



SPECIFICATION FOR ULTRASONIC SENSOR

| | | | |
|------------|----|--|------|
| TOTAL PAGE | 10 | www.bestarsensor.com | ROHS |
|------------|----|--|------|

| | | | |
|--------------|---------------|-------------|---------------|
| Customer | | Model Name | BPU1448IFAH09 |
| Customer P/N | | Product No. | 101900 |
| Date | 31. Jul. 2012 | Issue No. | BS/TEU01.303A |
| Page | 01 of 10 | Issue Date | 2012/07/31 |

Approval:

- 1.Applications
- 2.Features
- 3.Technical terms
- 4.Drawing
- 5.Beam Pattern
- 6.Test Circuit
- 7.Reliability Test
- 8.Notice
- 9.Packing
- 10.History change record

| Drawn by | Checked by | Approved by | Customer approved |
|----------|------------|-------------|-------------------|
| 祁小柯 | 邹东平 | 李红元 | |

BESTAR SENSORTECH CO.,LTD

Room 706.No.178. YuLong South Road,Zhonglou district,ChangZhou,
JiangSuProvince,P.R.China

Tel: +86 519 88990131 **Fax:** +86 519 88990133

E-mail:li@bestarsensor.com <http://www.bestarsensor.com>

BPU1448IFAH09



1.Applications

This specification covers the water proof type ultrasonic ceramic transducer which are used for ultrasonic ranging and parking sensor of automobile.

2.Features

- 2.1) Water proof and dual use.
- 2.2) Compact and light weight.
- 2.3) High sensitivity and sound pressure.
- 2.4) Less power consumption.
- 2.5) High reliability.

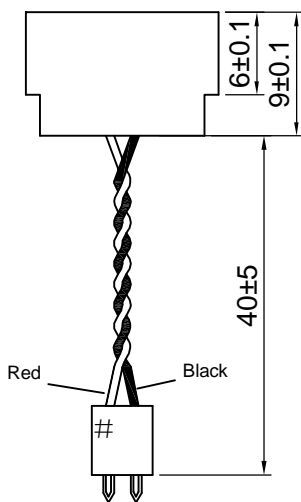
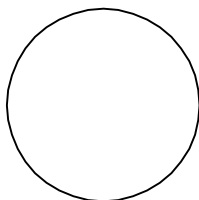
3.Technical terms

| No. | Item | Unit | Specification |
|-----|-----------------------|------|--------------------|
| 1. | Construction | | Water Proof |
| 2. | Using Method | | Dual Use |
| 3. | Center Frequency | KHz | 48±1KHz |
| 4. | Sound Pressure Level | dB | ≥85(30cm/10Vrms) |
| 5. | Echo Pulse Width | v | ≥1.8v(at 60cm) |
| 6. | Ringing Time | ms | ≤1.6ms |
| 7. | Sensitivity | dB | ≥-90dB/V/ μ bar |
| 8. | Capacitance | pF | 2100pF±25% at 1KHz |
| 9. | Directivity | ° | 110×50deg |
| 10. | Operating Tem.Range | | -40 to +85 °C |
| 11. | Storage Tem.Range | | -40 to +85 °C |
| 12. | Detectable Range | m | 0.3...2 |
| 13. | Net weight | g | 2.45g/pcs |
| 14. | Maximum Input Voltage | Vp-p | 160Vp-p |
| 15. | Housing Material | | Aluminum |

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

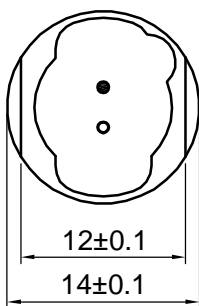
| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:2 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09



Lead wire
1571-30# Red,Black
connector pitch 2mm

: JAM code



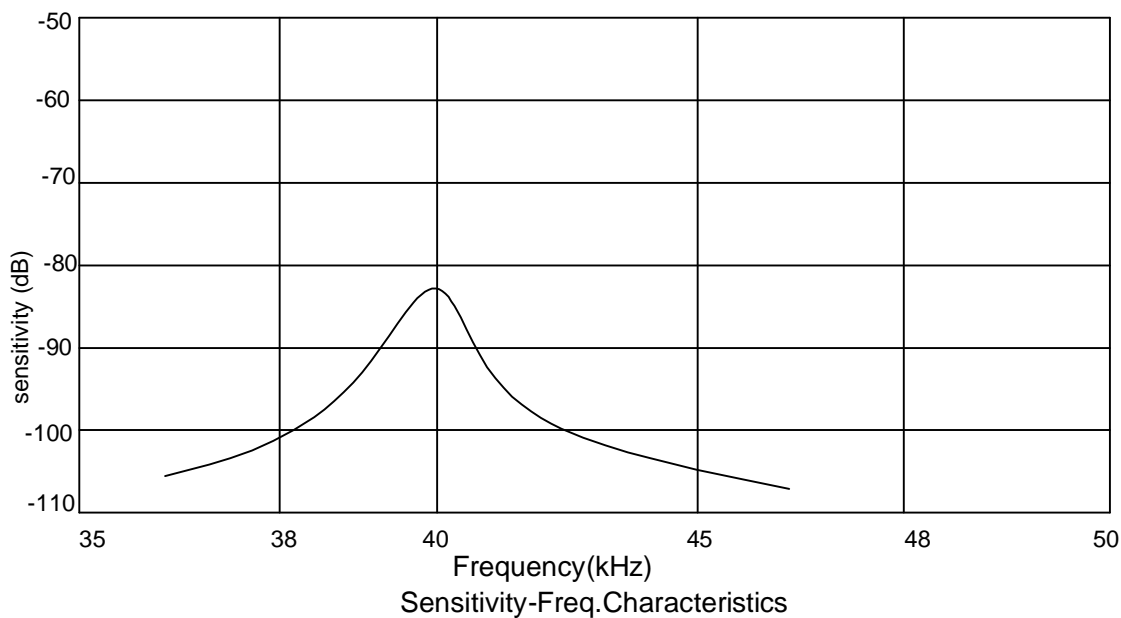
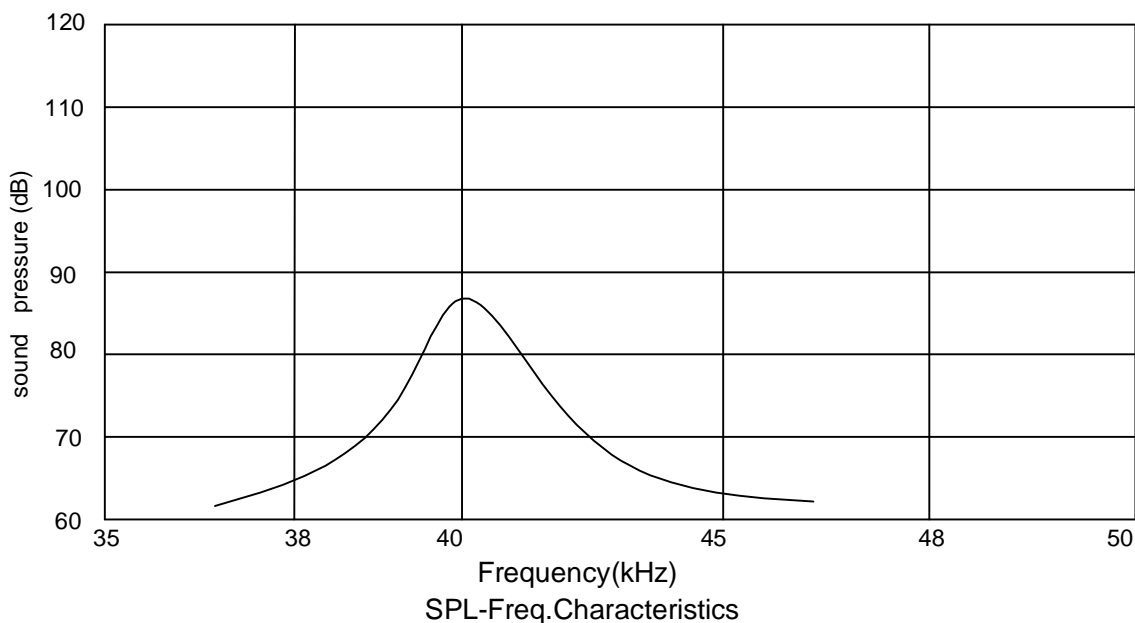
unit:mm

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:3 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09

5. Beam Pattern

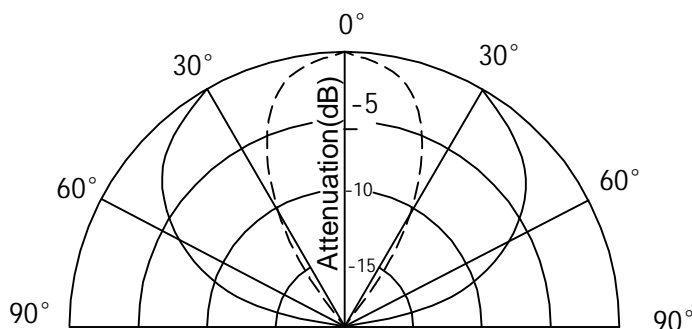


This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:4 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09

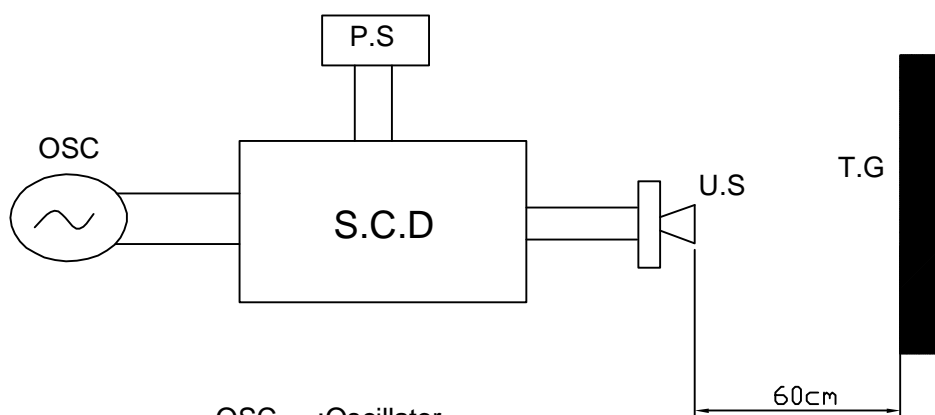
--- Vertical
 ——— Horizontal



Directivity in Overall Sensitivity

6. Test circuit

Echo&Rest. Resonant Time test circuit



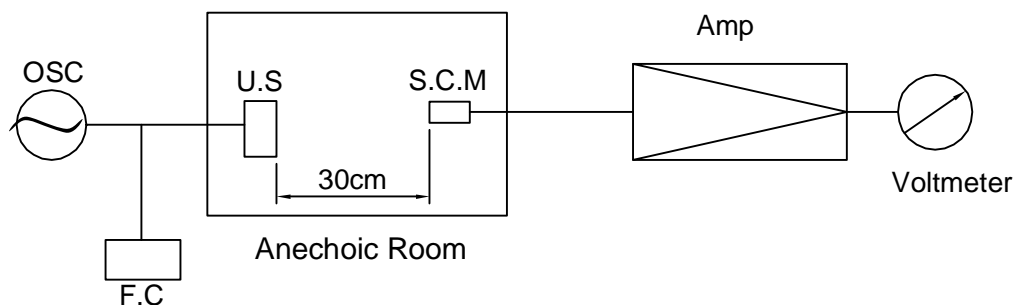
OSC : Oscillator
 P.S : Power supply
 S.C.D : Special circuit diagram
 U.S : Ultrasonic Sensor
 T.G : Target

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:5 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

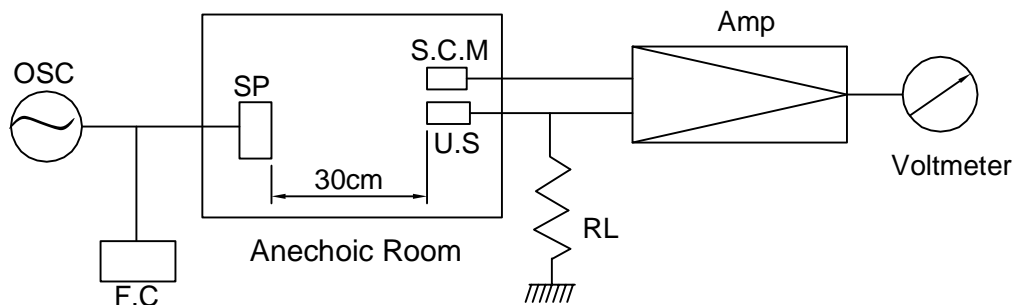
BPU1448IFAH09

S.P.L test circuit



OSC. :Oscillator
 F.C :Frequency Counter
 U.S :Ultrasonic Sensor
 S.C.M:Standard Cappacitor Microphone
 Amp. :Amplifier

sensitivity test circuit



OSC. :Oscillator
 F.C :Frequency Counter
 U.S :Ultrasonic Sensor
 S.C.M:Standard Cappacitor Microphone
 Amp. :Amplifier
 SP :Tweeter
 RL : 3.9KΩ

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:6 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09

7. Reliability Test

- 7.1 High temp.life test
 Temperature +85± 3°C
 Duration 500hrs
- 7.2 Low temp.life test
 Temperature -40±3°C
 Duration 500hrs
- 7.3 Heat Cycle Test
 Temperature +85±3°C 1hour
 -40±3°C 1hour
 Cycles 100cycles
- 7.4 Humidity Test
 Temperature +65±2°C
 Relative Humidity 90~95%
 Duration 500hrs
- 7.5 Vibration Test
 Vibration Frequency 10~200Hz
 Sweep Period 15min
 Acceleration 43.12m/s² (4.4G)
 Direction 3(x.y&z)
 Time 96hours/direction
- 7.6 Shock test
 Acceleration sine 980 m/s² (100G)
 Direction 3directions
 Shock time 3 time/directions
- 7.7 Drop test
 Height 1m onto concrete floor
 Times 10 times
- 7.8 Connector soldering check:
 Immersing terminal up to 1mm below base in soldering bath at 260 °C 10 seconds
 Notice:
 The variation of the S.P.L at 40 kHz is within 3dB compared with initial figures at 25°C in 24 hours after above test condition.

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:7 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09

8. Notice

8.1 Export Control <For customers outside The People's Republic of China>

No BeStar products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

8.2 Please contact our sales representatives or product engineers before using the products in the specification or catalogue for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this specification.

- a) Aircraft equipment or Aerospace equipment
- b) Undersea equipment and Power plant equipment
- c) Medical equipment and Transportation equipment (vehicles, trains, ships, etc.)
- d) Traffic signal equipment i Disaster prevention / crime prevention equipment
- e) Data-processing equipment including Application of similar complexity and/or reliability requirements to the applications listed above

8.3 Product specifications and catalogues are subject to change and our products in them may be discontinued without advance notice.

Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

8.4 Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this specifications in order to prevent smoking and/or burning, etc.

8.5 Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our specifications and catalogues. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

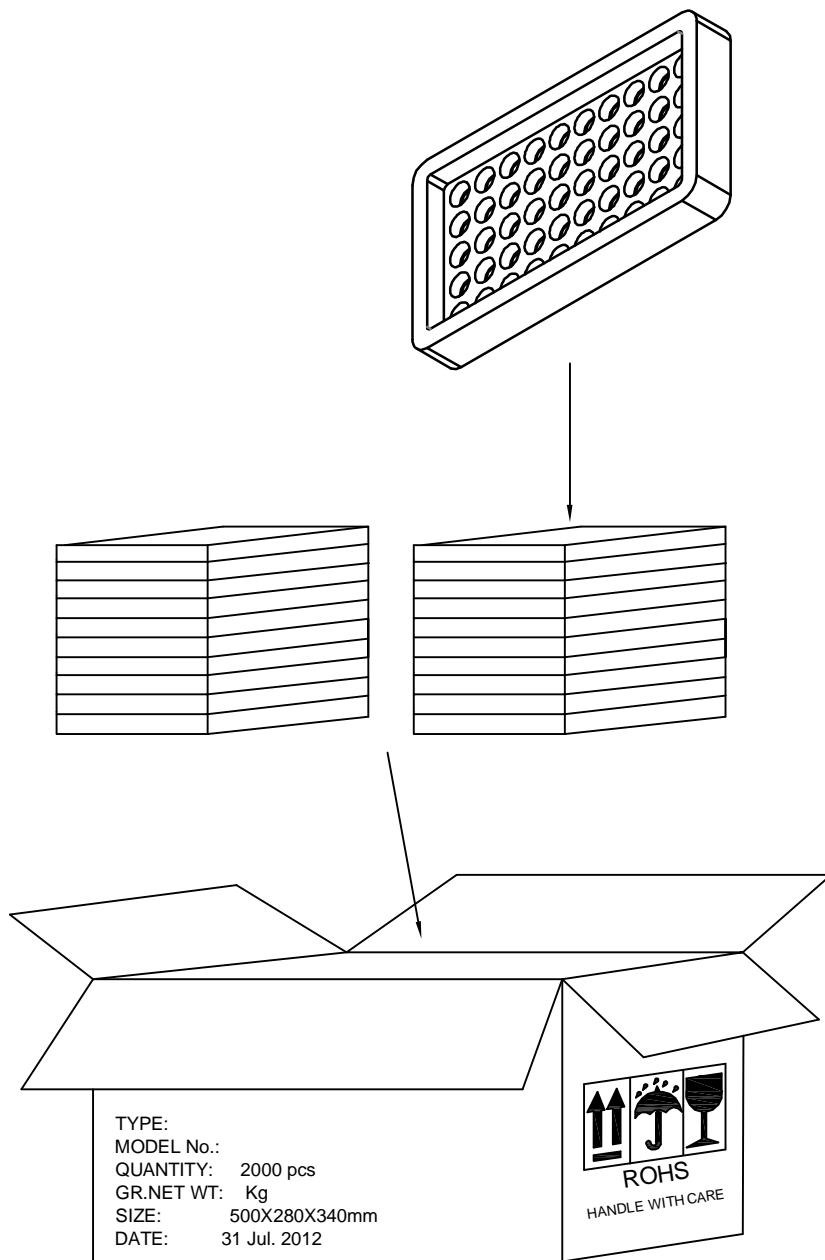
8.6 No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written consent

| | | | | | | | |
|---|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:8 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

BPU1448IFAH09

9.Packing



- 1)50 pcs/tray
- 2)40 trays/carton
- 3)2000 pcs/carton in total
- 4)carton size: 500X280X340m m

| | | | | | | | |
|--|------------|-------|------|--------------|------------|-----------------------|--------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD | | | | | | DRG NO: BS/TEU01.303A | Page:9 of 10 |
| www.bestarsensor.com li@bestarsensor.com | | | | | | | |

This print and information there in are proprietary to Bestar Sensortech Co., Ltd. and shall not be used in whole or in part without its written consent

BPU1448IFAH09

10. History change record

| version No. | Change Items | | Date | Drawn | Approved |
|-------------|--------------|-------|------------|-------|----------|
| | Before | After | | | |
| A | | | 2012.07.31 | 祁小柯 | 李红元 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

This print and information there in are proprietary to Bestar Sensorteck Co., Ltd. and shall not be used in whole or in part without its written content

| | | | | | | | |
|---|------------|-------|------|--------------|------------|-----------------------|---------------|
| | | | | Date: | 2012.07.31 | BPU1448IFAH09 | |
| | | | | Drawn by: | 祁小柯 | | |
| A | 2012.07.31 | 祁小柯 | | Checked by: | 邹东平 | Ultrasonic Sensor | |
| Rev. | Date | Drawn | Note | Approved by: | 李红元 | | |
| BESTAR SENSORTECH CO.,LTD www.bestarsensor.com li@bestarsensor.com | | | | | | DRG NO: BS/TEU01.303A | Page:10 of 10 |