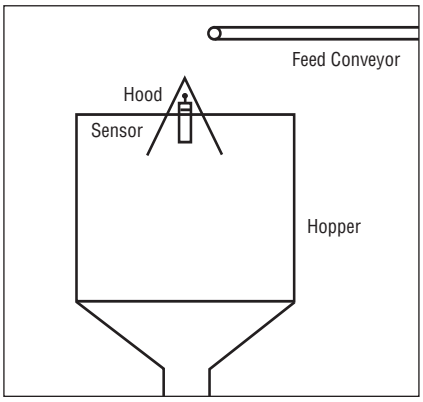
Ultrasonic Sensors

Ultrasonic Applications

- Level Control
- Roll Diameter
- Level Detection
- Liquid Level Control
- Web Break Detection
- Object Detection
- Loop Control
- Thickness and Gauging
- Stacking Height Control



Level Control of Sand in a Hopper

Ultrasonic Sensor Identification Codes

1	2	3 4	5 6	7	8 9 10 11	12	13 14 15 16	17	18	19 20 +
Type of Sensor	Type of Housing	Size of Housing Series/Name	Sensing Discipline	Dash	Electrical Spec	Dash	Sensing Distance	Dash	Type of Termination	Functions & Features

1 U = Ultrasonic

2 M = Metric threaded barrel metal
T = Metric threaded barrel plastic
R = Rectangular Housing

3/4 Size of housing
e.g. 30 = 30mm Diameter

5/6 UP = Ultrasonic Proximity

7 Dash

8 Voltage type
A = AC
D = DC

9 Output function
C = Current/Voltage output
S = 2x NO/NC solid state
B = Current output

10 Output type
A = Analog output
R = Relay
S = Solid state relay

11 3 = 3-wire output
4 = 4-wire output
5 = 5-wire output
6 = 6-wire output
7 = 7-wire output

12 Dash

13-16 Sensing distance
– mm: without dot
– m: with dot
e.g. 06.0 = 6 m
e.g. 15.0 = 15 m
e.g. 0050 = 50 mm
e.g. 10.0 = 10m
e.g. 13.0 = 13m

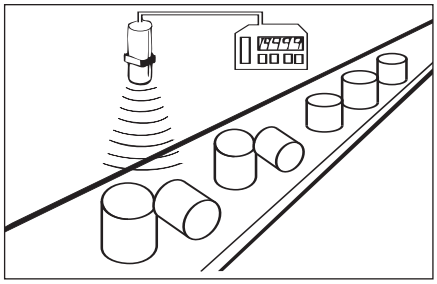
17 Dash

18 Connection type
A = Screw termination
S = Quick disconnect
C = Cable (standard 2 m or length in m)

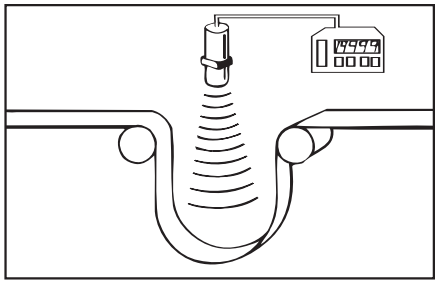
19 Options
S = LED with strength indicator
L = LED
T = Adjustable detection setting
H = Adjustable hysteresis setting
I = Current/Voltage inverter circuit
M = Microprocessor calibration and gain control circuit
C = Current inverter circuit
P = PVC housing and PVC sensing face

Quick Selection Guide

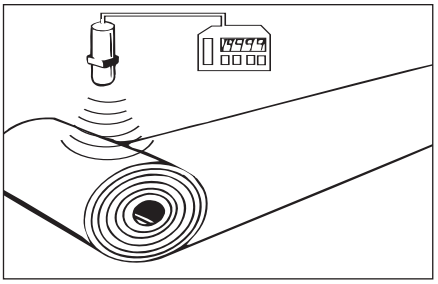
Model/Part #	Input Voltage	Sensing Distance	Output Type	Page #
UT30UP-DCA4-1016-CSI 7600-448-001	20-30 VDC	1016 mm/40 in.	4-20 mA or 0-10 VDC Inverted & Non-inverted Short Circuit Protected	13
UT30UP-DCA4-2032-CSI 7600-448-002	20-30 VDC	2032 mm/80 in.	4-20 mA or 0-10 VDC Inverted & Non-inverted Short Circuit Protected	13
UT30UP-DSS5-1016-CSHT 7600-448-003	20-30 VDC	1015 mm/40 in.	2x Solid State Relays	15
UT30UP-DSS5-2032-CSHT 7600-448-004	20-30 VDC	2032 mm/80 in.	2x Solid State Relays	15



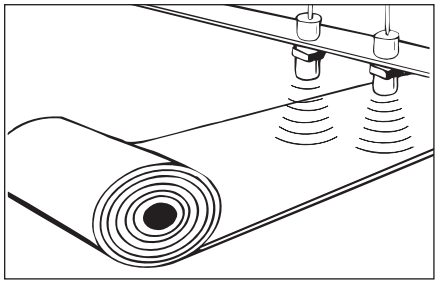
Quality Control Inspection



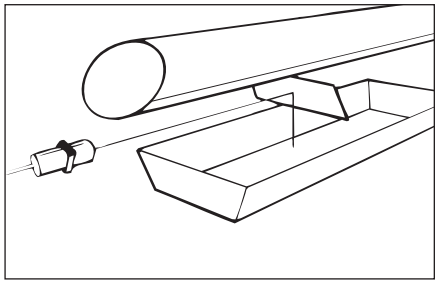
Loop Control



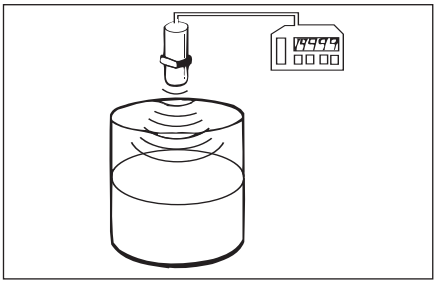
Roll diameter, Tension Control, Winding and Unwind



Web Break Detection



45° Deflection; Ink Well Level Detection; Hard to Get At Places



Liquid Level Control

For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678
INDUSTRIAL MAGZA DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com

Ultrasonic Sensors

with Analog Output

4-20 mA and 0-10 V

Wire selectable inverted
or non-inverted outputs

Threaded
plastic barrel
M 30 x 1.5

Threaded
plastic barrel
M 30 x 1.5

Sensing range		**101..1016 mm (4-40")**	**203..2032 mm (8-80")**
Switching functions/output		**Analog 4-20 mA and 0-10 V**	**Analog 4-20 mA and 0-10 V**
Ordering Information	Model description	**UT30UP-DCA4-1016-CSI**	**UT30UP-DCA4-2032-CSI**
	Part number	**7600-448-001**	**7600-448-002**

Electrical data

Voltage range	min./max.	20-30 VDC reverse polarity protected	20-30 VDC reverse polarity protected
Input current		50 mA	50 mA
Transducer frequency		212 KHz	150 KHz
Short circuit protected		Yes	Yes
LED - (strength indicator)		Yes - green to red; see note (d) on pg. 14	Yes - green to red; see note (d) on pg. 14
Response time		30 mSec	50 mSec
Range control		Zero and span (2 potentiometers)	Zero and span (2 potentiometers)

Mechanical Data

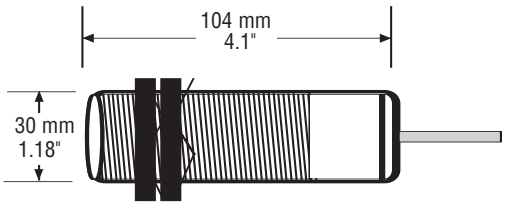
Temperature range	min./max	0°C/+60°C / 32°F/140°F	0°C/+60°C / 32°F/140°F
Degree of protection		IP 65/NEMA 12	IP 65/NEMA 12
Body material		Valox plastic	Valox plastic
Termination	cable 2 m/6 ft.	PVC 4 x 22 gauge	PVC 4 x 22 gauge
	Plug/socket	Versions available to order	Versions available to order
Accessories		1) Brackets	1) Brackets
Humidity		0-95% non-condensing	0-95% non-condensing

1) Brackets for M 30 x 1.5

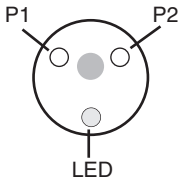
Ordering Information
Plastic - BKS-D34PA
Part number 596-0223-041

Metal - M 30 ST
Part number 7430-448-003

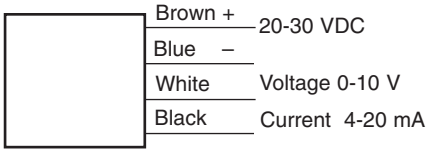
Dimensions



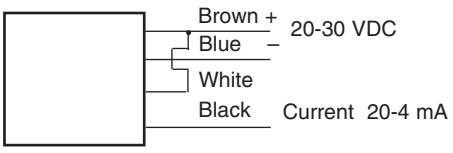
Adjustment Pots Zero and Span Control



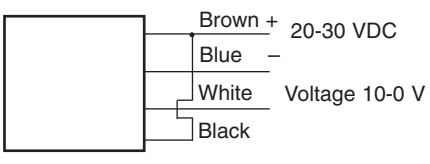
Wiring Data



Non Inverted Output



Current Output Inverted



Voltage Output Inverted

For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678
DIST. AUTORIZADO MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com

Ultrasonic Sensors

Operation and Set-Up

Minimum Analog Ranging

Minimum analog ranging is when you desire to have the full 4-20 mA or 0-10 V output over the minimum 5 inch sensing span. 5 inches of minimum sensing span can be adjusted anywhere in the sensing range. For example 10"-15" or 25"-30". To make this adjustment, you place your target at the minimum sensing range and adjust P1 to 4 mA. Then move your target to the maximum sensing range and adjust P2 to 20 mA. Re-check the readings and make appropriate adjustments, if necessary. See diagram (A).

Maximum Analog Ranging

Analog sensing in the maximum range means utilizing the entire 36" span (4"-40") and 72" span (8"-80"). To adjust, set your target at the minimum range, either 4" or 8" and adjust P1 to 4 mA. Move the target to the maximum range and adjust P2 to 20 mA. Re-check readings and make appropriate adjustments, if necessary. See diagram (B).

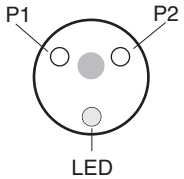
Inverted Analog Outputs

Inverted outputs means that the 4-20 mA or 0-10 V output signal will decrease proportionally with distance. To adjust, place your target at the minimum sensing distance and adjust P1 to 20 mA. Place your target at the maximum sensing distance and adjust P2 to 4 mA. Re-check readings and make appropriate adjustments, if necessary. See diagram (C).

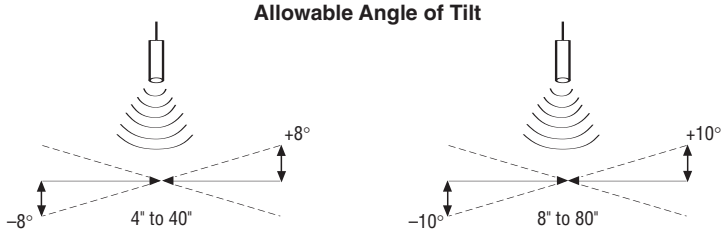
LED Operation (Note D)

The LED is green when the unit is powered up. It will fade to red as a target is detected with increased intensity as more signal is being reflected from the target. Note: Any color other than green equals a workable signal level.

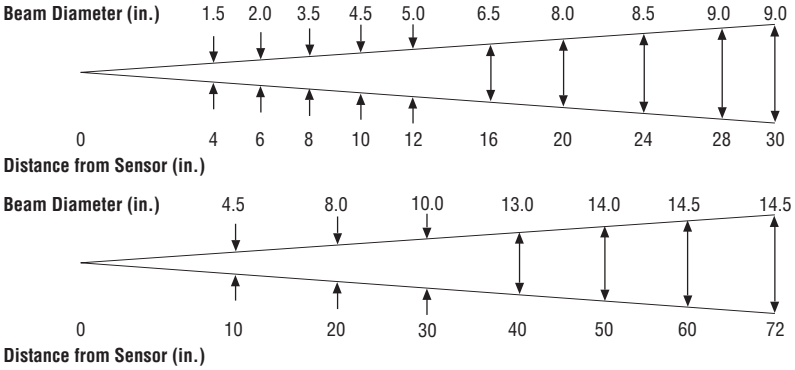
Adjustment Pots
Zero and Span Control



Allowable Angle of Tilt



Beam Spread vs. Target Distance



Minimum Analog Ranging

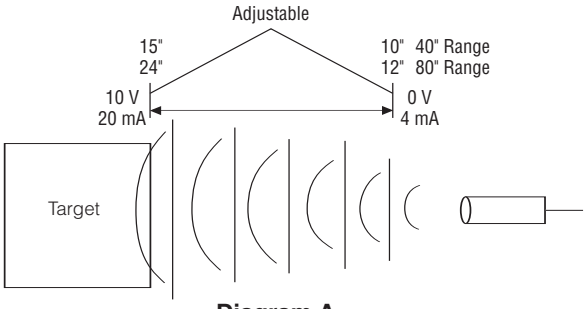


Diagram A

Maximum Analog Ranging

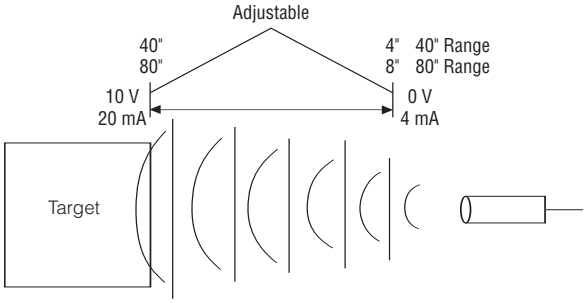


Diagram B

Inverted Analog Ranging

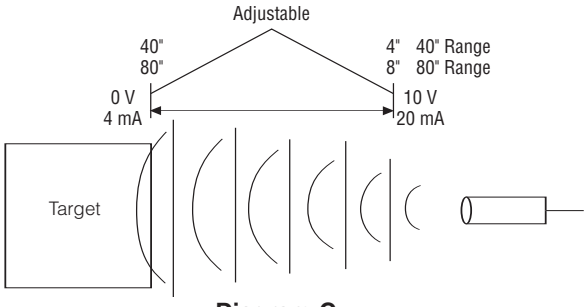


Diagram C

For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678
INDUSTRIAL MAGZA DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com

Ultrasonic Sensors

with Isolated Solid State Relay Outputs

fitted with Range and Hysteresis Control

Threaded plastic barrel M 30 x 1.5

Threaded plastic barrel M 30 x 1.5

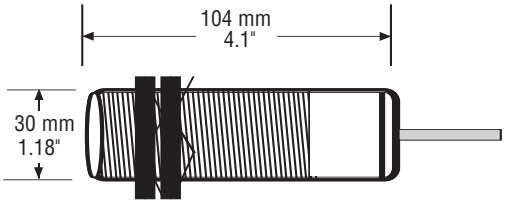
Sensing range		**101..1016 mm (4-40")**	**203..2032 mm (8-80")**
Switching functions/output		**2 Solid State Relays**	**2 Solid State Relays**
Ordering Information	Model description	**UT30UP-DSS5-1016-CSHT**	**UT30UP-DSS5-2032-CSHT**
	Part number	**7600-448-003**	**7600-448-004**
Electrical data			
Voltage range	min./max.	20-30 VDC reverse polarity protected	20-30 VDC reverse polarity protected
Input current		50 mA	50 mA
Transducer frequency		212 KHz	150 KHz
Short circuit protected		Yes	Yes
LED		Yes - green (not detecting), red (detecting)	Yes - green (not detecting), red (detecting)
Response time		30 mSec	50 mSec
Range control		Range and Hysteresis	Range and Hysteresis
Mechanical data			
Temperature range	min./max.	0°C/+60°C / 32°F/140°F	0°C/+60°C / 32°F/140°F
Degree of protection		IP 65/NEMA 12	IP 65/NEMA 12
Body material		Valox plastic	Valox plastic
Termination	cable 2 m/6 ft.	PVC 4 x 22 gauge	PVC 4 x 22 gauge
	Plug/socket	Versions available to order	Versions available to order
Accessories		1) Brackets	1) Brackets
Humidity		0-95% non-condensing	0-95% non-condensing

1) Brackets for M 30 x 1.5

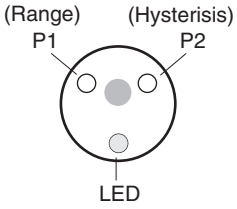
Ordering Information
Plastic - BKS-D34PA
Part number 596-0223-041

Metal - M 30 ST
Part number 7430-448-003

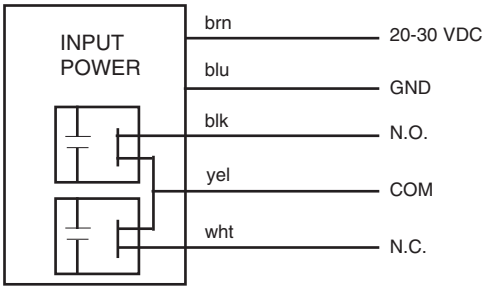
Dimensions



Adjustment Pots Detection and Hysteresis Control



Wiring Data



Output Specification

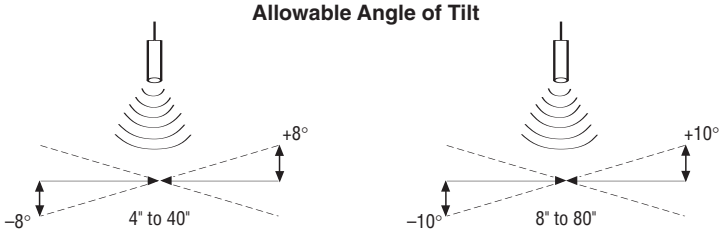
- 2 x Solid state relays N.O. / N. C.
- 160 VAC or VDC 100 mA continuous
- Short circuit protected
- 1500 volts RMS isolation

For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678
INDUSTRIAL MAGZA DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com

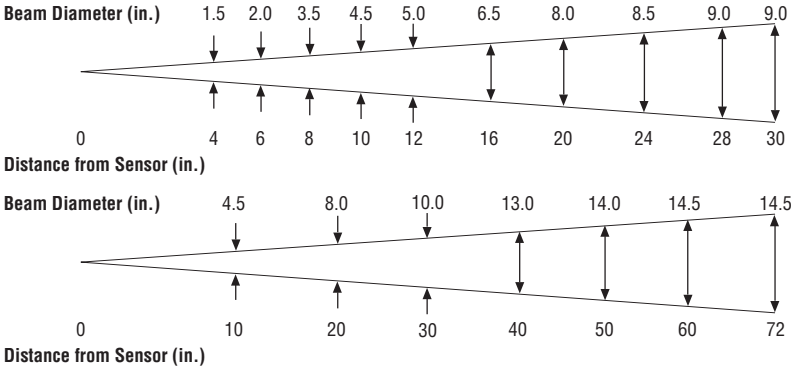
Ultrasonic Sensors

Operation and Set-Up

Allowable Angle of Tilt



Beam Spread vs. Target Distance

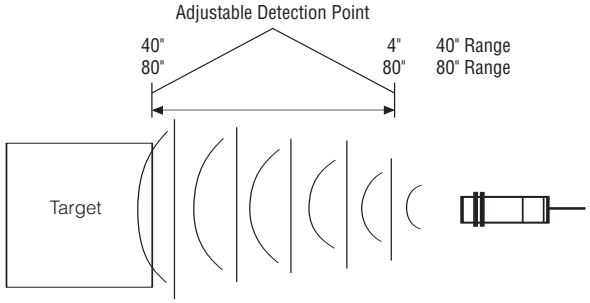


Proximity Sensing

Proximity detection is the detection of an object at a set distance. The sensing range is controlled by the “Range Control” potentiometer. Any object within the desired range is detected while objects beyond the set range are ignored. The sensing distance is dependent upon the sensor chosen, 40" or 80".

In the proximity mode of operation, the hysteresis potentiometer must be turned to 'off' by turning the pot counterclockwise.

Proximity Sensing

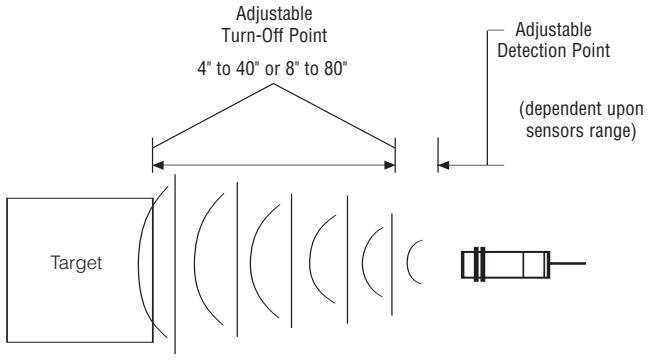


Hysteresis Control

The sensor is also fitted with a hysteresis control potentiometer. This control allows you to adjust the turn off point while the detection potentiometer sets the “turn on” point.

(Example: Range pot set for 10", hysteresis pot set for 20". With these settings the sensor will detect when the target reaches 10" and stays on as the target moves away to 20".) This hysteresis can be adjusted from .5" to 40" from the detect point with the 40" sensor and 1" to 80" with the 80" sensor.

Hysteresis Control



For Application Assistance Call 1-800-451-8279 or Fax 1-815-389-6678
INDUSTRIAL MAGZA DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com