Photoelectric triple beam detector User Manual
ABE-50  ABE-100  ABE-150  ABE-200  ABE-250/P  VER:AABE02

1. Parts Description

2. Setting Note

(1) Do not mount the detectors in following conditions:

1) Where installation base is not stable
2) Where there are blocks between the receiver and transmitter
3) Where sunlight shines directly
4) Where there are other infrared detectors working
5) Do not let the wires in the air

(2) Normal mounting:

- **Model**: ABE-50  ABE-100  ABE-150  ABE-200  ABE-250/P
- **Detection distance**: 30m, 100m, 150m, 200m, 250m
- **Beam spread angle**: 1.0m, 2.5m, 3.5m, 5.0m

- **Mounting height**: 0.7-1.0m
- **Beam Spread Range**: Horizontally 180° (±90°), Vertically 20° (±10°)
- **Correction angle**: 33mm 33mm 12mm

3. Setting method

- **Wall mounting**:
  1) Loosen the screw and remove the cover
  2) Attach the installation paper to the wall, mark the holes first and then make the guide holes.
  3) Wiring hole: Remove the foam plug, pull wire through, and reset the foam plug.
  4) Drop into the four holes with the expansion pipe, fix them with screws.
  5) Connecting wires to the terminals (please refer to "beam alignment").
  6) Review and reset the cover.

- **Pole mounting**:
  1) Break out the wire hole and pull out the wires
  2) Remove the cover
  3) Drop into the holes with the expansion pipe, fix it with screws.
  4) Fix the body on the bracket
  5) For the back to back installation diagram, please refer to the step 5 and 6 of the wall mounting method.

4. Connectors

- **Transmitter**
  - Notes: 1. Power voltage input: DC/AC 12V-24V; 2. No heater in the package, please order if required.

- **Receiver**
  - Notes: 1. Power voltage input: DC/AC 12V-24V; 2. No heater in the package, please order if required.

5. Connecting wires

- **1. Single connect**: Control panel operating voltage DC12V, NC alarm output. Connecting to power supply parallel (as follows):
- **2. Stacked connect**: Control panel operating voltage DC12V, NC alarm output series connect as follows:
- **3. Series connect**: Control panel operating voltage DC12V, NC alarm output series connect as follows:

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DC12V-24V

**Warning**: when installation, don’t connect the port with the voltage or current which is over the normal specification!
6. Digital tube voltage indicator

Digital tube indicator (on the right side of PCB shell)

1. Adjust the beam frequency switch, make sure the frequency of transmitter must be the same as frequency of receiver.
2. Adjust the screw and bracket until receiver can be seen and try to let its position in the line-of-sight center.
3. Adjust the screw and bracket until receiver can be seen and try to let its position in the line-of-sight center. The indication of digital tube will change between “H” to “L”, “L” indicates no signal and alarm output. The calibration of the optical axis digital tube indicates "0".
4. Operation confirmation. Please make sure the alarm indicators off before testing. If not, please redo the alignment until the detector into normal alarm state.

7. DIP switch

DIP switch description (DIP switch at the left side of the main PCB cover, as shown in picture)

- **Transmitter**:
  1. 1 and 2 two DIP switches to set the beam frequency, must be set the same as 1 and 2 two DIP switches setting on receiver.
  2. Transmitter operating instructions, set it to off after debugging and set break code switch to off for saving energy.
  3. Pre-heating function helps to test heater heating function. Its constant temperature is higher than heating. If customers buy heaters and use, keep it in the heating position to save power.
  4. The beam has two level power, please set according to the needs of the alarm distance.

- **Receiver**:
  1. 1 and 2 two DIP switches to set the beam frequency, must be set the same as 1 and 2 two DIP switches setting on transmitter.
  2. Receiver operating instructions, set it to off after debugging and set break code switch to off for saving energy.
  3. Pre-heating function helps to test heater heating function. Its constant temperature is higher than heating. If customers buy heaters and use, keep it in the heating position to save power.
  4. Interrupt time should be selected according to actual use.
  5. When interrupted occasionally by birds, leaves or paper, set longer respond time. And please double check when finished.

8. Beam frequency

When using some pairs beams or under long-distance applications, select a specific beam frequency to avoid mutual interference between beams.

When using in stack please set the frequency difference of 2 as show below, beams above set to 1, the under one set to 3.2 and 4 frequency setting is the same as 1 and 3.

- **1 and 2 groups stacked**
- **2 and 3 groups stacked**
- **3 and 4 groups for long-distance using**

9. Operation confirmation

Please make sure the alarm indicator is off before testing. If not, redo the alignment.

1. At the transmitter side
2. At the receiver side
3. In the middle

Alarm indicator turns on when beam is interrupted, test finished successfully.

10. Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power on, but indicator LED does not light (P)</td>
<td>1. DIP switch is in the state of saving electricity 2. Power cable without voltage; broken circuit or short circuit; polarity is incorrect; beyond specified voltage, power cable exceeds the specified length.</td>
<td>1. Turn on the DIP switch 2. Check power adapter, circuit and voltage polarity; change adapter or power cable</td>
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<tr>
<td>When beam is blocked, alarm LED does not light and alarm</td>
<td>1. There are reflectors or other transmitters impacting receiver 2. 3 beams are not all blocked 3. Setting too long interruption time 4. Alarm output cable is fixed incorrectly</td>
<td>1. Remove reflectors or close other transmitters; adjust receiver 2. Ensure 3 beams all blocked 3. Reduce interruption time 4. Check receiver terminal and output cable</td>
</tr>
<tr>
<td>When beam is not blocked, alarm LED lights and alarm</td>
<td>1. Beam is out of alignment; optical axis does not overlap 2. There are objects between receiver and transmitter 3. Frequency is incorrect 4. The cover is dirty or capped by snow, frost and ice 5. Transmitter does not output</td>
<td>1. Adjust optical axis 2. Check objects between receiver and transmitter 3. Ensure the frequency of receiver and transmitter are the same 4. Clean cover and use heater 5. Check the power, current and cable of transmitter</td>
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</tbody>
</table>

11. Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>ABE-50</th>
<th>ABE-100</th>
<th>ABE-150</th>
<th>ABE-250</th>
<th>ABE-250P</th>
</tr>
</thead>
<tbody>
<tr>
<td>DETECTING DISTANCE (OUTDOOR)</td>
<td>50m</td>
<td>100m</td>
<td>150m</td>
<td>200m</td>
<td>250m</td>
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<tr>
<td>DETECTING DISTANCE (INDOOR)</td>
<td>150m</td>
<td>350m</td>
<td>450m</td>
<td>650m</td>
<td>750m</td>
</tr>
<tr>
<td>DETECTING DISTANCE (MAX)</td>
<td>500m</td>
<td>650m</td>
<td>900m</td>
<td>1200m</td>
<td>1500m</td>
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<tr>
<td>DETECTION METHOD</td>
<td>Simultaneous interruption of 3 infrared beams</td>
<td></td>
<td></td>
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<tr>
<td>INTERRUPTION TIME</td>
<td>20ms, 50ms, 100ms (adjustable)</td>
<td></td>
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<tr>
<td>NUMBER OF BEAMS</td>
<td>3 beams</td>
<td></td>
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<tr>
<td>FREQUENCY</td>
<td>Adjustable (but transmitter should be same with receiver)</td>
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<tr>
<td>ALARM CYCLE</td>
<td>2±1s</td>
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<tr>
<td>TEMPER</td>
<td>NC. Works when cover is removed</td>
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<tr>
<td>CURRENT CONSUMPTION</td>
<td>70mA @ 12VDC; 90mA @ 110VAC</td>
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<tr>
<td>POWER AND VOLTAGE</td>
<td>DC12~24V; AC11-18V</td>
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<td>IP RATING</td>
<td>IP65</td>
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<tr>
<td>OPERATING TEMPERATURE</td>
<td>-20°C ~ 55°C</td>
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<tr>
<td>HUMIDITY</td>
<td>95% MAX</td>
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<tr>
<td>ALARM OUTPUT</td>
<td>Relay output 10: common output DC/DC24V0.5A MAX</td>
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<tr>
<td>CORRECTION ANGLE</td>
<td>360° (if used in stack)</td>
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<tr>
<td>INSTALLATION LOCATION</td>
<td>Indoor/Outdoor, wall/pole</td>
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<tr>
<td>WEIGHT</td>
<td>1.8KG</td>
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12. Dimensions

[Diagram showing dimensions]