

Installing OmniSense S-900-1 Sensors on Gypsum Panels

Georgia Pacific's DensGlass Gold®¹ and other glass faced gypsum panels are commonly used as the exterior sheathing on many types of commercial construction. This application note describes OmniSense's recommended procedure for mounting the S-900-1 sensor to glass faced gypsum panels.

Required Tools

1. Variable Torque Cordless Drill/Driver with #2 square drive bit

Required Materials

1. OmniSense S-900-1 Sensor
2. 2" x 8" x 1/2" plywood – can be fire retardant treated
3. #10 x 3" bugle head stainless steel deck screw. Some sources are:
 - a. #10 x 3" - "Swaneze Beaver Bite Screw" made by Swan Secure Products. These can be ordered from www.mcmaster.com part number 900000A257
 - b. #10 x 3" - Grip Rite "Stainless Steel Exterior Screw" part number 3PGSTLS1 available from Lowes or Home Depot.
4. 11" Standard Cable Tie – Optional, only if sensor will be mounted to a surface that will be subject to hammer blows

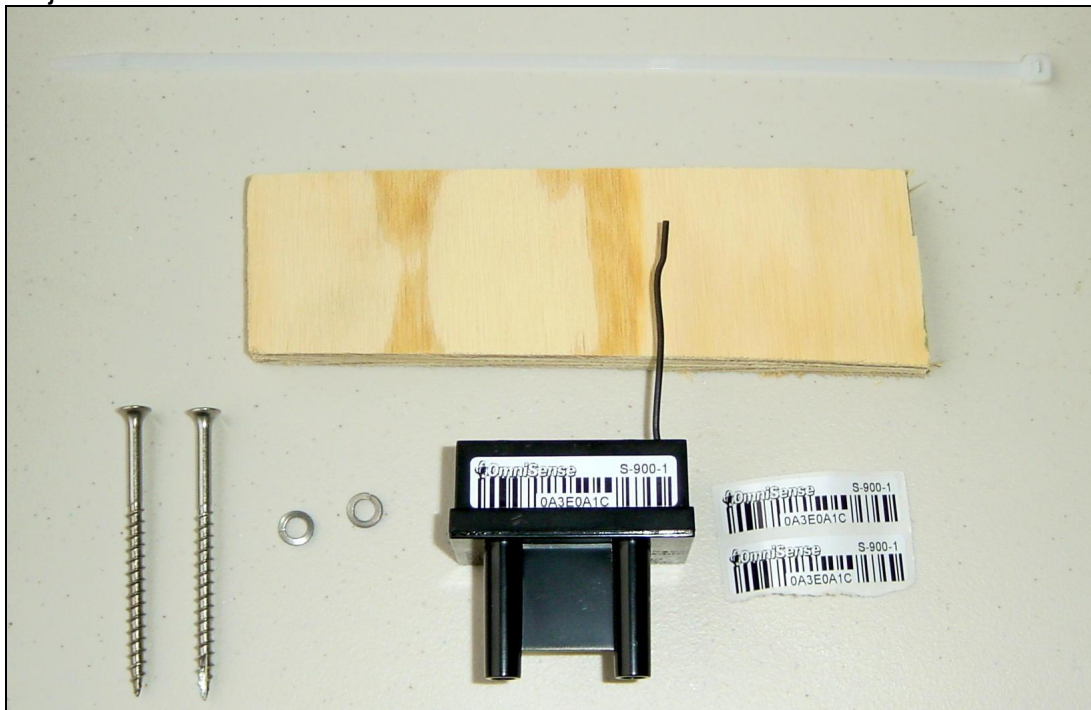


Figure 1 - Required Materials

¹ DensGlass Gold® is the registered trademark of Georgia-Pacific

Sensor Mounting Procedure

1. Remove sensor from its box and remove the included mounting screws.
2. Remove the split washers from the included mounting screws and install those split washers on the 3" stainless steel deck screw. **Caution – you MUST use the supplied split washers! Failure to do so will result in faulty sensor Moisture Content readings as temperature changes cause thermal expansion and contraction of the mounting hardware.**
3. Place the plywood flush against the inside face of the glass faced gypsum panel exterior sheathing. Optimal mounting location and orientation for a window is shown in Figure 3 although variation in location due to space constraints is common.
4. Using the #10 x 3" stainless steel deck screw with the split washer under the screw head, screw the sensor to the plywood as shown in Figure 2 while pressing the plywood firmly against the gypsum panel. Use a "mid-range" torque setting on the drill/driver. Over torque will damage the sensor and under torque can result in faulty sensor Moisture Content readings.
5. Optionally secure the zip tie around the sensor as shown in Figure 2 – this is done to ensure the battery will not be ejected if the surface the sensor is mounted on is subjected to high G force impacts such as hammer blows.
6. For best wireless range and reception straighten the antenna and then bend it such that it points skyward as shown in Figure 2.
7. Using the supplied ID labels record the Sensor ID and the sensor location.

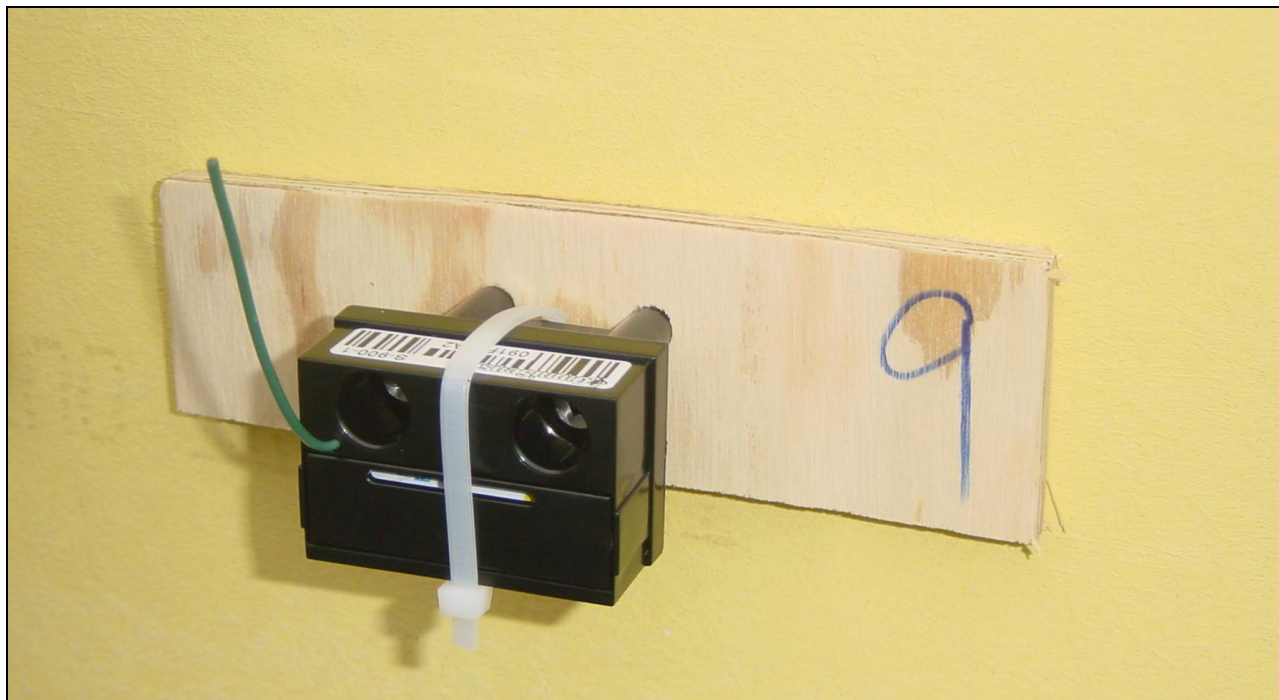


Figure 2 - Properly Mounted S-900-1 Sensor



OmniSense

*Wireless Sensor Networks
for Facility Monitoring*

Prevent Structural Damage Before it Starts

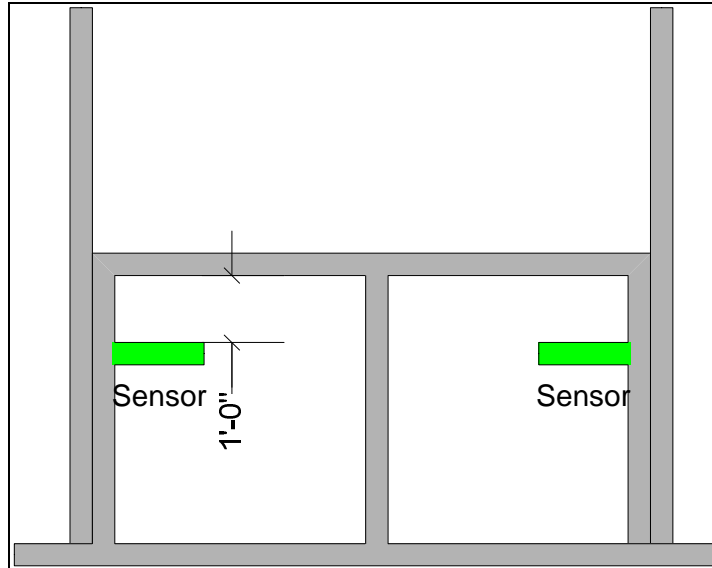


Figure 3 - Optimal Sensor Mounting Location

Results of Sensor Mounting Procedure

Sensors mounted using this method have been tested using a pull test and successfully withstood 70 lbs of pulling force perpendicular to the gypsum panel without movement or damage.

The use of the plywood interface allows easy mounting without concern about stripping out the deck screw in the soft gypsum panel as it is the plywood, not the gypsum, taking the full force of the torque.

The use of this mounting method allows the sensor to measure and detect moisture on the exterior and interior face of the gypsum panel. Thus if water penetrates the weather barrier and travels down either the exterior or interior face of the gypsum panel it can be detected. The plywood has the added benefit of being highly moisture absorbent and by blocking the "leak zone" below the window will likely catch and absorb moisture, if present, in that area.

Document Revision History

| Date | Revision | Description |
|----------|----------|-------------|
| 10/22/05 | 1.0 | Originated |
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