

Ultrasonic Sensor Section

CONTRINEX

HIGHLIGHTS:

- ✓ Detection independent of target material, color, shape or surface
- ✓ Easy adjustment by either potentiometer or teach-in
- ✓ Dual output sensors, including analog and digital
- ✓ High resolution analog output, current or voltage
- ✓ Normal length or short housings and 90° sensing
- ✓ High excess gain, reliable in dirty and high noise environments
- ✓ NEW... M12 sensors with external teach and analog output



A
Swiss
Company

INTRODUCTION

CONTRINEX USA

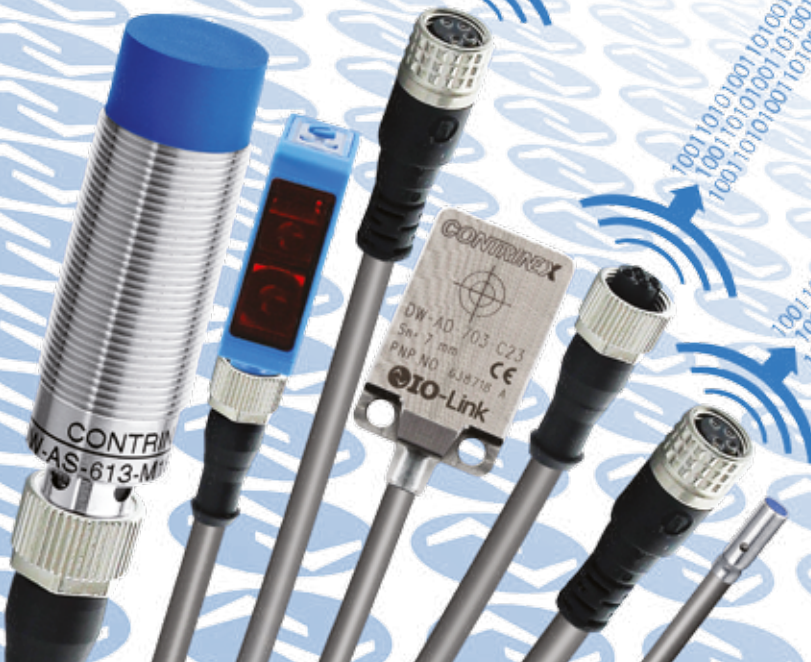
Contrinex is a leading manufacturer of sensors for factory automation. With a North American distribution center near Dallas Texas, this Swiss-founded company has a unique and innovative range of products whose features far surpass those of standard sensors.

Since its foundation in 1972 by Peter Heimlicher, Dipl Ing ETH, Contrinex has grown from a one-man operation to a multinational group with over 500 employees worldwide. More than 15 subsidiaries cover the core markets in Europe, Asia, North and South America.

At a glance

- Technology leading manufacturer of inductive and photoelectric sensors as well as safety and RFID systems
- World market leader for miniature sensors, sensors with long operating distances and devices for particularly demanding operating conditions (all-metal, high-pressure and high-temperature resistant sensors)
- Represented in over 60 countries worldwide, headquarters in Switzerland
- 8000 products
- Programmable IO-Link Sensors for the 4th Industrial Revolution utilize our intelligent ASIC.

CONTRINEX - SENSE MORE, DO MORE

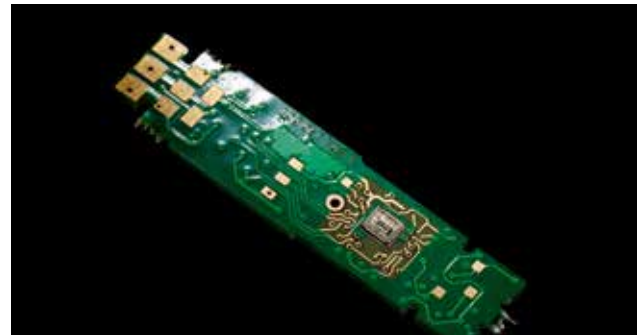


MARKET-LEADING INNOVATION

- 1979** Sensor business starts with self-contained subminiature inductive sensors: Ø4 mm (instead of M8 before)
- 1982** Launch of inductive sensor with patented Condist® technology – market leadership with operating distances 3x standard
- 1986** Launch of Ø3 mm inductive sensors, now market leader for subminiature inductive sensors
- 1996** Market launch of Ø4 mm subminiature photoelectric sensors
- 1999** Launch of world's first inductive sensor with full-metal housing – thanks to patented Condet® technology
- 2005** Integration of Contrinex's excellent performance for inductive sensors in CMOS-ASIC (Application-Specific Integrated Circuit), a proprietary development
- 2007** Launch of RFID products for closed loop industrial applications. First RFID product range with tags and readers in full-metal housing
- 2008** Launch of Safetinex®, the industrial safety product range
- 2009** The smart sensor is born. Launch of next generation ASIC, a "system on a chip", including IO-Link interface
- 2011** Development starts on Contrinex's first ASIC for photoelectric sensors
- 2014** Launch of photoelectric sensor with new generation Contrinex ASIC and IO-Link



Early inductive sensor produced for own use in 1973 (special version for extreme conditions)



ASIC sensor technology



Safety product range



Subminiature photoelectric sensor



SENSORS

INDUCTIVE

BASIC
MINIATURE
EXTREME
EXTRA PRESSURE
HIGH PRESSURE
EXTRA TEMPERATURE
HIGH TEMPERATURE
WASHDOWN
ANALOG OUTPUT
2-WIRE
WELD-IMMUNE
SPECIAL

PHOTOELECTRIC

CYLINDRICAL SUBMINIATURE
CYLINDRICAL MINIATURE
CYLINDRICAL SMALL
CUBIC SUBMINIATURE
CUBIC MINIATURE
CUBIC SMALL
CUBIC COMPACT
FIBER-OPTICS

ULTRASONIC

MINIATURE
SMALL
COMPACT

CAPACITIVE

BASIC
HIGH PERFORMANCE

SAFETY

LIGHT CURTAINS

FINGER PROTECTION type 4
HAND PROTECTION type 4
SAFETY RELAYS
ACCESS CONTROL type 4
PROCESS CONTROL type 2

RFID

LOW AND HIGH FREQUENCY

TRANSPONDERS
CONTRINET
USB READ/WRITE MODULES
HANDHELD DEVICES
ACCESSORIES
SOFTWARE
STARTER KITS

PROGRAM OVERVIEW

PRODUCT RANGE		MINIATURE	SMALL	COMPACT
				

HOUSING SIZE	OPERATING DISTANCE			
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DIFFUSE (WITH BACKGROUND SUPPRESSION)

M12	30 ... 400 mm	p. 293		
M18C (short)	30 ... 700 mm		p. 298	
M18W (90°)	30 ... 700 mm		p. 298-299	

REFLEX

M18C (short)	0 ... 700 mm		p. 297	
M18W (90°)	0 ... 700 mm		p. 297	

DIFFUSE & REFLEX

M18	50 ... 1000 mm		p. 299	
M30	60 ... 6000 mm			p. 305

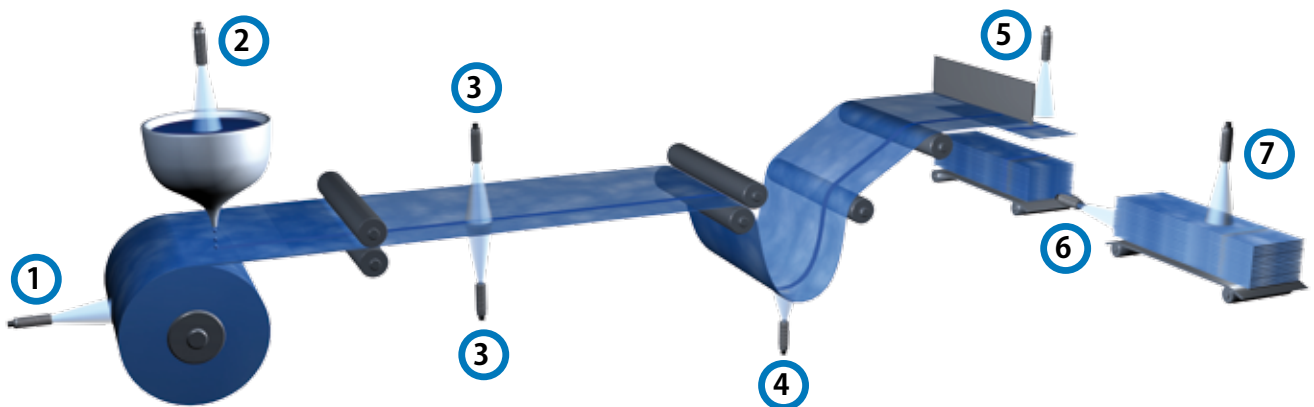
ANALOG

M12	30 ... 400 mm	p. 293		
M18	50 ... 1000 mm		p. 299-300	
M30	60 ... 6000 mm			p. 306-307

PROGRAM OVERVIEW

HOUSING SIZE	SENSING RANGE														PAGE
	30 mm	50 / 60 mm	100 mm	150 mm	200 mm	300 mm	400 mm	600 mm	700 mm	1000 mm	1300 mm	1500 mm	3000 mm	6000 mm	
DIFFUSE (WITH BACKGROUND SUPPRESSION)															
M12								30 ... 400 mm							293
M18C (short)								30 ... 700 mm							298
M18W (90°)								30 ... 700 mm							298-299
RETRO REFLECTIVE															
M18C (short)								0 ... 700 mm							297
M18W (90°)								0 ... 700 mm							297
DIFFUSE & REFLECTIVE															
M18			50 ... 1000 mm												299
M30			60 ... 6000 mm											305	
ANALOG															
M12								30 ... 400 mm							293
M18			50 ... 1000 mm												299-300
M30			60 ... 6000 mm											306-307	

1. Wind and unwind monitoring
2. Liquid level monitoring
3. Thickness control
4. Loop tension control
5. Detect or count (completeness check)
6. Position feedback
7. Distance / height control



Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

Glossary

Index

INTRODUCTION

OPERATING PRINCIPLE

Ultrasonic sensors can be used as contact-free devices in many areas of automation. They are employed wherever distances have to be measured in air, since they not only detect objects, but they can also indicate and evaluate the absolute distance between themselves and the target. Changing atmospheric conditions, (e.g. temperature variations) are compensated during evaluation of the measurement.

Ultrasonic devices working as diffuse or reflex sensors send out ultrasonic impulses in cyclical intervals. If these are reflected by an object, the resulting echo is received and converted into an electrical signal. Detection of the received echo is dependent on its intensity, itself dependent on the distance of the object from the sensor. The devices function according to the echo-delay principle, i.e. the time delay between the emitter and echo impulses is evaluated.

SENSING RANGE

Due to the sensor's construction, the ultrasound is radiated in a lobar shape. Only reflecting objects within this sound beam are detected. Echoes in the blind zone between the sensing face and the sensing range cannot be evaluated.

TARGETS

The targets to be detected can be in the solid, liquid, granular or powder state. The material may be transparent or colored, of any shape, and with a polished or matt surface. All even or flat surfaces up to an angular deviation of approximately 3° from perpendicular to the sound beam can be detected with certainty, even at the maximum operating distance. Depending on surface roughness, the angular deviation may even be greater. In principle, targets can enter the sound beam from any direction.

TEMPERATURE COMPENSATION

The ultrasonic sensors are equipped with temperature sensors and a compensation circuit, in order to be able to compensate for changes in operating distance caused by temperature fluctuations.

ENVIRONMENTAL CONDITIONS

Normal atmospheric variations at any given location have a negligible influence on the speed of sound. The propagation of ultrasonic waves in a vacuum is not possible.

Hot objects (e.g. red-hot metals) cause air turbulence, dispersing or diverting the ultrasound. In such surroundings, no analyzable echo is produced.

Ultrasonic sensors are designed for use under normal atmospheric conditions, i.e. in air. Operation in other gases (e.g. carbon dioxide) can give rise to serious error measurements or even functional failure, due to differing sound speed and damping values.

Normal rain or snowfall does not impair the functioning of ultrasonic sensors. The transducer surface should, however, not become moistened, although dew is permissible.

Ambient noise is distinguished from the system's own sound echoes and, as a rule, does not lead to functional errors.

SAFETY

The use of ultrasonic sensors in applications where the safety of people is dependent on their functioning is not permitted.

TECHNOLOGY FAMILIES

Contrinex ultrasonic sensors are cylindrical in form and delivered ready-to-connect with an integral 4- or 5-pole S12 connector. In addition to switching outputs, high resolution analog output (current or voltage) and dual-output (analog+digital or digital+digital) sensors are also available. Devices are offered in three technology versions: **Diffuse**, **Reflex** and **Diffuse & Reflex**.

DIFFUSE

Excellent background suppression

With diffuse sensors, the target itself reflects the ultrasonic impulses. When the target enters a preset sensing area, the echo reflected from it causes the device to switch. To eliminate false switching, the Contrinex ultrasonic **Diffuse** family includes excellent background suppression in **Miniature** (M12) and **Small** (M18) devices. The latter are available in normal or short housings, including 90° sensing and teach-in versions. Sensing ranges extend from 30 to 700 mm.

REFLEX

Blind zone elimination

In the case of reflex sensors, a fixed reflector (e.g. a small metal plate) is mounted facing the device. The switching range is set to this reflector. If an object comes between the ultrasonic sensor and the reflector, the sensor no longer recognizes the latter, which causes the output to switch. The Contrinex ultrasonic **Reflex** family comprises **Small** (M18) devices with short housings, including 90° sensing and teach-in. Use of a reflector eliminates the blind zone, so that sensing ranges extend from 0 to 700 mm.

DIFFUSE & RETRO REFLECTIVE

Background suppression or blind zone elimination

These sensors may either be used as a diffuse sensor with background suppression, or with a fixed reflector to function as a reflex sensor with blind zone elimination. The Contrinex ultrasonic **Diffuse & Retro-reflective** family includes **Small** (M18) and **Compact** (M30) devices. The latter are available in versions with greatly extended operating distances and 1 or 2 PNP N.O. outputs. Sensing ranges extend up to 6000 mm.

SYNCHRONIZATION

Devices of series 1180/1181 and 1300...1303 can be synchronized with each other by simply connecting their synchronization outputs (pin 2 for N.O., pin 4 for N.C.). In this way, up to 10 sensors can be synchronized. In many cases, it is thus possible to mount the sensors very close to one another without mutual interference.

MULTIPLEX

The fourth connection can be used as an external release input. Thus, ultrasonic sensors can be activated or deactivated with an external control, without switching the supply voltage on and off. An external multiplex operation can be achieved by switching the ultrasonic sensors on and off one after the other via the release input. In this case, assurance is always given that the ultrasonic sensors do not influence one another. In multiplex mode more than 10 sensors can be mounted close together without mutual interference.

PROGRAMMING

For optimum adaptation to the application conditions, devices of series 1180/1181 and 1300 ... 1303 can be programmed with the PC interface device APE-0000-001 (see Ultrasonic accessories, page 264).

The series 1180/1181C and 1180/1181W devices are adjustable by teach-in via the device connection.

MOUNTING

Ultrasonic sensors can be operated in any installation position. However, positions in which materials can be deposited on the transducer surface should be avoided.

In order to obtain the best reflection results, the ultrasonic sensor should be oriented in such a way that the sound waves strike the target at as close to 90° as possible. If this is not possible (e.g. with bulk materials), the maximum possible range has to be determined experimentally, and is dependent on the material, surface and orientation of the objects.

M12 STANDARD SIZE FOR TIGHT SPACES

MINIATURE

ULTRASONIC SENSORS

KEY ADVANTAGES

- ✓ External teach function
- ✓ Miniature cylindrical housing
- ✓ Analog and digital outputs available
- ✓ Detection independent of target's color, shape, material and surface structure
- ✓ Excellent temperature compensation

RANGE OVERVIEW	Distance mm	Diffuse	Diffuse with analog output
MINIATURE	30 ... 400	p. 293	p. 293

HOUSING SIZE

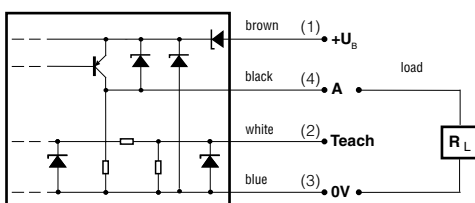
OPERATING PRINCIPLE

SENSING RANGE MM

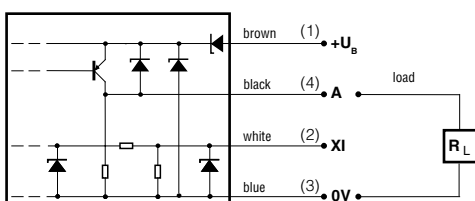
ULTRASONIC

WIRING DIAGRAMS

PNP NO with teach-in



PNP NO output / Analog output



DATA

Housing material

Degree of protection

Rated ultrasonic frequency

Max. switching frequency

Output current

Ambient temperature range

1 x PNP NO / S12

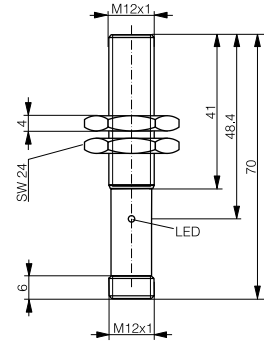
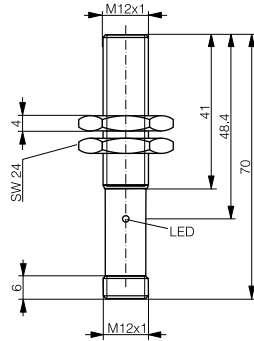
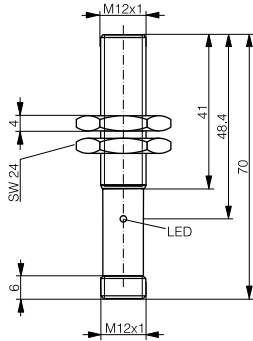
Analog 4 ... 20 mA

Analog 0 ... 10 V

Other types available

MINIATURE

M12	M12 WITH ANALOG OUTPUT	M12 WITH ANALOG OUTPUT
DIFFUSE SENSOR WITH BACKGROUND SUPP.	DIFFUSE SENSOR	DIFFUSE SENSOR
30 ... 400	30 ... 400	30 ... 400



Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
IP 65	IP 65	IP 65
310 kHz	310 kHz	310 kHz
8 Hz	-	-
100 mA	-	-
-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F
UTS-1121-303		
	UTS-1121-329	
		UTS-1121-319

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

Glossary

Index

M18 STANDARD SIZE, ADAPTABLE MOUNTING

SMALL

ULTRASONIC DIFFUSE OR REFLEX SENSORS

KEY ADVANTAGES

- ✓ Ready-to-connect small devices
- ✓ Can be operated as diffuse or retro-reflective sensors (with interface)
- ✓ Detection independent of target's color, shape, material and surface structure
- ✓ Reduced blind zone
- ✓ 90° sensing, short housings

RANGE OVERVIEW	Distance mm	Diffuse & Reflex	Reflex	Diffuse with back-ground supp.	Diffuse with analog output
SMALL	0 ... 200		p. 297	p. 298	
	0 ... 700		p. 297	p. 298-299	
	0 ... 1000	p. 299			p. 299-300

HOUSING SIZE

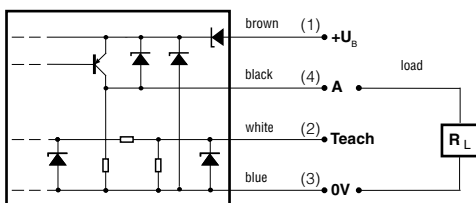
OPERATING PRINCIPLE

SENSING RANGE MM

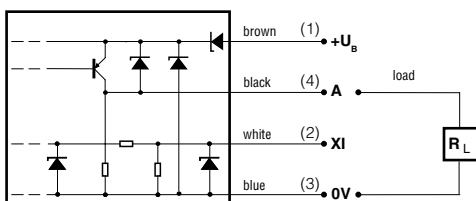
ULTRASONIC

WIRING DIAGRAMS

PNP NO with teach-in



PNP NO output / Analog output

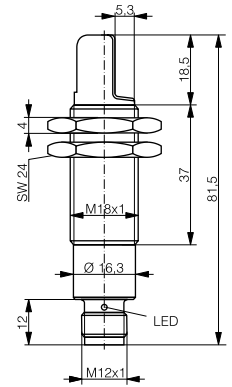
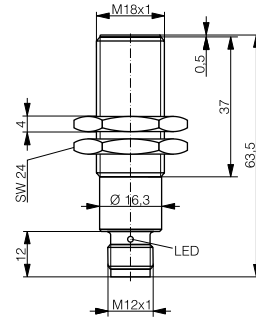
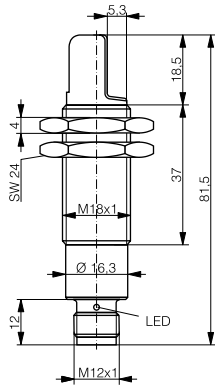
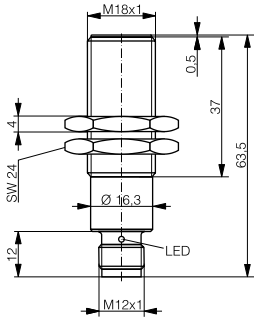


DATA

Housing material
Degree of protection
Rated ultrasonic frequency
Max. switching frequency
Output current
Ambient temperature range
1 x PNP NO / S12
Other types available

SMALL

M18 WITH TEACH-IN	M18 WITH TEACH-IN	M18 WITH TEACH-IN	M18 WITH TEACH-IN
REFLEX SENSOR	REFLEX SENSOR	REFLEX SENSOR	REFLEX SENSOR
0 ... 200	0 ... 200	0 ... 700	0 ... 700



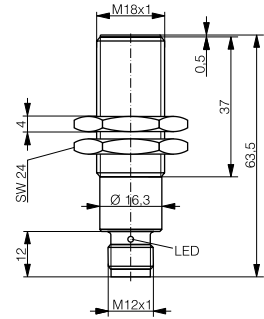
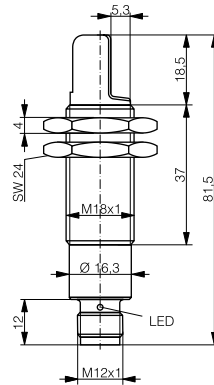
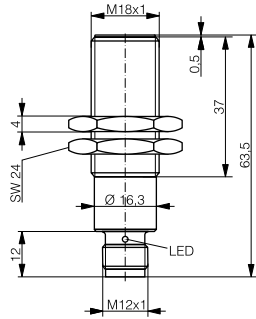
- Inductive
- Photoelectric
- Ultrasonic
- Capacitive
- Safety
- RFID
- Connectivity
- Accessories
- Glossary
- Index

Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
IP 65	IP 65	IP 65	IP 65
400 kHz	400 kHz	200 kHz	200 kHz
10 Hz	10 Hz	5 Hz	5 Hz
150 mA	150 mA	150 mA	150 mA
-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F
URS-1180C-303	URS-1180W-303	URS-1181C-303	URS-1181W-303

SMALL

ULTRASONIC

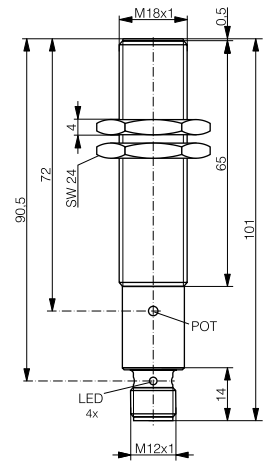
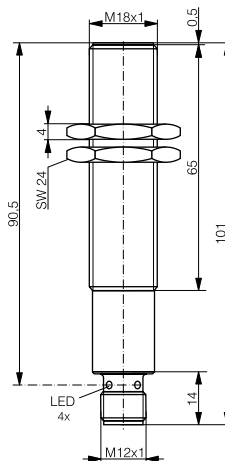
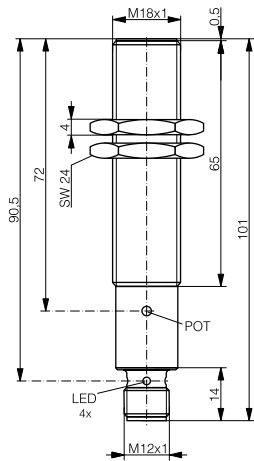
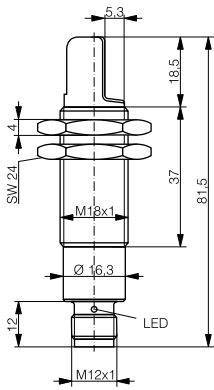
HOUSING SIZE	M18 WITH TEACH-IN	M18 WITH TEACH-IN	M18 WITH TEACH-IN
OPERATING PRINCIPLE	DIFFUSE SENSOR WITH BACKGROUND SUPP.	DIFFUSE SENSOR WITH BACKGROUND SUPP.	DIFFUSE SENSOR WITH BACKGROUND SUPP.
SENSING RANGE MM	30 ... 200	30 ... 200	100 ... 700



DATA			
Housing material	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
Degree of protection	IP 65	IP 65	IP 65
Rated ultrasonic frequency	400 kHz	400 kHz	200 kHz
Max. switching frequency	10 Hz	10 Hz	5 Hz
Output current	150 mA	150 mA	150 mA
Ambient temperature range	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F
1 x PNP NO / S12	UTS-1180C-303	UTS-1180W-303	UTS-1181C-303
Analog 4 ... 20 mA			
Other types available			

SMALL

M18 WITH TEACH-IN	M18	M18 WITH ANALOG OUTPUT	M18
DIFFUSE SENSOR WITH BACKGROUND SUPP.	DIFFUSE AND REFLEX SENSOR	DIFFUSE SENSOR	DIFFUSE AND REFLEX SENSOR
100 ... 700	50 ... 300	50 ... 300	150 ... 1000



Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
IP 65	IP 67	IP 67	IP 67
200 kHz	400 kHz	400 kHz	200 kHz
5 Hz	5 Hz	---	4 Hz
150 mA	150 mA	---	150 mA
-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F
UTS-1181W-303	UTS-1180-303	UTS-1180-329	UTS-1181-303

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

Glossary

Index

SMALL

HOUSING SIZE

M18 WITH
ANALOG OUTPUT

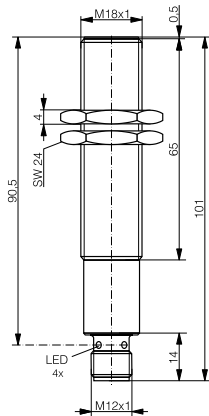
OPERATING PRINCIPLE

DIFFUSE SENSOR

SENSING RANGE MM

150 ... 1000

ULTRASONIC



DATA

Housing material	Nickel-plated brass
Degree of protection	IP 67
Rated ultrasonic frequency	200 kHz
Max. switching frequency	-
Output current	-
Ambient temperature range	-25 ... +70°C / -13 ... +158°F
Analog 4 ... 20 mA	UTS-1181-329
Other types available	



M30 STANDARD SIZE, FITS MOST SITUATIONS

COMPACT

ULTRASONIC SENSORS WITH 2-OUTPUTS

KEY ADVANTAGES

- ✓ Ready-to-connect compact devices
- ✓ Switching or analog output or a combination of both
- ✓ Detection independent of target's color, shape, material and surface structure
- ✓ Reduced blind zone

RANGE OVERVIEW	Distance mm	Diffuse and Reflex	Diffuse with analog output
COMPACT	60 ... 300	p. 305	p. 306
	200 ... 1300	p. 305	p. 306
	400 ... 3000	p. 305	p. 306
	600 ... 6000	p. 305	p. 307

HOUSING SIZE

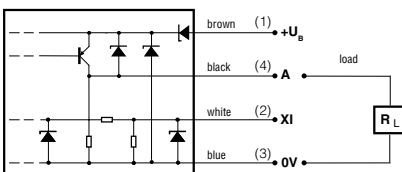
OPERATING PRINCIPLE

SENSING RANGE MM

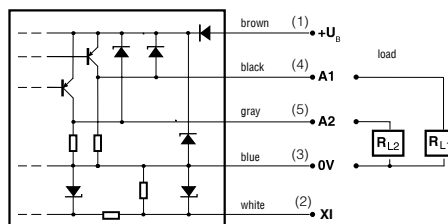
ULTRASONIC

WIRING DIAGRAMS

PNP NO

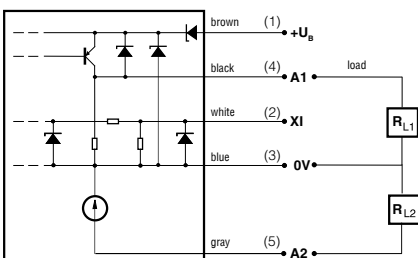


2 x PNP NO

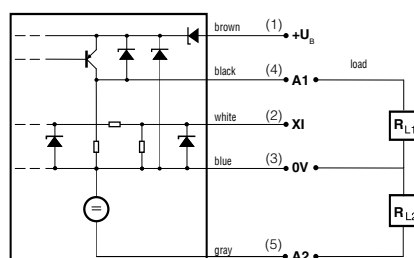


*UTS-130#-107 only

PNP NO + analog outputs (current)



PNP NO + analog outputs (voltage)



DATA

Housing material

Degree of protection

Rated ultrasonic frequency

Max. switching frequency

Output current

Ambient temperature range

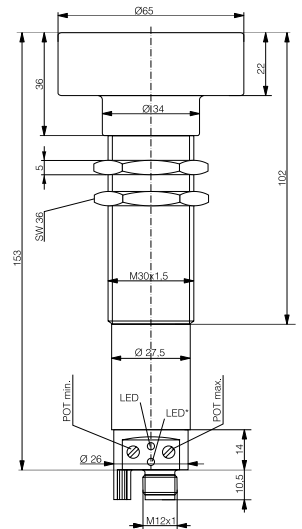
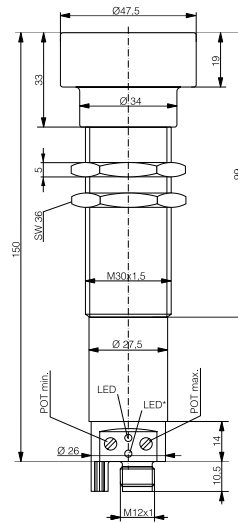
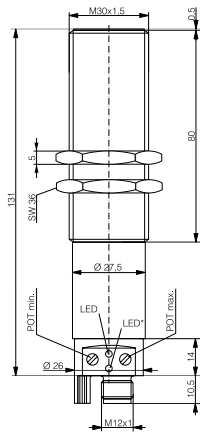
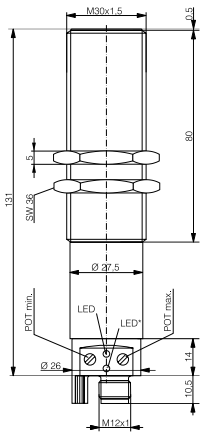
1 x PNP NO / S12

2 x PNP NO / S12

Other types available

COMPACT

M30	M30	M30	M30
DIFFUSE AND REFLEX SENSOR	DIFFUSE AND REFLEX SENSOR	DIFFUSE AND REFLEX SENSOR	DIFFUSE AND REFLEX SENSOR
60 ... 300	200 ... 1300	400 ... 3000	600 ... 6000



Nickel-plated brass	Nickel-plated brass	Nickel-plated brass	Nickel-plated brass
IP 65	IP 65	IP 65	IP 65
400 kHz	200 kHz	120 kHz	80 kHz
8 Hz	4 Hz	2 Hz	1 Hz
300 mA	300 mA	300 mA	300 mA
-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F	-25 ... +70°C / -13 ... +158°F
UTS-1300-303	UTS-1301-303	UTS-1302-303	UTS-1303-303
UTS-1300-107	UTS-1301-107	UTS-1302-107	UTS-1303-107

Inductive
Photoelectric
Ultrasonic
Capacitive
Safety
RFID
Connectivity
Accessories
Glossary
Index

COMPACT

HOUSING SIZE

M30 WITH
ANALOG OUTPUT

M30 WITH
ANALOG OUTPUT

M30 WITH
ANALOG OUTPUT

OPERATING PRINCIPLE

DIFFUSE AND
REFLEX SENSOR

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REFLEX SENSOR

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REFLEX SENSOR

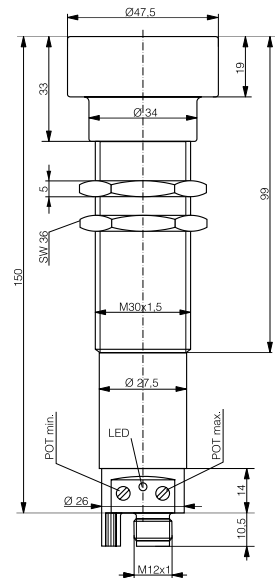
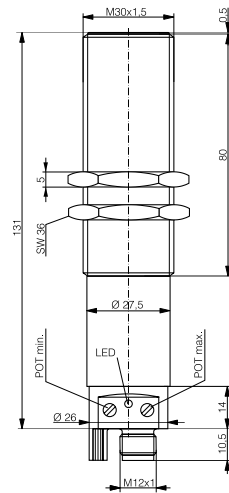
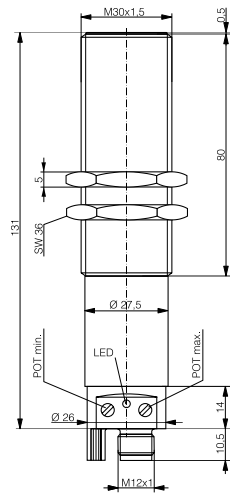
SENSING RANGE MM

60 ... 300

200 ... 1300

400 ... 3000

ULTRASONIC



DATA

Housing material

Nickel-plated brass

Nickel-plated brass

Nickel-plated brass

Degree of protection

IP 65

IP 65

IP 65

Rated ultrasonic frequency

400 kHz

200 kHz

120 kHz

Max. switching frequency

5 Hz

4 Hz

2 Hz

Output current

300 mA

300 mA

300 mA

Ambient temperature range

-25 ... +70°C / -13 ... +158°F

-25 ... +70°C / -13 ... +158°F

-25 ... +70°C / -13 ... +158°F

Analog 4 ... 20 mA + PNP NO / S12

UTS-1300-123

UTS-1301-123

UTS-1302-123

Analog 0 ... 10 V + PNP NO / S12

UTS-1300-113

UTS-1301-113

UTS-1302-113

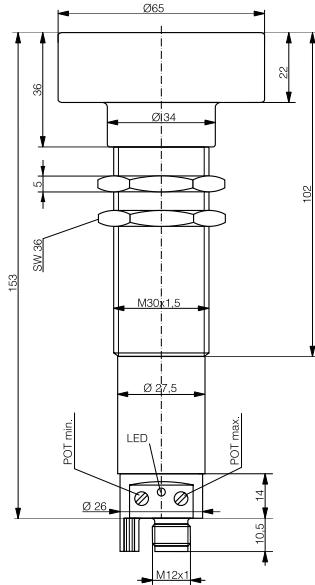
Other types available

COMPACT

M30 WITH
ANALOG OUTPUT

DIFFUSE AND
REFLEX SENSOR

600 ... 6000



Nickel-plated brass

IP 65

80 kHz

1 Hz

300 mA

-25 ... +70°C / -13 ... +158°F

UTS-1303-123

UTS-1303-113

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

Glossary

Index

ULTRASONIC ACCESSORIES

CONPROG PC INTERFACE

For optimum adaptation to the application conditions, the parameters of all the devices in this catalog (excepting series 1180/1181C and 1180/1181W) can be programmed, visualized, checked and changed with the PC interface device APE-0000-001 and its software CONPROG. Amongst others, the following parameters can be set:

- Beginning and end of operating range
- Hysteresis
- End of sensing range
- Switching function (N.O. or N.C.)
- Beginning and end of analog characteristic curve (devices with analog output)
- Direction of analog characteristic curve (rising or falling)
- End of blind zone
- Mean value generation
- Temperature compensation
- Multiplex function
- Function as diffuse or reflex sensor
- Switching frequency
- Damping (sensitivity)

The programmed values can be stored and printed, thus simplifying the maintenance and documentation of the installation. In case several sensors need to be parametrized identically, the stored setting values can be transferred rapidly to the other sensors by means of the interface device (e.g. when connecting switches in series, or when exchanging them).

The interface device is delivered with a RS232 cable (for serial interface), a mains transformer plug, a sensor connecting cable and CONPROG PC software for Windows. Updates to the latest software version can be downloaded from the Contrinex website (www.contrinex.com).

INTERFACE DEVICE

suitable for all the devices in this catalog, excepting series 1180/1181C and 1180/1181W.

Part reference: **APE-0000-001**



S12 INTERFACE CABLE WITH TEACH-IN BUTTON

suitable for teach-in of 1180/1181C and 1180/1181W devices.

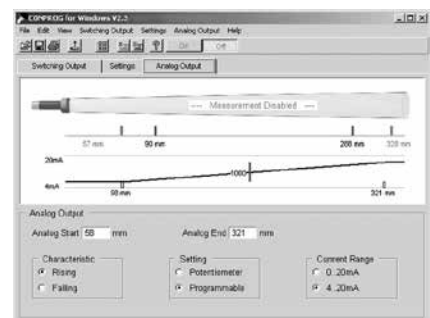
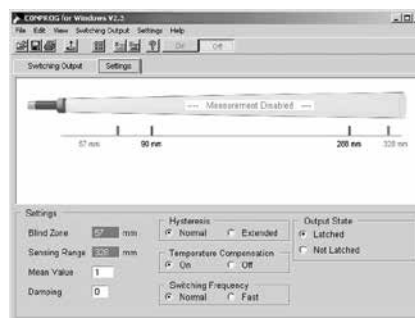
Part reference: **APE-0000-003**



CONPROG PC SOFTWARE

for Windows.

Included with APE-0000-001 interface device



ULTRASONIC SENSORS

UTS-1180C-303 (-XXX)

ULTRASONIC SENSOR

U

SENSOR TYPE

Retro-reflective sensor	R
Diffuse sensor / diffuse and reflex sensor	T
Through-beam sensor	L

CONNECTION

Connector	S
Cable	K

HOUSING TYPE

Cylindrical device	1
--------------------	----------

HOUSING SIZE

Cylindrical devices	
M12	12
M18	18
M30	30

SPECIAL EXECUTIONS

POLARITY

PNP NO (+ analog)	3
2 switching outputs	7
Analog output	9

OUTPUT

Switching output	0
Analog (voltage)	1
Analog (current)	2
Through-beam sensor	0
5-wire, (2 outputs), diffuse / reflex sensor	1
4-wire, (1 output), diffuse / reflex sensor	3

HOUSING

Short	C
For lateral sensing	W

OPERATING DISTANCE

Shortest operating distance	0
Increased operating distance	1
Long operating distance	2
Very long operating distance	3

ULTRASONIC SENSORS

<i>Part reference</i>	<i>Chapter/page</i>	<i>Part reference</i>	<i>Chapter/page</i>	<i>Part reference</i>	<i>Chapter/page</i>
APE-0000-001	3/308	UTS-1181-329	3/300	UTS-1302-303	3/305
APE-0000-003	3/308	UTS-1181C-303	3/298	UTS-1303-107	3/305
URS-1180C-303	3/297	UTS-1181W-303	3/299	UTS-1303-113	3/307
URS-1180W-303	3/297	UTS-1300-107	3/305	UTS-1303-123	3/307
URS-1181C-303	3/297	UTS-1300-113	3/306	UTS-1303-303	3/305
URS-1181W-303	3/297	UTS-1300-123	3/306		
UTS-1121-303	3/293	UTS-1300-303	3/305		
UTS-1121-329	3/293	UTS-1301-107	3/305		
UTS-1121-319	3/293	UTS-1301-113	3/306		
UTS-1180-303	3/299	UTS-1301-123	3/306		
UTS-1180-329	3/299	UTS-1301-303	3/305		
UTS-1180C-303	3/298	UTS-1302-107	3/305		
UTS-1180W-303	3/298	UTS-1302-113	3/306		
UTS-1181-303	3/299	UTS-1302-123	3/306		

Inductive

Photoelectric

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

Glossary

Index



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