

Ultrasonic sensors T18...U series Opposed mode sensors



- Ideal for the detection of transparent material in a difficult environment
- Switch-selectable between two resolutions: NORMAL and HIGH
- Short response time of 1 or 2 ms
- Alignment Indicating Device: LED flashes at a rate proportional to signal strength
- Compact housing
- Protection class IP 67
- Conprox®-connector or cable 2 m

Operating principles

Ultrasonic opposed mode sensors operate according to a similar principle as light opposed mode sensors. The emitter produces continuously ultrasonic impulses, which are detected by the receiver. If no more impulses are received, the receiver switches the output on. By using ultrasonic waves instead of light the ultrasonic opposed mode sensor has a number of important advantages in comparison with standard photo-electric sensors.

Range of application

The opposed mode sensor T18-...-U can easily detect transparent objects such as glass, bottles, plastic webs even in difficult environmental conditions. Objects can even be detected through a cloud of dust or paint.

Alignment Indicating Device

A microprocessor evaluates the received ultrasonic impulses and indicates the intensity by a yellow LED on the back side of the housing. The flash rate is proportional to the ultrasound intensity. Like this the ultrasonic opposed mode sensor can be adjusted very precisely and a deterioration of the operating conditions can be determined at once.

Switching between two resolutions

Reversing the polarity of the supply voltage permits to select between the resolutions NORMAL and HIGH.

In the NORMAL resolution it is possible to evaluate weaker signals. The sensor has an increased sensing range (60 cm) and can be used in difficult environmental conditions. In case a fast detection is important, the resolution can be set to HIGH. In this case, the response time is 1 ms whereas 2 ms if the resolution is set to NORMAL. The sensing range is restricted to 30 cm.

The object detection capability and the minimum distance between two adjacent objects are included in the table hereunder.

Object Detection Capability





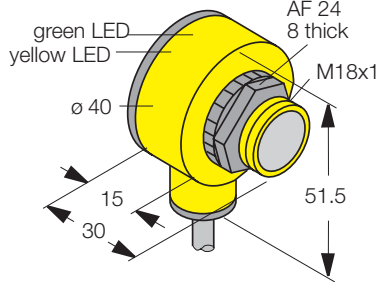
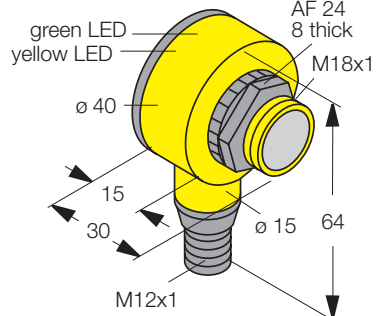
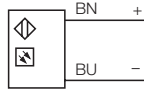
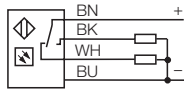
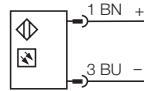
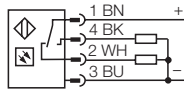
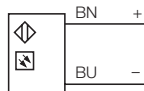
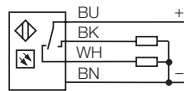
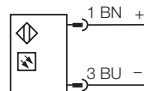
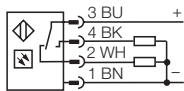
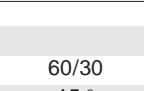
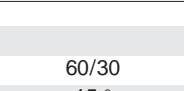
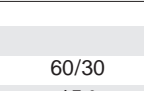
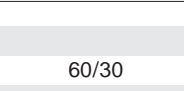
Resolution	Distance Emitter – Receiver	Object speed	Object speed	Object speed
		0 m/s	1.25 m/s	2.5 m/s
NORMAL	150 mm	25.4 mm	35.6 mm	38.1 mm
	300 mm	31.8 mm	50.8 mm	50.8 mm
	600 mm	25.4 mm	44.5 mm	44.5 mm
HIGH	150 mm	15.2 mm	19.1 mm	20.3 mm
	300 mm	12.7 mm	19.1 mm	25.4 mm

Minimum distance between two objects

Resolution	Distance Emitter – Receiver	Object speed	Object speed	Object speed
		0 m/s	1.25 m/s	2.5 m/s
NORMAL	150 mm	0.8 mm	1.0 mm	1.3 mm
	300 mm	2.5 mm	3.8 mm	5.1 mm
	600 mm	8.9 mm	10.2 mm	12.7 mm
HIGH	150 mm	3.3 mm	3.8 mm	4.3 mm
	300 mm	10.2 mm	11.4 mm	11.4 mm

Ultrasonic sensors

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	Type Ident-No.	T18-6-UE 30 382 69	T18-VP6-UR 30 385 10	T18-6-UE-Q 30 385 09	T18-VP6-UR-Q 30 385 11
connection mode				 Conprox®	 Conprox®
electrical version		DC	DC	DC	DC
dimensions					
wiring diagram					
resolution NORMAL					
resolution HIGH					
Range					
Resolution NORMAL/HIGH [cm]		60/30	60/30	60/30	60/30
Sonic cone angle		15 °	15 °	15 °	15 °
Minimum target size		see table page 1	see table page 1	see table page 1	see table page 1
Rated supply voltage [V]		12...30 VDC	12...30 VDC	12...30 VDC	12...30 VDC
Ripple [%]		≤ 10	≤ 10	≤ 10	≤ 10
No load current [mA]		≤ 50	≤ 35	≤ 50	≤ 35
Switching output		-	antivalent	-	antivalent
Output		-	pnp	-	pnp
Rated operational current [mA]		-	≤ 100 ¹⁾	-	≤ 100 ¹⁾
Voltage drop [V]		≤ 2	≤ 2	≤ 2	≤ 2
Reverse polarity protection		●	●	●	●
Short-circuit protection		●	●	●	●
Time delay on power up [ms]		≤ 100	≤ 100	≤ 100	≤ 100
Response time					
Resolution NORMAL/HIGH [ms]		2/1	2/1	2/1	2/1
Switching frequency					
Resolution NORMAL/HIGH [Hz]		125/200	125/200	125/200	125/200
Repeat accuracy (at sensing range of 30 cm)					
Resolution NORMAL/HIGH [mm]		2/1	2/1	2/1	2/1
Housing material		PBT	PBT	PBT	PBT
Protection class (DIN 40050)		IP 67	IP 67	IP 67	IP 67
Ambient temperature tolerance [°C]		-40...+70	-40...+70	-40...+70	-40...+70
Cable/connector		2 m, PVC 4 x 0.5 mm ²	2 m, PVC 4 x 0.5 mm ²	Conprox®	Conprox®
Supply voltage indication LED		green	green	green	green
Output indication LED		-	yellow flashing ²⁾	-	yellow flashing ²⁾
Overload indication LED		-	green flashing	-	green flashing

¹⁾ 150 mA at temperatures to 25°C

²⁾ The flash rate is proportional to the received signal intensity