Ultrasonic sensor M18 short design

Thanks to the compact and robust design, the U*18S is the optimum solution for difficult application conditions. In combination with selectable output forms, the space-saving version offers flexibility for measuring and switching applications.

In addition, this series can be used either as a diffuse reflection sensor or as a retro-reflective sensor.

Product characteristics

- Can be used as a diffuse reflection sensor or retro-reflective sensor
- Reliable measuring regardless of transparency, gloss, surface characteristics and material colour
- Resistant to contamination, moisture, dust and mist
- Stainless steel housing material (DIN 1.4404) or plastic (PBT)
- Two different operating ranges up to 1.2 m
- Switching output NPN/PNP, analogue output
- Parameterization via programming cable
- Temperature compensation

Technical drawing

IMAGE 1/3

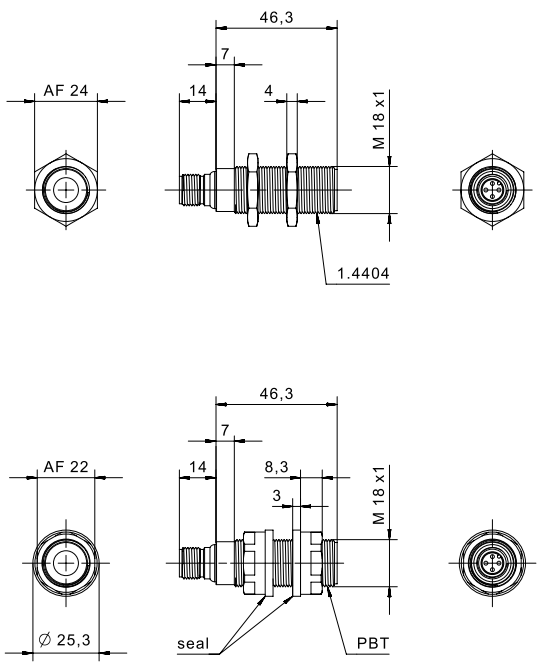


IMAGE 2/3

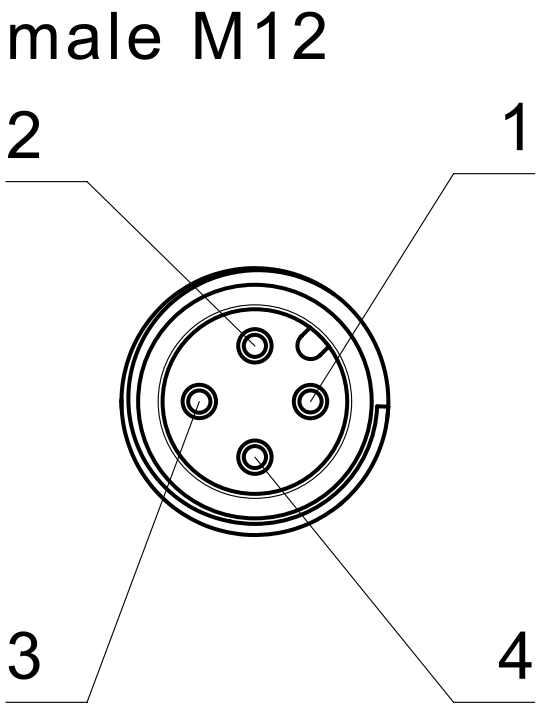
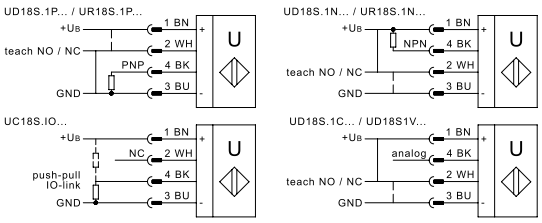


IMAGE 3/3



Product options

IMAGE 1/1

ORDERING KEY

	Measurement range	Housing material		Output					Connection
		Plastic PBT	Stain-less steel DIN 1.4044	PNP	NPN	4 … 20 mA	0 … 10 V	IO-Link (push-pull)	M12 connec-tion, 4-pin
Diffuse reflection sensor									
Switching output									
UD18SP1P030	40 … 300 mm	x		x					x
UD18SM1P030	40 … 300 mm		x	x					x
UD18SP1N030	40 … 300 mm	x			x				x
UD18SM1N030	40 … 300 mm		x		x				x
UD18SP1P120	80 … 1,200 mm	x		x					x
UD18SM1P120	80 … 1,200 mm		x	x					x
UD18SP1N120	80 … 1,200 mm	x			x				x
UD18SM1N120	80 … 1,200 mm		x		x				x
Analogue output									
UD18SP1C030	40 … 300 mm	x				x			x
UD18SM1C030	40 … 300 mm		x			x			x
UD18SP1V030	40 … 300 mm	x					x		x
UD18SM1V030	40 … 300 mm		x				x		x
UD18SP1C120	80 … 1,200 mm	x				x			x
UD18SM1C120	80 … 1,200 mm		x			x			x
UD18SP1V120	80 … 1,200 mm	x					x		x
UD18SM1V120	80 … 1,200 mm		x				x		x
Retro-reflective sensor									
Switching output									
UR18SP1P030	50 … 300 mm	x		x					x
UR18SM1P030	50 … 300 mm		x	x					x
UR18SP1N030	50 … 300 mm	x			x				x
UR18SM1N030	50 … 300 mm		x		x				x
UR18SP1P120	100 … 1,200 mm	x		x					x
UR18SM1P120	100 … 1,200 mm		x	x					x
UR18SP1N120	100 … 1,200 mm	x			x				x
UR18SM1N120	100 … 1,200 mm		x		x				x

Electrical data

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Continuous current	-		0.1 A			
Switching frequency	8 Hz	3 Hz	8 Hz	3 Hz	8 Hz	3 Hz
Polarity reversal protection	yes					
Switching output	-		NPN		PNP	
Output signal min.	-					
Output signal max.	-					
Output signal min.	4 mA		-			
Output signal max.	20 mA		-			
Operating voltage min.	10 V DC					
Operating voltage max.	30 V DC					
Current consumption	< 35 mA		<35 mA			
Load resistance min.	-					
Load resistance max.	500 Ohm		-			
Technology	Ultrasonic					
Operating frequency	300 kHz	200 kHz	300 kHz	200 kHz	300 kHz	200 kHz
Outputs	1x 4...20mA		1x NPN		1x PNP	
Operating Mode	diffuse reflection sensor					
Sensing range	40...300 mm					
Opening angle of sound cone	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °
Ripple	5 %					
Repeating accuracy	1 %					
Resolution	<= 2 mm	<= 3 mm	<=2 mm	<=3 mm	<=2 mm	<=3 mm
Thermal drift	±2 %					
Overload protection	yes					
Short-circuit protection	yes					
Synchronization	no					

Electrical data

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Multiplexing	no					
Linearity error	1 %					
Blind zone	40 mm	80 mm	40 mm	80 mm	40 mm	80 mm
Start-up time analogue output	500 ms		–			
Start-up time digital output	–		400 ms			
Response time analogue output	400 ms		–			
EMC	EN 60947-5-2					
Minimum distance sensor/reflector (retro-reflective sensor)	–					
Minimum distance object/reflector (retro-reflective sensor)	–					
MTTF	216 a					

Electrical data

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Continuous current	-				0.1 A	
Switching frequency	8 Hz	3 Hz	8 Hz	3 Hz	8 Hz	3 Hz
Polarity reversal protection	yes					
Switching output	-				NPN	
Output signal min.	0 V DC		-			
Output signal max.	10 V DC		-			
Output signal min.	-		4 mA		-	
Output signal max.	-		20 mA		-	
Operating voltage min.	10 V DC					
Operating voltage max.	30 V DC					
Current consumption	<35 mA		< 35 mA		<35 mA	
Load resistance min.	3000 Ohm		-			
Load resistance max.	-		500 Ohm		-	
Technology	Ultrasonic					
Operating frequency	300 kHz	200 kHz	300 kHz	200 kHz	300 kHz	200 kHz
Outputs	1x 0...10V		1x 4...20mA		1x NPN	
Operating Mode	diffuse reflection sensor					
Sensing range	40...300 mm					
Opening angle of sound cone	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °
Ripple	5 %					
Repeating accuracy	1 %					
Resolution	<=2 mm	<=3 mm	<= 2 mm	<= 3 mm	<=2 mm	<=3 mm
Thermal drift	±2 %					
Overload protection	yes					
Short-circuit protection	yes					
Synchronization	no					

Electrical data

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Multiplexing	no					
Linearity error	1 %					
Blind zone	40 mm	80 mm	40 mm	80 mm	40 mm	80 mm
Start-up time analogue output	500 ms				-	
Start-up time digital output	-				400 ms	
Response time analogue output	400 ms				-	
EMC	EN 60947-5-2					
Minimum distance sensor/reflector (retro-reflective sensor)	-					
Minimum distance object/reflector (retro-reflective sensor)	-					
MTTF	216 a					

Electrical data

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Continuous current	0.1 A		–		0.1 A	
Switching frequency	8 Hz	3 Hz	8 Hz	3 Hz	8 Hz	3 Hz
Polarity reversal protection	yes					
Switching output	PNP		–		NPN	
Output signal min.	–		0 V DC		–	
Output signal max.	–		10 V DC		–	
Output signal min.	–					
Output signal max.	–					
Operating voltage min.	10 V DC					
Operating voltage max.	30 V DC					
Current consumption	<35 mA				<40 mA	
Load resistance min.	–		3000 Ohm		–	
Load resistance max.	–					
Technology	Ultrasonic					
Operating frequency	300 kHz	200 kHz	300 kHz	200 kHz	300 kHz	200 kHz
Outputs	1x PNP		1x 0...10V		1x NPN	
Operating Mode	diffuse reflection sensor				retro-reflective sensor	
Sensing range	40...300 mm				0...300 mm	0...900 mm
Opening angle of sound cone	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °
Ripple	5 %					
Repeating accuracy	1 %				0.5 %	
Resolution	<=2 mm	<=3 mm	<=2 mm	<=3 mm	<=2 mm	<=3 mm
Thermal drift	±2 %					
Overload protection	yes					
Short-circuit protection	yes					
Synchronization	no					

Electrical data

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Multiplexing	no					
Linearity error	1 %					
Blind zone	40 mm	80 mm	40 mm	80 mm	-	
Start-up time analogue output	-		500 ms		-	
Start-up time digital output	400 ms		-		400 ms	
Response time analogue output	-		400 ms		-	
EMC	EN 60947-5-2					
Minimum distance sensor/reflector (retro-reflective sensor)	-				50 mm	100 mm
Minimum distance object/reflector (retro-reflective sensor)	-				10 %	
MTTF	216 a					

Electrical data

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Continuous current	0.1 A					
Switching frequency	8 Hz	3 Hz	8 Hz	3 Hz	8 Hz	3 Hz
Polarity reversal protection	yes					
Switching output	PNP		NPN		PNP	
Output signal min.	-					
Output signal max.	-					
Output signal min.	-					
Output signal max.	-					
Operating voltage min.	10 V DC					
Operating voltage max.	30 V DC					
Current consumption	<40 mA					
Load resistance min.	-					
Load resistance max.	-					
Technology	Ultrasonic					
Operating frequency	300 kHz	200 kHz	300 kHz	200 kHz	300 kHz	200 kHz
Outputs	1x PNP		1x NPN		1x PNP	
Operating Mode	retro-reflective sensor					
Sensing range	0...300 mm	0...900 mm	0...300 mm	0...900 mm	0...300 mm	0...900 mm
Opening angle of sound cone	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °	7 ±2 °	8 ±2 °
Ripple	5 %					
Repeating accuracy	0.5 %					
Resolution	<=2 mm	<=3 mm	<=2 mm	<=3 mm	<=2 mm	<=3 mm
Thermal drift	±2 %					
Overload protection	yes					
Short-circuit protection	yes					
Synchronization	no					

Electrical data

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Multiplexing	no					
Linearity error	1 %					
Blind zone	–					
Start-up time analogue output	–					
Start-up time digital output	400 ms					
Response time analogue output	–					
EMC	EN 60947-5-2					
Minimum distance sensor/reflector (retro-reflective sensor)	50 mm	100 mm	50 mm	100 mm	50 mm	100 mm
Minimum distance object/reflector (retro-reflective sensor)	10 %					
MTTF	216 a					

Properties

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Accessories supplied	2 Edelstahlmuttern SW24					
Controls	Programmierleitung					
Indicators	Switching state: 1 LED yellow, Echo: 1 LED green					

Properties

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Accessories supplied	2 Edelstahlmuttern SW24		2 Kunstoffmuttern SW22 + 2 Gummischeiben			
Controls	Programmierleitung					
Indicators	Switching state: 1 LED yellow, Echo: 1 LED green					

Properties

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Accessories supplied	2 Kunstoffmuttern SW22 + 2 Gummischeiben				2 Edelstahlmuttern SW24	
Controls	Programmierleitung					
Indicators	Switching state: 1 LED yellow, Echo: 1 LED green					

Properties

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Accessories supplied	2 Edelstahlmuttern SW24		2 Kunstoffmuttern SW22 + 2 Gummischeiben			
Controls	Programmierleitung					
Indicators	Switching state: 1 LED yellow, Echo: 1 LED green					

Mechanical data

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Dimensions	M18x1; L=60,3mm					
Housing design	cylindrical					

Mechanical data

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Dimensions	M18x1; L=60,3mm					
Housing design	cylindrical					

Mechanical data

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Dimensions	M18x1; L=60,3mm					
Housing design	cylindrical					

Mechanical data

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Dimensions	M18x1; L=60,3mm					
Housing design	cylindrical					

Material information

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Housing material	Edelstahl 1.4404					
Material sound transducer	Epoxy resin with glass balls					

Material information

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Housing material	Edelstahl 1.4404		PBT			
Material sound transducer	Epoxy resin with glass balls					

Material information

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Housing material	PBT				Edelstahl 1.4404	
Material sound transducer	Epoxy resin with glass balls					

Material information

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Housing material	Edelstahl 1.4404		PBT			
Material sound transducer	Epoxy resin with glass balls					

Environmental conditions

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Protection class	IP67 DIN EN 60529					
Operating temperature min.	-20 °C					
Max. operating temperature	70 °C					
Min. storage temperature	-30 °C					
Max. storage temperature	80 °C					
Temperature compensation	yes					

Environmental conditions

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Protection class	IP67 DIN EN 60529					
Operating temperature min.	-20 °C					
Max. operating temperature	70 °C					
Min. storage temperature	-30 °C					
Max. storage temperature	80 °C					
Temperature compensation	yes					

Environmental conditions

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Protection class	IP67 DIN EN 60529					
Operating temperature min.	-20 °C					
Max. operating temperature	70 °C					
Min. storage temperature	-30 °C					
Max. storage temperature	80 °C					
Temperature compensation	yes					

Environmental conditions

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Protection class	IP67 DIN EN 60529					
Operating temperature min.	-20 °C					
Max. operating temperature	70 °C					
Min. storage temperature	-30 °C					
Max. storage temperature	80 °C					
Temperature compensation	yes					

Installation

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Thread	M18					
Torque	50 N m					
Weight	80 g					

Installation

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Thread	M18					
Torque	50 N m		1 N m			
Weight	80 g		65 g			

Installation

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Thread	M18					
Torque	1 N m				50 N m	
Weight	65 g				80 g	

Installation

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Thread	M18					
Torque	50 N m		1 N m			
Weight	80 g		65 g			

Connection

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
Connector type	M12 4-pol.					

Connection

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
Connector type	M12 4-pol.					

Connection

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
Connector type	M12 4-pol.					

Connection

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
Connector type	M12 4-pol.					

Approvals

Attribute	UD18SM1C030	UD18SM1C120	UD18SM1N030	UD18SM1N120	UD18SM1P030	UD18SM1P120
CE label	yes					
UL certification	yes					
CCC certification	<36V ja					

Approvals

Attribute	UD18SM1V030	UD18SM1V120	UD18SP1C030	UD18SP1C120	UD18SP1N030	UD18SP1N120
CE label	yes					
UL certification	yes					
CCC certification	<36V ja					

Approvals

Attribute	UD18SP1P030	UD18SP1P120	UD18SP1V030	UD18SP1V120	UR18SM1N030	UR18SM1N120
CE label	yes					
UL certification	yes					
CCC certification	<36V ja					

Approvals

Attribute	UR18SM1P030	UR18SM1P120	UR18SP1N030	UR18SP1N120	UR18SP1P030	UR18SP1P120
CE label	yes					
UL certification	yes					
CCC certification	<36V ja					