Nos.1355&1355-6
WALL OUTLET PHOTOELECTRIC SYSTEM

The Ademco No. 1355 (and No. 1355-6) Photoelectric System is a completely solid state intrusion detector which looks like two double gang electrical wall outlets when installed. Its invisible, modulated beam will protect spans from 3 feet up to 75 feet, and its unique design allows all system wiring to be completed at only one end of the span.

The No. 1355 is powered from a plug-in transformer (included) and contains a rechargeable power supply. The No. 1355-6 requires power from a 6 V.DC source (current drain: 65 ma at 6 V., 100 ma at 7 V.) such as a battery or filtered full wave rectified power supply (e.g. Ademco Nos. 492 or 493 Battery Packs). Normally the filtered power supply from the protective system's control panel may be used. Do not use unfiltered supplies such as the No. 89 or controls with unfiltered supplies such as the Nos. 330, 331 or 332. (The No. 1355-6 can be used with the No. 330R and 340R series controls.)

The four main components of the system are:

1. A combination transmitter and receiver ("transceiver").
2. A "drop-pack" containing all supervisory circuitry for the transceiver.
3. A special bounce-back reflector.
4. A low voltage plug-in transformer (No. 1355 system only).

The transceiver is recessed in a hole in the wall at one end of the span and looks like an electrical wall outlet. It projects an invisible beam of light that is aimed at a bounce-back reflector which also looks like a wall outlet. This reflector, without adjustment of any kind, bounces the invisible light from the transmitter right back to the receiver.

The drop-pack, which is recessed in the same hole with the transceiver, contains all supervisory circuitry for the transceiver and alarm relay, and (No. 1355 only) a rechargeable standby power supply. It is connected to a light emitting diode which serves as a pilot light for the system. It drops down inside the wall directly below the transceiver and is connected to it. If the invisible beam from the transmitter is properly aimed at the special bounce-back reflector, the drop-pack pilot lamp will be ON indicating that proper protection is taking place. If the unit is not working or some obstacle is interrupting the beam, the pilot lamp will be off, indicating that the system is not properly set. The pilot lamp also monitors the power connections, and will go OFF if the incoming power is interrupted.

SELECTING THE LOCATION

1. The system's range has a minimum of 3 feet and a maximum of 75 feet. Make sure that the span to be protected is not less than 3 feet and not more than 75 feet. Check to make sure that there will be no obstacles between the transceiver and the reflector.

2. For the installation of the transceiver and the drop-pack, locate a wall at least 3 5/8" deep. The system is designed to fit any standard wall framed with two by fours. If the wall depth is not known, drill a pilot hole to measure before cutting the wall.

3. Do not select a location for the transceiver which points towards windows, incandescent lights, or fluorescent lights.
4. It is not necessary to locate the bounce-back reflector in a dark area.

5. No. 1355 ONLY: Make sure that a 115 V.AC electrical outlet is nearby and has uninterrupted electricity 24 hours a day. Make sure that current to this outlet is not interrupted by a switch or by a circuit breaker when offices or factories are closed for the day.

DIAGRAM 1

1. After determining that the wall depth is at least 3 5/8", mark out a rectangle exactly 3 3/4" high x 4" wide anywhere between 18 and 36 inches above the floor.

2. Cut out the 3 3/4" x 4" hole. Make sure all space inside the wall has been cleaned out properly.

3. a. No. 1355: Connect two 22 gauge wires to the secondary of the plug-in transformer. Run these wires from the AC outlet where the transformer will be installed, through the wall to the hole for the transceiver and drop-pack. Bring the wires out of the wall leaving at least 18 inches of wire dangling. Do not plug the transformer into the 24 outlet yet!

   b. No. 1355-6: Run two wires (in accordance with the following tabulation) from the 6 V.DC power source (normally the local control panel) through the wall to the hole for the transceiver and drop-pack. Bring the wires out of the wall leaving at least 18 inches of wire dangling. Do not connect the wires to the power source yet.

<table>
<thead>
<tr>
<th>MAXIMUM DISTANCE</th>
<th>MINIMUM WIRE SIZE</th>
<th>SUGGESTED ADEMCO NO.</th>
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<tbody>
<tr>
<td>300 feet</td>
<td>#22</td>
<td>289 or 286</td>
</tr>
<tr>
<td>500</td>
<td>#20</td>
<td>283</td>
</tr>
<tr>
<td>1000</td>
<td>#18</td>
<td>284</td>
</tr>
</tbody>
</table>

4. Snake protective circuit wires through the wall and bring them through the rectangular hole, again leaving about 18 inches of wire dangling outside the hole.
INSTALLING THE DROP PACK

1. Attach the red LED pilot lamp to the drop-pack. Wire the black lead of the LED to terminal number 4 of the drop-pack, the red lead to terminal number 5. Then secure the LED in the special clip on the top of the drop-pack.

2. Connect the protective circuit wires dangling out of the hole to terminals 1 and 3 of the drop-pack (for closed circuit alarm loops) or terminals 2 and 3 (for open circuit loops).

3. Attach the two wires from the power source to terminals 5 and 6. (No. 1355-6 SYSTEM NOTE: Unit will not function with reverse polarity.)

4. Insert the drop-pack in the wall. The pack should be inserted so that the terminals face away from the front of the wall. The lip on the front of the unit should rest snugly on the wall at the bottom of the rectangular hole. (See Diagram 4.) Make sure that the leads that come out of the drop pack are dangling outside the hole so they can be connected to the transceiver.

1. Slip the back-up plate over the back housing of the transceiver.

2. Connect the leads from the drop-pack to the transceiver terminals as shown in Diagram 3. Do not mistake the BLACK COVERED SHIELD of the gray cable for the other BLACK lead. Caution: Connect the GREEN lead last. Keep its spade lug covered (as supplied) until ready to connect. Do not permit the lug to touch ground or any part of the unit other than terminal 3.
3. Make a preliminary check to make sure the system is operating by doing the following:

a. Connect power.

b. Using a screwdriver, wire or other conductive device, short terminals No. 2 and No. 3 on the transceiver terminal strip. If all connections have been made properly, the red LED pilot lamp on the top of the drop-pack will light. The LED lamp will not light if (1) wiring connections to the drop-pack and the transceiver have been made improperly (2) the transformer (No. 1355 system only) is not completely plugged in or (3) polarity is reversed on the leads from the LED to the drop-pack, or (No. 1355-6 system) from 6 V.DC power.

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**DIAGRAM 4:**

4. Prepare the transceiver for wall insertion. Take two of the four long-threaded screws supplied and screw them through the two support screw holes marked "A" on Diagram 4 and then attach them to the back-up plate. Make the connection so that about one inch separates the front plate of the transceiver and the back-up plate.

5. Insert the transceiver into the wall with the transmitter and receiver lenses on a horizontal plane. Proper insertion will require that the back-up plate and the front plate of the transceiver sandwich the surrounding wall on the left and right sides and the top of the hole as well. (See Diagram 4.) The easiest way to make the installation is to insert the open, unscrewed side of the front mounting plate/back-up plate sandwich into the wall first, then slide the "sandwich" over towards the screwed side so that it sandwiches the wall. Once a sandwich has been made on the right, left and top sides and the transceiver is snugly up against the top of the hole in the wall, the two other screws may be inserted on the loose side of the transceiver front plate. Once all screw connections have been made, tightening of all four screws should be done until the transceiver is securely mounted. There should be a gap of approximately 1 1/4" between the mounting plate and the drop-pack power supply. The red LED pilot lamp on the top of the drop-pack should be clearly visible to someone looking at the hole in the wall from a straight-on direction. The LED lamp must be visible for later alignment to take place.
ALIGNMENT PROCEDURE

Because the beam of the system is invisible, system alignment requires a process of "back-tracking" the beam from the transceiver to the desired location of the bounce-back reflector.

**DIAGRAM 5:**

Back-tracking first requires that the installer set up a "line-of-sight" between the transceiver and the proposed location of the bounce-back reflector. The "line-of-sight" is nothing more than an imaginary line between these two points. Back-tracking then requires that the invisible beam be properly aligned, using the bounce-back reflector, at progressively greater distances from the transceiver. Alignment involves bouncing the invisible beam from the transceiver transmitter off the reflector back to the transceiver receiver. The beam can be "found" at distances greater than 3 feet from the transceiver by facing the reflector towards the transceiver and moving it from side to side, top to bottom until the red LED pilot lamp on top of the drop-pack lights up. When the lamp is lit, the beam is on target.

Begin back-tracking approximately 5 feet from the transceiver. To make necessary changes in the aim of the beam, use the three adjustment screws on the face of the transceiver. (See Diagram 4.) Note that the two upper alignment screws on the left and right side move the beam diagonally in intersecting directions. The screw at the bottom center moves the beam up and down. Familiarity with the directional effect of the screw adjustment will be extremely helpful in quickly lining up the system.

Once alignment has been completed at five feet, move back in the line-of-sight approximately ten feet from the transceiver. Again line up the beam so that the red LED pilot lamp lights when the reflector is in the line-of-sight. It may be necessary to make one or two more alignments at twenty-five and fifty feet before final alignment can be made.

At some point the final mounting position of the bounce-back reflector will be reached. At this point, it is essential to have the beam hit the bounce-back reflector directly on center. To make this final alignment, take a piece of Ademco No. 440 double stick tape and temporarily attach the bounce-back reflector to the wall. Repeating the alignment procedure described earlier, line up the beam so that the red LED lamp is ON.

Now remove the bounce-back reflector and find out how far in each direction - top, bottom, left, and right - the reflector can be moved without the red LED lamp going out. Using a pencil, mark these outer "beam-on" positions (See Diagram 5). Now, using these four points as guides, permanently attach the bounce-back reflector in the exact center of the "beam-on" pattern.
To make absolutely sure that the system has been aligned properly, use an opaque card to cover approximately 40% of the reflector in any given direction. The remaining uncovered area of the reflector should be sufficient to keep the red LED pilot lamp ON. If the lamp goes OUT, the beam is not yet centered properly and requires further adjustment. If the 40% coverage test can be completed in all directions, then the beam has been aligned properly and the installation is complete.

Complete the installation by installing the front outlet plate on the transceiver.
TROUBLESHOOTING Nos. 1355 & 1355-6

TROUBLE: 1. RED LED PILOT LAMP NOT LIT.

PROBABLE CAUSE

A. System not aligned properly (no bounce-back).
B. System is operating from standby battery only (No. 1355 only).
C. LED wires reversed.

REMEDY

A. Realign following the installation instructions.
B. Make certain that the output of the transformer is 12 volts A.C. and that this voltage is applied properly to the photoelectric. (Transformer must be installed in an outlet not turned off at night).
C. Black wire must be attached to terminal 4 and red wire must be connected to terminal 5.

TROUBLE: 2. SYSTEM WILL NOT SET UP.

PROBABLE CAUSE

A. The range limitation has been exceeded.
B. Transmitter source not operating.
C. Reflector plate and head plate reversed.
D. Customer has repositioned furniture which now blocks a portion of the beam.

REMEDY

A. Relocate the photoelectric.
B. Recheck wiring from drop pack to head.
C. Reflector must be installed at the "mirror" end of beam.
D. Either return furniture to its former position or re-locate photoelectric.

TROUBLE: 3. PROTECTIVE CIRCUIT WILL NOT SET UP WHEN ATTACHED TO THE PHOTOELECTRIC.

A. Protective circuit has been wired using incorrect terminals.
B. Relay in photoelectric not activating properly.

A. For closed circuit systems terminals 1 and 3 must be used (2 and 3 for closed circuit systems).
B. Obtain a return authorization from Ademco and return unit.

TROUBLE: 4. SYSTEM WILL NOT ALARM WHEN THE BEAM IS BROKEN.

A. Short in protective circuit wiring at photoelectric.
B. Relay in photoelectric not operating properly.

A. Check the protective circuit wires and make certain that an alarm is caused when they are removed from the photoelectric system.
B. Obtain a return authorization from Ademco and return unit for repair.
<table>
<thead>
<tr>
<th>TROUBLE: 5. SYSTEM OPERATES INTERMITTENTLY.</th>
<th>PROBABLE CAUSE</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A. Beam not being reflected at maximum strength.</td>
<td>A. Relocate photoelectric and reflector making certain that the LED above the Drop Pack remains lit even when 40% of the bounce-back reflector is covered.</td>
</tr>
<tr>
<td></td>
<td>B. Plug-in transformer not connected to a 24-hour outlet (No. 1355 only).</td>
<td>B. Make certain to plug the transformer into an outlet not turned off at night.</td>
</tr>
<tr>
<td></td>
<td>C. System &quot;just barely&quot; exceeds suggested range.</td>
<td>C. Relocate the photoelectric to come within the range limitation.</td>
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<tr>
<th>TROUBLE: 6. UNIT FAILS TO OPERATE PROPERLY (NO. 1355-6 ONLY).</th>
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<tbody>
<tr>
<td>Power to unit has been interrupted.</td>
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<tr>
<td>Check for 6V, DC at terminals 5 and 6. Be sure polarity is correct and power to unit is filtered. Correct condition as required.</td>
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