

The UM12 is an ultrasonic sensor for non-contact detection of objects, animals, and persons.

- Detection or distance measurement is not possible within the blind zone of the UM12 ultrasonic sensor.
- During normal operation, an orange LED lights up to signal that the switching output is active (for sensors with a switching output) or that an object is in the scaling area (for sensors with an analog output).
- The UM12 sensors feature internal temperature compensation. Due to the sensor heating up, the temperature compensation function will reach its best working point after approximately 1 minute.
- The LED status display consists of two LEDs behind an opening in the housing.

- Process diagram A for sensors with switching outputs
- Process diagram B for sensors with analog outputs

Sensors that have a switching output offer three operating modes (see process diagram **A**):

- **Operation with one switching point (method A or method B)**
The output is active when the object is located below the taught-in switching point. In the teach-in procedure "Set switching point – method A", the sensor learns the actual distance to the object as a switching point. In the teach-in procedure "Set switching point – method B", the sensor learns the distance to the object plus 8% as a switching point.

- The output is inactive when the object is located within the taught-in window.

- The output is active when the object is located between the sensor and a fixed reflector. The object to be recorded may be in the area of 0 ... 85% of the taught-in distance.

See process diagram B.

- Teach-in scaling (4 mA to 20 mA and 0 V to 10 V)
- If the distant sensor scaling limit is taught-in first, followed by the close sensor scaling limit, then the limits are replaced internally.
- If scaling <1 mm is taught-in, then both LEDs flash rapidly together for approximately 3 seconds as an error indication. The old scaling limits are retained.

See process diagram C

Factory settings:

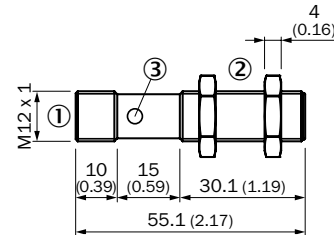
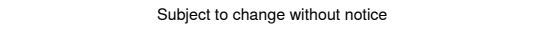
- Analog output: rising output characteristic from min. to max operating range
- Switching output: normally open contact, switching point at operating range

Table of assembly clearances

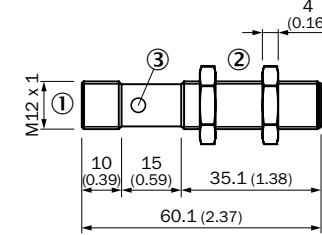
	Parallel	Opposite
UM12-117x	>250 mm	>1300 mm
UM12-119x	>250 mm	>1400 mm

Maintenance

SICK sensors are maintenance-free. We do recommend that the limit surfaces are carefully cleaned with water, and that the screwed connections and plug connections are checked at regular intervals.



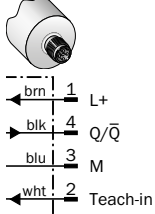
UM12-xxxxx6x
UM12-xxxxx7x



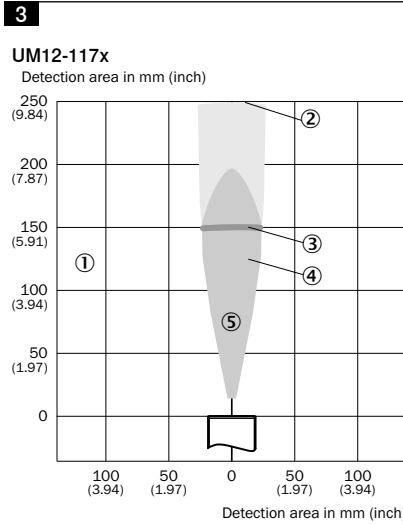
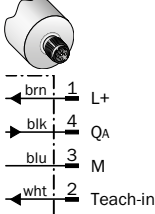
- ① Connection
- ② Mounting nuts, width 17 mm
- ③ LED status indicator supply voltage active (green), switching/analog output (orange)



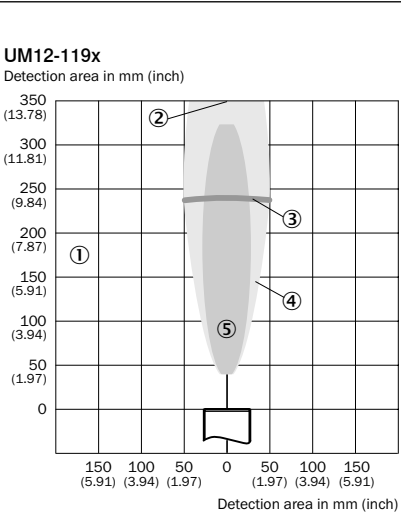
UM12-xxxxx1x
UM12-xxxxx5x
male connector
M12, 4 pin



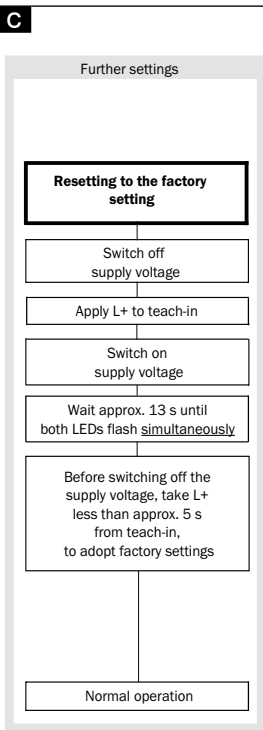
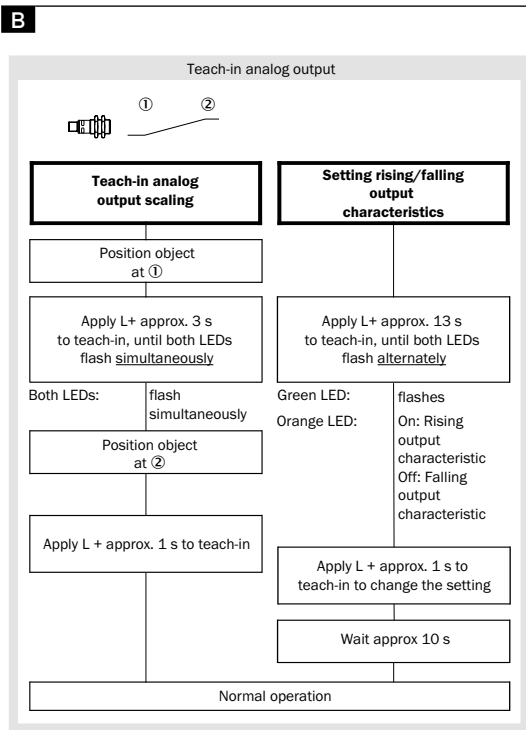
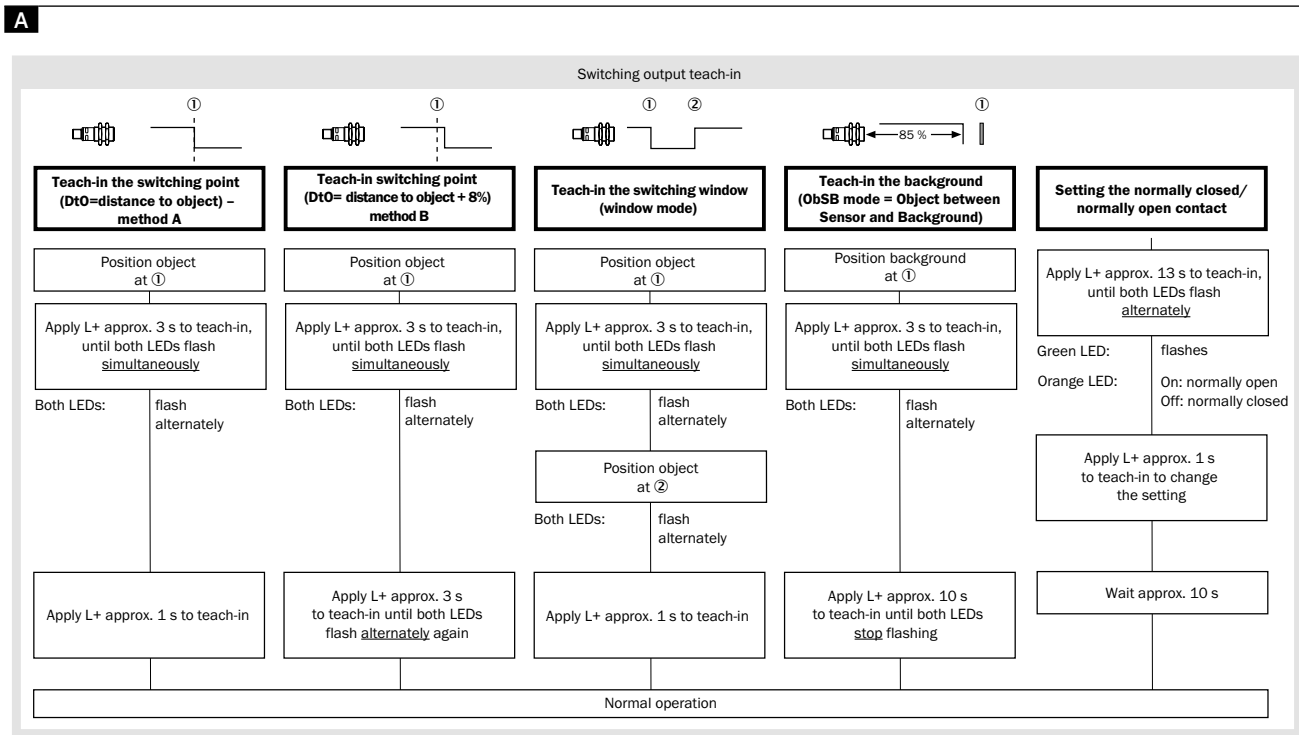
UM12-xxxxx6x
UM12-xxxxx7x
male connector
M12, 4 pin



- ① Detection range dependent on reflection properties of the object.
- ② Limiting range
- ③ Operating range
- ④ Example object: Aligned plate 500 mm x 500 mm
- ⑤ Example object: Rod with diameter of 10 mm



- ① Detection range dependent on reflection properties, size and alignment of the object.
- ② Limiting range
- ③ Operating range
- ④ Example object: Aligned plate 500 mm x 500 mm
- ⑤ Example object: Rod with diameter of 10 mm



Sensors with switching outputs				Sensors with analog outputs		
	PNP	UM12-1172211	UM12-1192211	4 mA to 20 mA	UM12-1172261	UM12-1192261
	NPN	UM12-1172251	UM12-1192251	0 V to10 V	UM12-1172271	UM12-1192271
Operating range (limiting range)		20 ... 150 mm (250)		40 ... 240 mm (350)		
Ultrasonic frequency (typical)		380 kHz		500 kHz		
Hysteresis		2 mm		3 mm		
Resolution		≥ 0.069 mm				
Repeatability		± 0.15% referring to current measurement value				
Accuracy		± 1% referring to current measurement value				
Supply voltage ¹⁾		U _v = DC 10 ... 30 V		Voltage output: U _v = DC 15 ... 30 V Current output: U _v = DC 10 ... 30 V at RL ≤ 100 Ω U _v = DC 15 ... 30 V at RL > 100 Ω		
Power consumption		≤ 1.2 W (no load)				
Housing material		Nickel plated brass, PBT; ultrasonic converter: polyurethane foam, epoxy resin with glass content				
Enclosure rating as per EN 60529		IP 67				
Protection class		⚡				
Connection type		Round connector M12, 4-pin				
Ambient temperature		Operation: −25°C ... +70°C Storage: −40°C ... +85°C				
Weight		approx. 15 g				
Analog output		not available		4 mA to 20 mA: RL ≤ 500 Ω, short-circuit protected		
		not available		0 V to 10 V: RL ≥ 100 kΩ, short-circuit protected		
Switching output ²⁾		PNP: 200 mA		not available		
		NPN: 200 mA		not available		
Output rate		8 ms		10 ms		
Response time		24 ms		30 ms		
Initialization time		< 300 ms		24 ms ³⁾ 30 ms ³⁾		
Max. tightening torque for mounting nuts		1 Nm				

1) Limit values, reverse polarity protected, operation in short-circuit protected network, max. 8 A
2) PNP: HIGH = $U_v - (< 2 \text{ V})$ / LOW = 0 V / NPN: HIGH $\leq 2 \text{ V}$ / LOW = U_v
3) Subsequent smoothing of the analog output, depending on the application, may increase the response time by up to 200%