



- *High precision and switching frequency*
- *Colour independence and transparent object detection*
- *Easy Teach-in setting and 2 bi-coloured signalling LEDs*
- *Models with digital NPN - PNP and 0 - 10 V or 4- 20 mA analogue outputs*

## US18 SERIES

The range of measurement and inspection devices is enriched thanks to the introduction of new ultrasonic M18x1 ABS tubular sensors of the **US18** series.

Models with axial or radial acoustic emission and with discrete bipolar output (1 NPN and 1 PNP) or with 4-20 mA or 0-10 V analogue output are available.

The extremely reduced blind zone and the unequalled 5 ms response speed are only two of the many features that are worth highlighting.

The sensors are easily configured through the Teach-in function, while the operating status is visibly signalled by 2 bi-coloured LEDs.

The temperature compensation function corrects the sound speed changes due to temperature variations, so the sensor precision remains unchanged in all situations and a 0.5 mm resolution is guaranteed.

The electrical connection is accomplished through standard M12 5-pole connectors.

The new **US18** ultrasonic sensors detect all objects independent from the non sound-absorbent material, reflectivity, transparency and colour, thus perfectly suiting applications in the automotive, packaging, machine tool fields and material transformation processes.



# ULTRASONIC SENSORS

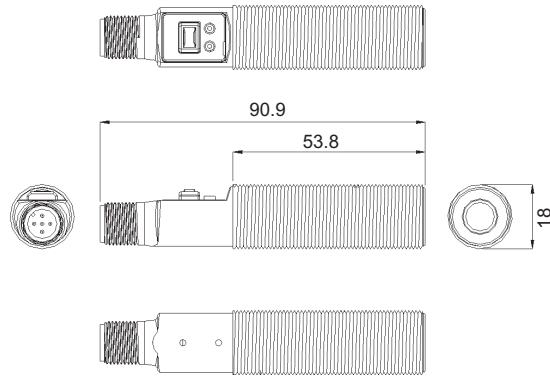
Models with discrete output are excellent foreground and/or background suppressors. The Teach-in procedure allows to fix a switching window with 10 mm width and to detect minimum and maximum values.

The models with analogue output are conceived as distance sensors: the analogue output can be scaled on windows of any width inside the operating range, or positioned at the centre of a detection window with a fixed width of 100 mm.

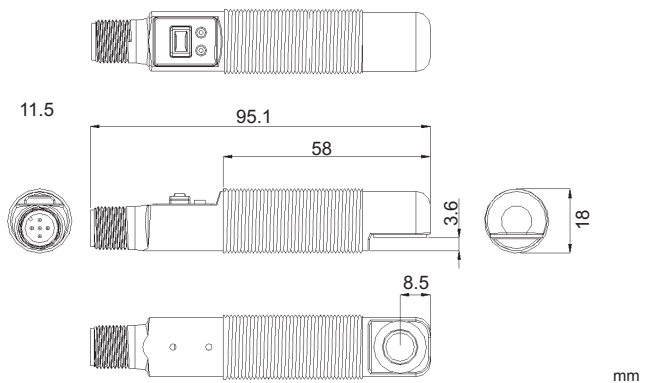


## DIMENSIONS

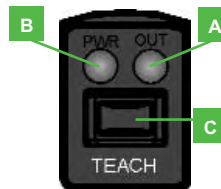
### AXIAL VERSIONS



### RADIAL VERSIONS



## INDICATORS AND SETTINGS



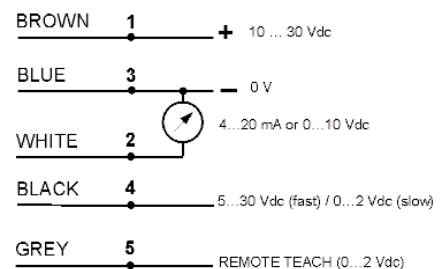
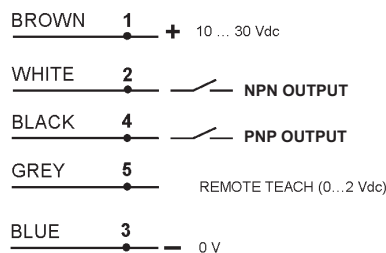
- A** Output status LED
- B** Power / signal intensity LED
- C** Teach-in push-button

## ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors (A.03)** and **Fixing Brackets (A.04)** of the **General Catalogue**.

## CONNECTIONS





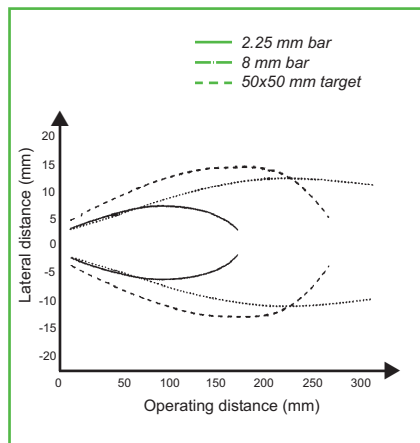
## TECHNICAL DATA

	Models with discrete output	Models with analogue output
<b>Operating distance (typical values):</b>	30 ... 300 mm	
<b>Power supply:</b>	10 ... 30 Vdc (limit values), polarity inversion protection	
<b>Ripple:</b>	≤ 2 Vpp	
<b>Consumption:</b>	65 mA max., 40 mA typical at 25 Vdc	
<b>Output type:</b>	NPN and PNP	0...10 Vdc or 4...20 mA
<b>Output current:</b>	100 mA max., short-circuit protection	
<b>Saturation voltage:</b>	PNP < 1.2 V at 10 mA, < 1.6 V at 100 mA NPN < 200 mV at 10 mA, < 600 mV at 100 mA	
<b>Load resistance:</b>		voltage output: 2.5 kΩ min. current output: 1 kΩ max.
<b>Response time:</b>	5 ms	2.5 ms (black wire at 0-2 Vdc or unconnected) 30 ms (black wire at 5-30 Vdc)
<b>Switching frequency:</b>	100 Hz	200 Hz (black wire at 0-2 Vdc or unconnected) 16 Hz (black wire at 5-30 Vdc)
<b>Delay at powering:</b>	300 ms	
<b>Indicators:</b>	yellow-green bi-coloured OUTPUT LED red POWER LED	
<b>Setting:</b>	Teach-in or remote input	
<b>Ultrasonic emission frequency:</b>	300 KHz, repeated each 2.5 ms	
<b>Temperature drift:</b>	minor than 1.7 % at detection distance	
<b>Repeatability:</b>	0.5 mm	
<b>Minimum detection window:</b>	5 mm	
<b>Hysteresis:</b>	0.7 mm	
<b>Resolution *:</b>	±1 mm with 2.5 ms response time ±0.5 mm with 30 ms response time	
<b>Minimum detection window dimension:</b>	5 mm	
<b>Operating temperature:</b>	-25 ... 55 °C	
<b>Storage temperature:</b>	-25 ... 70 °C	
<b>Electrical protection:</b>	Class 2	
<b>Housing material:</b>	Polyester	
<b>Mechanical housing:</b>	IP67	
<b>Connections:</b>	M12 5-pole connector	
<b>Weight:</b>	25 g	
<b>Standard reference:</b>	EN 60068-2-6, EN 60068-2-27	

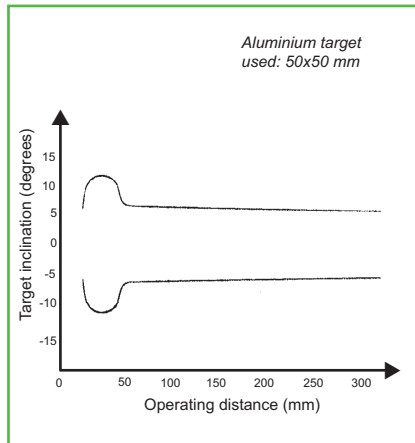
\* with 50x50 mm aluminium target at 22°C and constant operating conditions



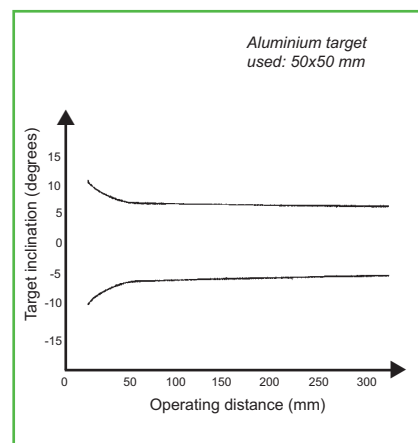
## DETECTION DIAGRAMS



**Beam - distance variation (typical values)**



**Maximum target inclination (models with discrete output)**



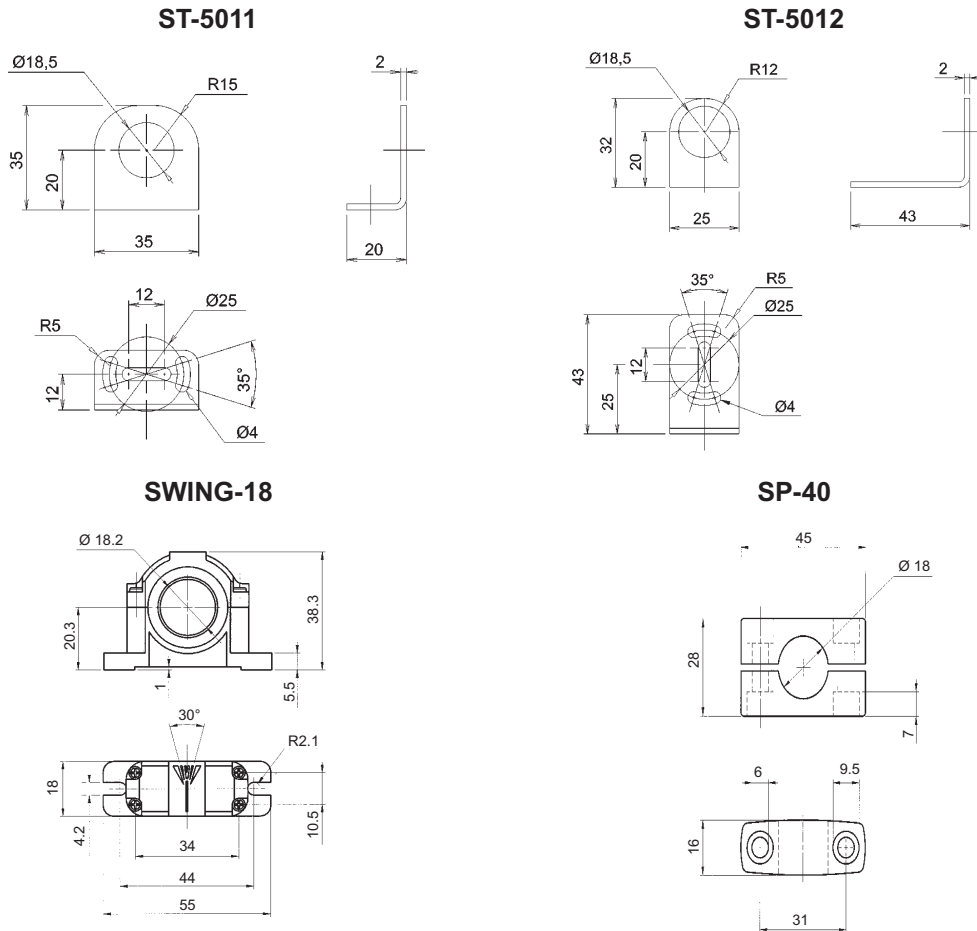
**Maximum target inclination (models with analogue output)**

## MODEL SELECTION TABLE

MODEL	HOUSING TYPE	OUTPUT	ORDER N°
US18-PA-5-N03-OH	axial	NPN and PNP	95B040000
US18-PR-5-N03-OH	radial	NPN and PNP	95B040010
US18-PA-5-N03-IH	axial	4-20 mA analogue	95B040020
US18-PR-5-N03-IH	radial	4-20 mA analogue	95B040030
US18-PA-5-N03-VH	axial	0-10 V analogue	95B040040
US18-PR-5-N03-VH	radial	0- 10 V analogue	95B040050

## ACCESSORIES

## DIMENSIONS



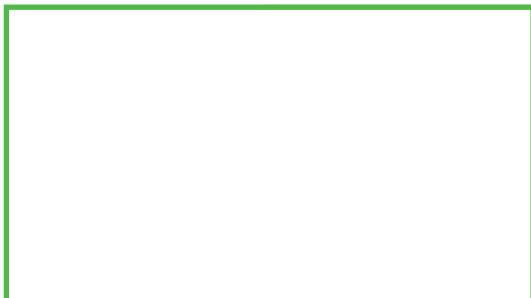
## ACCESSORY SELECTION TABLE

MODEL	DESCRIPTION	ORDER N°
ST-5011	M18 fixing bracket	95ACC5240
ST-5012	M18 fixing bracket	95ACC5250
SWING-18	adjustable support for plastic tubular M18 sensors	895000006
SP-40	fixed support for tubular M18 sensors	95ACC1370
CS-A1-03-G-03	axial M12 5 pole unshielded 3 m connector	95ACC2110
CS-A1-03-G-05	axial M12 5 pole unshielded 5 m connector	95ACC2120

Refer also to **Accessories for Sensors of the General Catalogue**



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