Distance Sensor



- 2 mutually independent switching outputs
- IO-Link version 1.1
- Reflex and through-beam operation mode are possible
- Temperature range: -30...60 °C
- Wireless settings via NFC

These ultrasonic sensors evaluate the sound reflected from the object. They can detect almost any object and are especially well suited for monitoring fill levels of liquids and bulk goods and for detecting transparent objects regardless of the material, state, color or transparency. The measured value can be read out via IO-Link, and the sensor can be optimally adapted to the application. The format allows space-saving installation on conveyor lines. The sensor can be used in reflex mode operation and as an ultrasonic through-beam sensor.



Technical Data

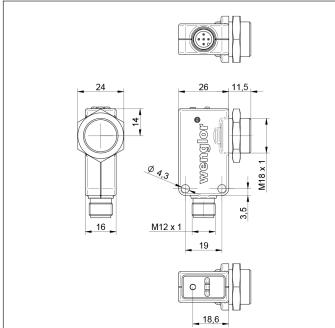
Working range, reflex sensor1001200 mmWorking range, through-beam sensor12000 mmReproducibility maximum5 mmLinearity Deviation2 mmResolution1 mmUltrasonic Frequency240 kHzOpening Angle< 12 °Service Life (T = +25 °C)100000 hSwitching Hysteresis1 % *Electrical DataSupply Voltage1830 V DCCurrent Consumption (Ub = 24 V)< 30 mASwitching frequency, reflex sensor7 HzResponse time, reflex sensor72 msResponse time, reflex sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2.5 VSwitching Output/Switching Current100 mASynchronous ModeyesInterfaceSensorsBeverse Polarity and Overload ProtectionyesInterfaceyesData StorageyesProtection ClassIIIMechanical DataM12 × 1; 4/5-pinSafety-relevant DataM12 × 1; 4/5-pinConnection Diagram No.243Control Panel No.243Suitable Connection Equipment No.243	Ultrasonic Data				
Reproducibility maximum5 mmLinearity Deviation2 mmResolution1 mmUltrasonic Frequency240 kHzOpening Angle< 12 °	Working range, reflex sensor	1001200 mm			
Linearity Deviation2 mmResolution1 mmUltrasonic Frequency240 kHzOpening Angle< 12 °	Working range, through-beam sensor	12000 mm			
Resolution1 mmUltrasonic Frequency240 kHzOpening Angle<12 °	Reproducibility maximum	5 mm			
Ultrasonic Frequency240 kHzOpening Angle< 12 °	Linearity Deviation	2 mm			
Opening Angle< 12 °Service Life (T = +25 °C)100000 hSwitching Hysteresis1 % *Electrical Data	Resolution	1 mm			
Service Life (T = +25 °C)100000 hSwitching Hysteresis1 % *Electrical DataSupply Voltage1830 V DCCurrent Consumption (Ub = 24 V)< 30 mA	Ultrasonic Frequency	240 kHz			
Switching Hysteresis1 % *Electrical DataSupply Voltage1830 V DCCurrent Consumption (Ub = 24 V)< 30 mA	Opening Angle	< 12 °			
Electrical DataSupply Voltage1830 V DCCurrent Consumption (Ub = 24 V)< 30 mA	Service Life (T = +25 °C)	100000 h			
Supply Voltage1830 V DCCurrent Consumption (Ub = 24 V)< 30 mA	Switching Hysteresis	1 % *			
Current Consumption (Ub = 24 V)< 30 mASwitching frequency, reflex sensor7 HzSwitching frequency, through-beam sensor7 HzResponse time, reflex sensor72 msResponse time, through-beam sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Electrical Data				
Switching frequency, reflex sensor7 HzSwitching frequency, through-beam sensor7 HzResponse time, reflex sensor72 msResponse time, through-beam sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop<2,5 V	Supply Voltage	1830 V DC			
Switching frequency, through-beam sensor7 HzResponse time, reflex sensor72 msResponse time, through-beam sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Current Consumption (Ub = 24 V)	< 30 mA			
Response time, reflex sensor72 msResponse time, through-beam sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Switching frequency, reflex sensor	7 Hz			
Response time, through-beam sensor72 msTemperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Switching frequency, through-beam sensor	7 Hz			
Temperature Range-3060 °CNumber of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Response time, reflex sensor	72 ms			
Number of Switching Outputs2Switching Output Voltage Drop< 2,5 V	Response time, through-beam sensor	72 ms			
Switching Output Voltage Drop< 2,5 VSwitching Output/Switching Current100 mASynchronous Modeup to 40 sensorsShort Circuit ProtectionyesReverse Polarity and Overload ProtectionyesLockableyesInterfaceIO-Link V1.1 Smart SensorsData StorageyesProtection ClassIIIMechanical DataYesSetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aPNP NOIO-LinkIO-LinkIO-LinkConnection Diagram No.243Control Panel No.A49	Temperature Range	-3060 °C			
Switching Output/Switching Current100 mASynchronous Modeup to 40 sensorsShort Circuit ProtectionyesReverse Polarity and Overload ProtectionyesLockableyesInterfaceIO-Link V1.1 SmartSensor Profile/NFCSensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataYesSetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aPNP NOIO-LinkIO-LinkIO-LinkConnection Diagram No.243Control Panel No.A49	Number of Switching Outputs	2			
Synchronous Modeup to 40 sensorsShort Circuit ProtectionyesReverse Polarity and Overload ProtectionyesLockableyesInterfaceIO-Link V1.1 Smart Sensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataYesSetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aPNP NOIO-LinkIO-LinkIO-LinkConnection Diagram No.243Control Panel No.A49	Switching Output Voltage Drop	< 2,5 V			
Short Circuit ProtectionyesReverse Polarity and Overload ProtectionyesLockableyesInterfaceIO-Link V1.1 Smart Sensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataSetting MethodSetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aPNP NOIO-LinkIO-LinkIO-LinkConnection Diagram No.243Control Panel No.A49	Switching Output/Switching Current	100 mA			
Reverse Polarity and Overload ProtectionyesLockableyesInterfaceIO-Link V1.1 Smart Sensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataIIISetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aPNP NOIS58,4 aIO-LinkIS58,4 aConnection Diagram No.243Control Panel No.A49	Synchronous Mode	up to 40 sensors			
LockableyesInterfaceIO-Link V1.1 Smart Sensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataIIISetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIMTTFd (EN ISO 13849-1)1558,4 aPNP NOIIO-LinkIConnection Diagram No.243Control Panel No.A49	Short Circuit Protection	yes			
InterfaceIO-Link V1.1 Smart Sensor Profile/NFCData StorageyesProtection ClassIIIMechanical DataIIISetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIMTTFd (EN ISO 13849-1)1558,4 aPNP NOIIO-LinkIConnection Diagram No.243Control Panel No.A49	Reverse Polarity and Overload Protection	yes			
Data StorageyesProtection ClassIIIMechanical DataIIISetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIMTTFd (EN ISO 13849-1)1558,4 aPNP NOIIO-LinkIConnection Diagram No.243Control Panel No.A49	Lockable				
Data StorageyesProtection ClassIIIMechanical DataIIISetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIMTTFd (EN ISO 13849-1)1558,4 aPNP NOIIO-LinkIConnection Diagram No.243Control Panel No.A49	Interface	IO-Link V1.1 Smart Sensor Profile/NFC			
Mechanical DataSetting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataM12 × 1; 4/5-pinMTTFd (EN ISO 13849-1)1558,4 aPNP NOIO-LinkIO-LinkIO-Connection Diagram No.Control Panel No.A49	Data Storage				
Setting MethodTeach-in/IO-Link/NFCHousing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataIS58,4 aMTTFd (EN ISO 13849-1)1558,4 aPNP NOIO-LinkIO-LinkIO-Connection Diagram No.Control Panel No.A49	Protection Class	III			
Housing MaterialPlastic PBTDegree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataMTTFd (EN ISO 13849-1)1558,4 aPNP NOIO-LinkConnection Diagram No.243Control Panel No.	Mechanical Data				
Degree of ProtectionIP67/IP68ConnectionM12 × 1; 4/5-pinSafety-relevant DataInterferenceMTTFd (EN ISO 13849-1)1558,4 aPNP NOInterferenceIO-LinkInterferenceConnection Diagram No.243Control Panel No.A49	Setting Method	Teach-in/IO-Link/NFC			
ConnectionM12 × 1; 4/5-pinSafety-relevant DataMTTFd (EN ISO 13849-1)1558,4 aPNP NOIO-LinkIO-LinkIO-Connection Diagram No.Connection Diagram No.243Control Panel No.A49	Housing Material	Plastic PBT			
Safety-relevant Data MTTFd (EN ISO 13849-1) 1558,4 a PNP NO IO-Link Connection Diagram No. 243 Control Panel No.	Degree of Protection	IP67/IP68			
MTTFd (EN ISO 13849-1) 1558,4 a PNP NO IO-Link Connection Diagram No. 243 Control Panel No. A49	Connection	M12 × 1; 4/5-pin			
PNP NO IO-Link IO-Link IO Connection Diagram No. 243 Control Panel No. A49	Safety-relevant Data				
IO-Link Connection Diagram No. 243 Control Panel No. A49	MTTFd (EN ISO 13849-1)	1558,4 a			
Connection Diagram No. 243 Control Panel No. A49	PNP NO				
Control Panel No. A49	IO-Link	Ŏ			
	Connection Diagram No.	243			
Suitable Connection Equipment No 2 35	Control Panel No.	A49			
	Suitable Connection Equipment No.	2 35			
Suitable Mounting Technology No. 150 370	Suitable Mounting Technology No.	150 370			

* Referring to the switching distance, at least 2 mm.

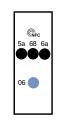
Complementary Products IO-Link Master

Ultrasonic Sensors





Ctrl. Panel A 49



06 = Teach Button

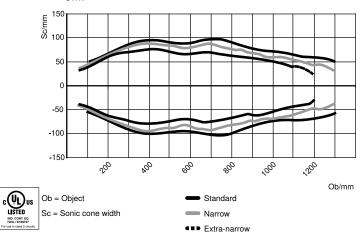
5a = Switching Status Display, O1 68 = supply voltage indicator

6a = Switching Status Display, O2

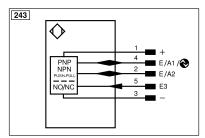
nd						
	Supply Voltage +	nc	Not connected	ENBRS422	Encoder B/B (TTL)	
	Supply Voltage 0 V	U	Test Input	ENA	Encoder A	
	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENв	Encoder B	
	Switching Output (NO)	W	Trigger Input	Amin	Digital output MIN	
	Switching Output (NC)	W-	Ground for the Trigger Input	Amax	Digital output MAX	
	Contamination/Error Output (NO)	0	Analog Output	Аок	Digital output OK	
	Contamination/Error Output (NC)	0-	Ground for the Analog Output	SY In	Synchronization In	
	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT	
	Teach Input	Amv	Valve Output	Olt	Brightness output	
	Time Delay (activation)	а	Valve Control Output +	M	Maintenance	
	Shielding	b	Valve Control Output 0 V	rsv	Reserved	
	Interface Receive Path	SY	Synchronization	Wire Colo	rs according to DIN IEC 60757	
	Interface Send Path	SY-	Ground for the Synchronization	BK	Black	
	Ready	E+	Receiver-Line	BN	Brown	
	Ground	S+	Emitter-Line	RD	Red	
	Clock	-	Grounding	OG	Orange	
	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow	
	IO-Link	Rx+/-	Ethernet Receive Path	GN	Green	
	ower over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue	
	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet	
)	Safety Output	La	Emitted Light disengageable	GY	Grey	
I	Signal Output	Mag	Magnet activation	WH	White	
+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink	
5422	Encoder 0-pulse 0/0 (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow	
	Platinum measuring resistor	ENARS422	Encoder A/Ā (TTL)			

Characteristic response curve

Characteristic curves show the position of the center of the measured object (100 × 100 mm plate) at the time of switching. U1RT



All dimensions in mm (1 mm = 0.03937 Inch)



UK CA

CE

RoHS

EHE

(NFC

-	Supply voltage u v	U	l lest input	EINA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENв	Encoder B
A	Switching Output (NO)	W	Trigger Input	Amin	Digital output MIN
Ā	Switching Output (NC)	W-	Ground for the Trigger Input	Amax	Digital output MAX
V	Contamination/Error Output (NO)	0	Analog Output	Аок	Digital output OK
V	Contamination/Error Output (NC)	0-	Ground for the Analog Output	SY In	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
Т	Teach Input	Amv	Valve Output	Olt	Brightness output
Z	Time Delay (activation)	а	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Color	rs according to DIN IEC
TxD	Interface Send Path	SY-	Ground for the Synchronization	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	<u>+</u>	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
0	IO-Link	Rx+/-	Ethernet Receive Path	GN	Green
PoE	ower over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
OSSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN0 RS422	Encoder 0-pulse 0/0 (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow

Specifications are subject to change without notice