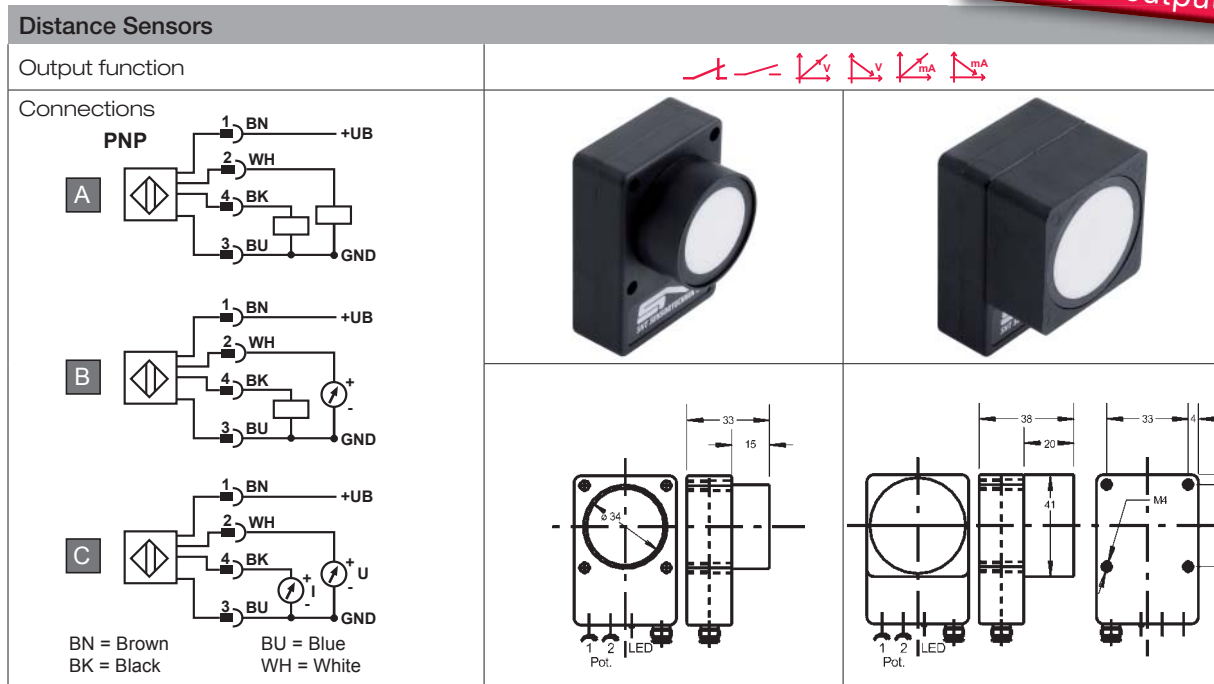
Technical Specs (at +20 °C; 24 VDC)	UPK 500 ...	UPK 1000 ...
Detection range	80 ... 500 mm	135 ... 1000 mm
Setting	Potentiometer	
Sampling frequency	~ 8 Hz	~ 5 Hz
Ultrasonic frequency	180 kHz	
Power supply voltage	15 ... 30 VDC	
Ripple of supply voltage	< 10 %	
Current consumption	~ 60 mA	
Binary output	PNP; max. 100 mA	
Analog output	0 ... 10 V / 10 ... 0 V; 4 ... 20 mA / 20 ... 4 mA	
Linearity analog output	<± 0,5 % / Sn max.	
Load resistance	> 10 kΩ-U-load / < 400 Ω -I-load	
Tracking speed of analogue output	< 60 ms / 95 % Sn max.	< 250 ms / 95 % Sn max.
Hysteresis, axial	~ 15 mm	~ 25 mm
Accuracy	<± 1% / Sn max.	
Temperature range	0 °C to +50 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Option synchronisation	input (on request) UPK.....Y	
Housing material	glass fiber reinforced Polyamid	
Electrical connection	Connector: M8x1; 4-pin	
Specification	CE	

Ordering Code

Version	Distance 80 ... 500 mm	Connection	Art. Nr.	Distance 135 ... 1000 mm	Connection	Art. Nr.
1 x PNP (NO), 1x PNP (NC)	UPK 500 PDPA 24 C	A	10098	UPK 1000 PDPA 24 C	A	10233
2 x PNP (NO)	UPK 500 PDPS 24 C	A	15956	UPK 1000 PDPS 24 C	A	15957
PNP (NO), 0 ... 10 VDC	UPK 500 PVPS 24 CA	B	10230	UPK 1000 PVPS 24 CA	B	10234
PNP (NO), 10 ... 0 VDC	UPK 500 PVPS 24 CVA	B	14504	UPK 1000 PVPS 24 CVA	B	14501
1 x PNP (NO), 4 ... 20 mA	UPK 500 PVPS 24 CI	B	10231	UPK 1000 PVPS 24 CI	B	10235
1 x PNP (NO), 20 ... 4 mA	UPK 500 PVPS 24 CVI	B	14505	UPK 1000 PVPS 24 CVI	B	14502
1x 0 ... 10 VDC, 1x 4 ... 20 mA	UPK 500 POR 24 CAI	C	10232	UPK 1000 POR 24 CAI	C	10236
1x 10 ... 0 VDC, 1x 20 ... 4 mA	UPK 500 POR 24 CVAI	C	10478	UPK 1000 POR 24 CVAI	C	13967

Ultrasonic Distance Sensors

multiple outputs


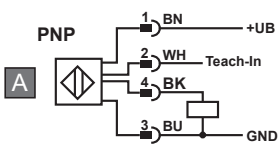
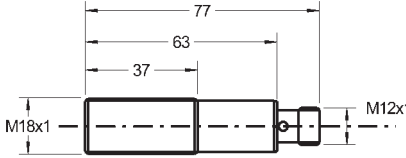
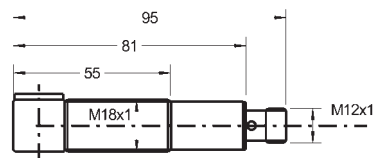


Technical Specs (at +20 °C; 24 VDC)	UPK 2500...	UPK 5000...
Detection range	250 ... 2500 mm	400 ... 5000 mm
Setting	Potentiometer	
Sampling frequency	~ 3 Hz	~ 2 Hz
Ultrasonic frequency	130 kHz	80 kHz
Power supply voltage	15 ... 30 VDC	
Ripple of supply voltage	< 10 %	
Current consumption	~ 60 mA	~ 65 mA
Binary output	PNP; max. 100 mA	
Analog output	0 ... 10 V / 10 ... 0 V; 4 ... 20 mA / 20 ... 4 mA	
Linearity analog output	<± 0,5 % / Sn max.	
Load resistance	> 10 kΩ-U-load / < 400 Ω -I-load	
Tracking speed of analogue output	< 400 ms / 95 % Sn max.	< 2 Sec. / 95 % Sn max.
Hysteresis, axial	~ 40 mm	~ 80 mm
Accuracy	<± 1 % / Sn max.	
Temperature range	0 °C to +50 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Option synchronisation input	input (on request) UPK.....Y	
Housing material	glass fiber reinforced Polyamid	
Electrical connection	Connector: M8x1; 4-pin	
Specification	CE	

Ordering Code						
Version	Distance 250 ... 2500 mm	Connection	Art. Nr.	Distance 400 ... 5000 mm	Connection	Art. Nr.
1 x PNP (NO), 1x PNP (NC)	UPK 2500 PDPA 24 C	A	10173	UPK 5000 PDPA 24 C	A	10239
2 x PNP (NO)	UPK 2500 PDPS 24 C	A	15958	UPK 5000 PDPS 24 C	A	15959
PNP (NO), 0 ... 10 VDC	UPK 2500 PVPS 24 CA	B	10237	UPK 5000 PVPS 24 CA	B	10240
PNP (NO), 10 ... 0 VDC	UPK 2500 PVPS 24 CVA	B	11284	UPK 5000 PVPS 24 CVA	B	11655
1 x PNP (NO), 4 ... 20 mA	UPK 2500 PVPS 24 CI	B	10172	UPK 5000 PVPS 24 CI	B	10238
1 x PNP (NO), 20 ... 4 mA	UPK 2500 PVPS 24 CVI	B	10528	UPK 5000 PVPS 24 CVI	B	14505
1x 0 ... 10 VDC, 1x 4 ... 20 mA	UPK 2500 POR 24 CAI	C	10176	UPK 5000 POR 24 CAI	C	10177
1x 10 ... 0 VDC, 1x 20 ... 4 mA	UPK 2500 POR 24 CVAI	C	10195	UPK 5000 POR 24 CVAI	C	11090

Ultrasonic proximity switch

low cost

Proximity switch	
Output function	— / —
Connections	
 <p>PNP</p> <p>1 BN — +UB</p> <p>2 WH — Teach-In</p> <p>4 BK —</p> <p>3 BU — GND</p> <p>BN = Brown BU = Blue</p> <p>BK = Black WH = White</p>	 

Technical Specs	UPR-B 1000 TVPA 24 C	UPR-B 1000 TVPA 24 CW
Detection range	100 ... 1000 mm	
Setting	Teach-In with Pin 2	
Sampling frequency	~ 5 Hz	
Ultrasonic frequency	180 kHz	
Power supply voltage	11 ... 30 VDC	
Ripple of supply voltage	10 %	
Current consumption	~ 30 mA	
Binary output	PNP (NO o. NC); max. 100 mA	
Hysteresis, axial	4 mm	
Temperature range	0 °C to +60 °C	
Pressure range	~ 900 ... 1100 mbar _{abs}	
Protection class	IP67	
Housing material	nickel plated brass; PA	
Electrical connection	Connector: M12x1; 4-pin	
Specification	CE	



UPR-B Ultrasonic Sensors

Small and smart like a lip stick



Ordering Code			
Version: Axial	Distance 100 ... 1000	Connection	Article No.
PNP (NO o. NC)	UPR-B 1000 TVPA 24 C	A	15864
Version: angled	Distance 100 ... 1000		
PNP (NO o. NC)	UPR-B 1000 TVPA 24 CW	A	15960

Mounting instructions - Accessories

Mounting instructions

- Two sensors must not stand directly opposite each other. Even at multiple operating distances problems can arise.
- When multiple sensors scan the same object or if there is a shared distant background, versions with synchronization must be used (option).
- Installation in narrow pipes can be problematic. The inner tube diameter should be sufficiently larger than the sound beam diameter. And no protruding parts, side bores or deposits shall exist. Otherwise they will be detected instead of the target (e.g. level) in the pipe.
- Smooth surfaces are to be scanned up to a tilt angle of approx. 10°. Rough and highly textured surfaces are however detectable up to far larger angles.
- Ultrasonic sensors should be mounted as softly as possible in order to prevent acoustic disturbances. The scope of delivery therefore includes rubber parts for the mounting. This is especially true when installing in thin sheets or mounting brackets.

Electrical connection

- Normally a power supply is used to which no further loads operate.
- The cable length should be kept as short as possible. With very long cables use a 470µF/35V supporting capacitor close to the sensor.
- The cables should not be laid parallel to power cables.
- To prevent interference, make sure that the part where the sensor is mounted is electrically well grounded.



Accessories

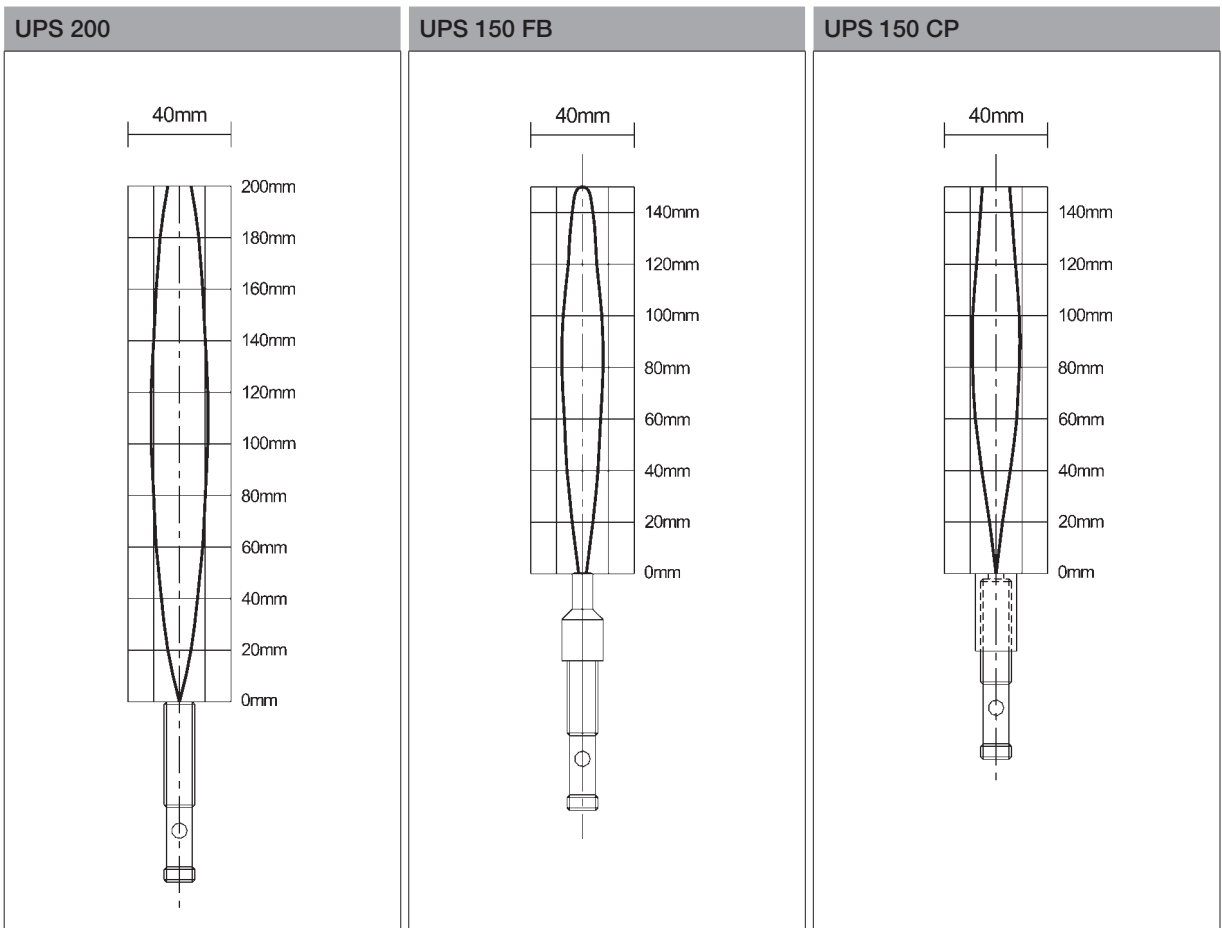
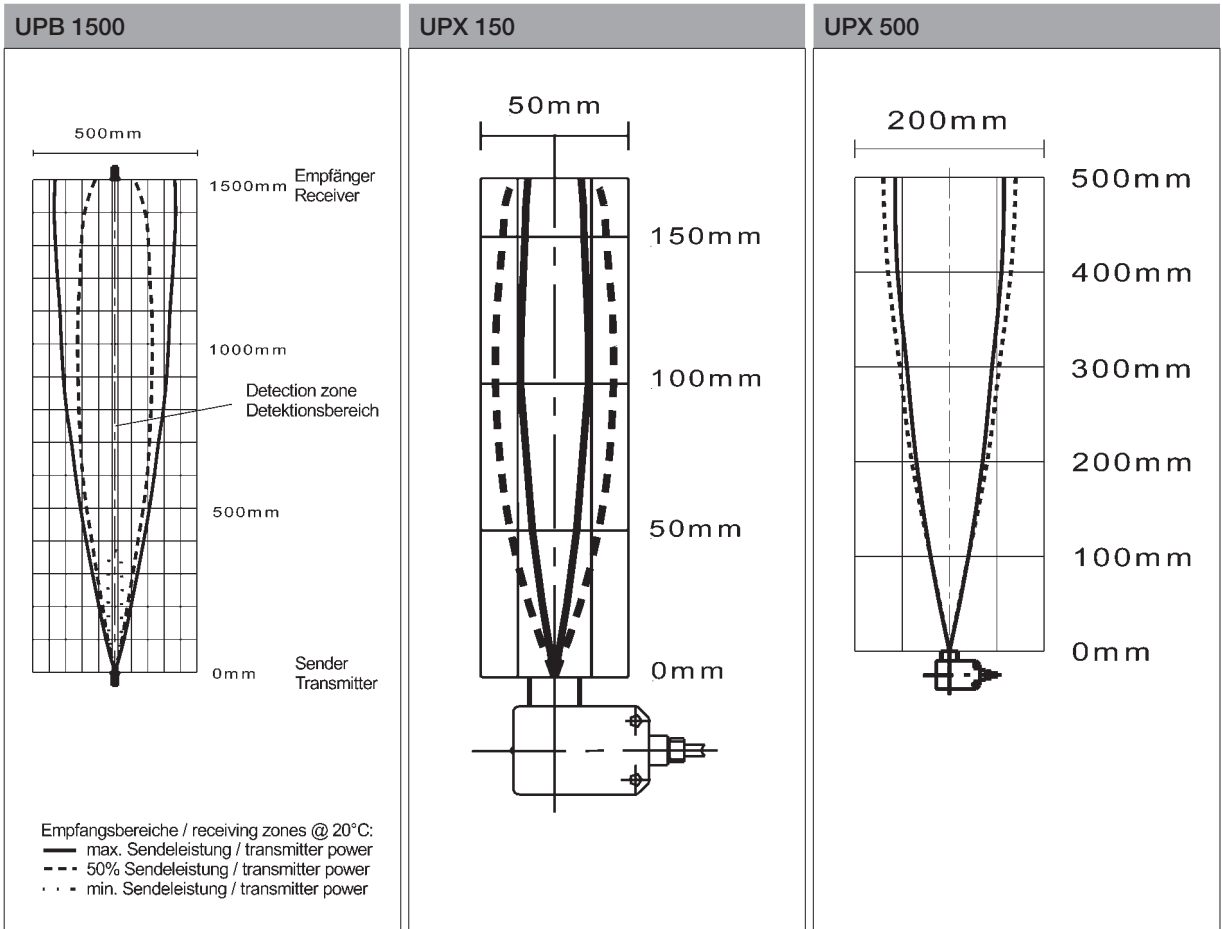
Connection cables		- Miniature screw connector - Outer shielding made of PUR Ø 4,5 mm; 3x 0,25 mm ² or Ø 5 mm; 4x 0,25 mm ²			
M8x1 connection cable	Pins / Colors	Length	Ordering Code	Article No.	
	3-pin 	5 m	AK-ZG-8/3-5	4562	
		10 m	AK-ZG-8/3-10	6806	
		15 m	AK-ZG-8/3-15	8722	
	4-pin 	5 m	AK-ZG-8/4-5	4563	
		10 m	AK-ZG-8/4-10	7382	
		15 m	AK-ZG-8/4-15	8723	

Anschlusskabel		- Miniature screw connector - Outer shielding made of PUR Ø 5 mm; 4x 0,25 mm ²			
M12x1 connection cable	Pins / Colors	Length	Ordering Code	Article No.	
	4-pin 	5 m	AK-ZG-12/4-5	4560	
		10 m	AK-ZG-12/4-10	8594	
		15 m	AK-ZG-12/4-15	8676	

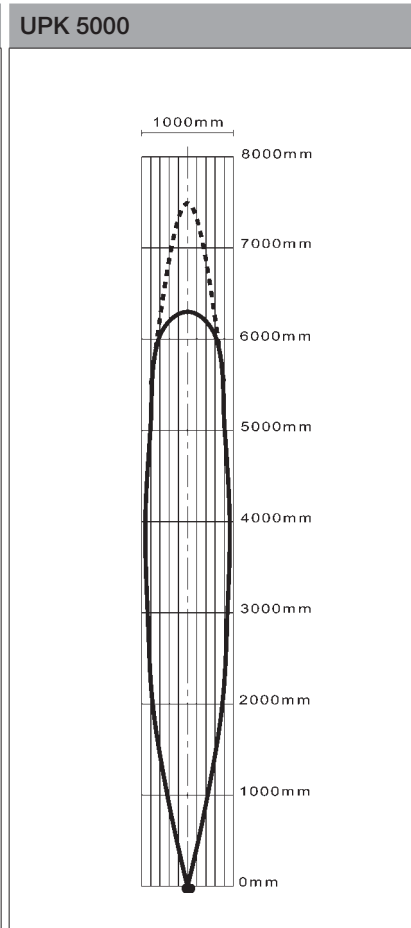
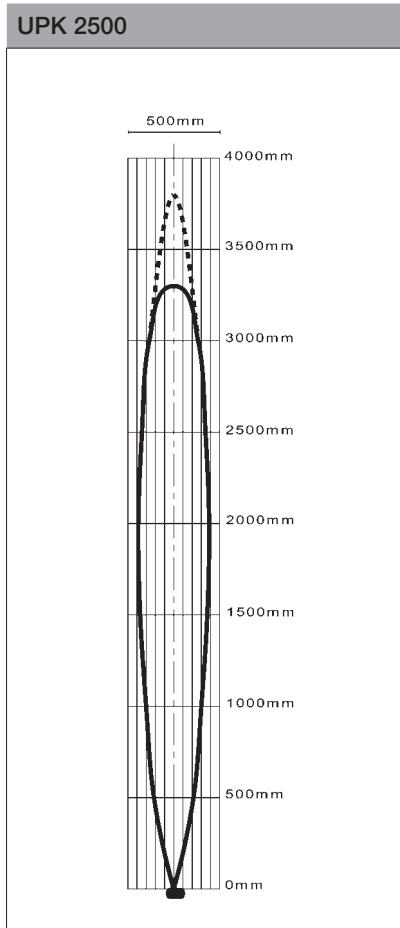
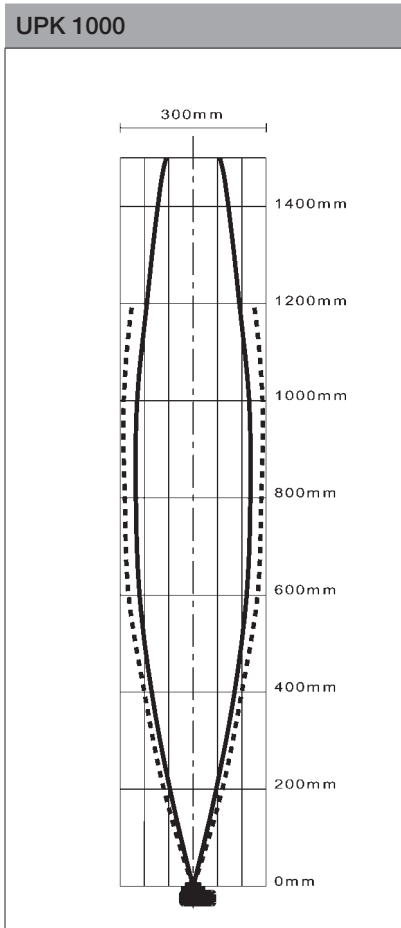
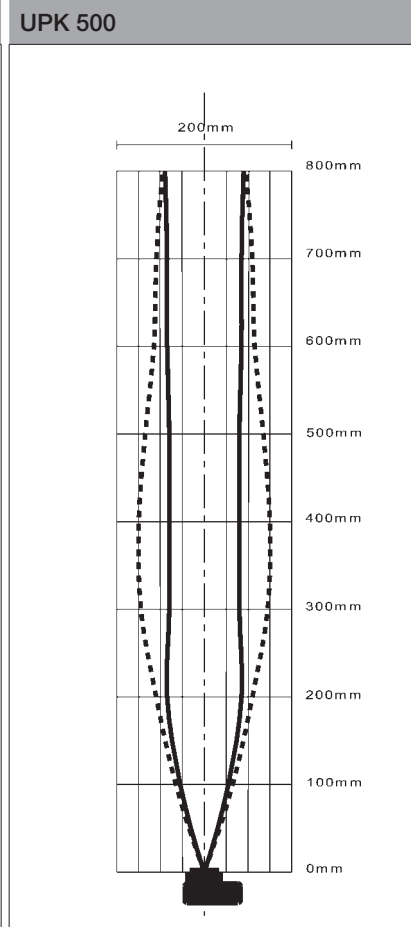
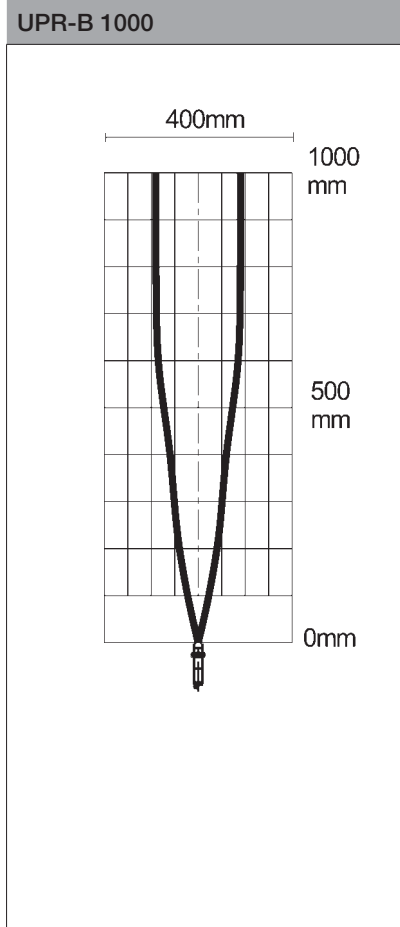
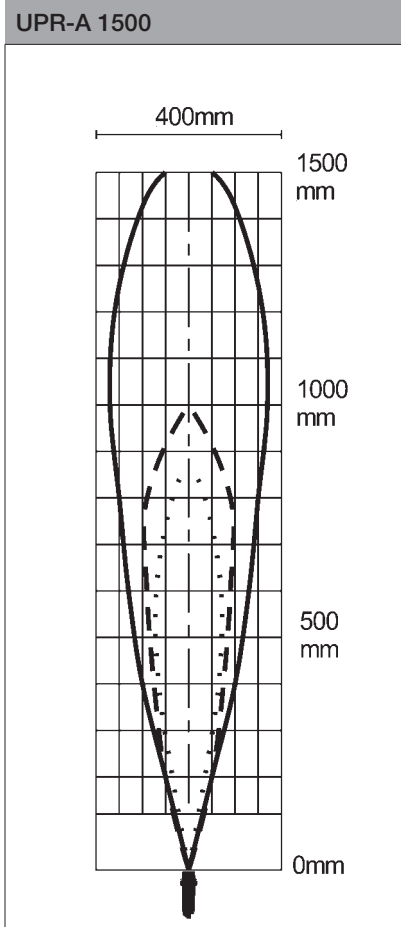
All connection cables are also available with angled connector version. Ordering code: AK-WG-...

	Ordering Code	Article No.
Mounting bracket for UPK 500 to UPK 5000	UPM	7677

Scanning fields



Scanning fields



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<input type="checkbox"/> Sensoren für die Verkehrstechnik <ul style="list-style-type: none"> ■ Busse und Bahnen 	<input type="checkbox"/> Überwachungssysteme für Produktionsprozesse <ul style="list-style-type: none"> ■ Bildverarbeitung (QS) ■ Materialfluss (Flüssigkeiten / Schüttgüter) ■ Umgebung (Staub)
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