

Micron Optics, Inc. os4100 Temperature Compensation Sensor Installation Procedure

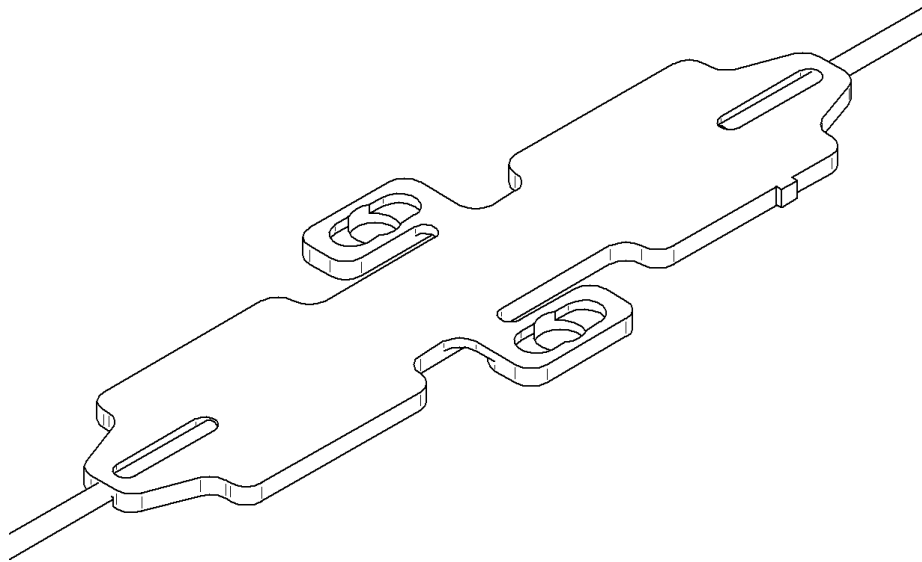


Figure 1 – os4100 Temperature Compensation Sensor

Introduction:

An os4100 temperature compensation sensor may be attached to a variety of surfaces using screws, spot welding, or epoxy bonding.

For all mounting methods, the mounting surface should be clean and flat. If the mounting surface is not smooth and flat, stress may be applied to the sensor frame during the mounting process negatively impacting sensor performance. Surface preparation and cleaning is especially important when epoxy is used to mount the sensor.

In many applications additional protection may be needed to protect the sensor and fiber from the weather and physical damage.

1. Screw Mount

The os4100 temperature compensation sensor may be fastened to a surface using two screws. The sensor provides two holes .075 inch [1.9 mm] in diameter as shown in Fig. 2. Use screw size 1-72 or M1.6.

- 1.1. Mounting surface must be reasonably flat and free of surface defects. The surface should be free of rust, scale, oxides, loose paint, or other coatings. Start by degreasing the surface with a degreaser compatible with the specimen. Abrade the surface as necessary to remove surface irregularities and contamination. It may be necessary to start with a coarse paper or grinder if the surface is very rough. Continue abrading surface with 220 grit silicone carbide paper to remove any surface defects, scale, and oxide. Wipe the

surface clean with a compatible solvent and inspect the surface to ensure that all surface defects have been removed. Thoroughly clean surface using a clean cloth saturated with a compatible solvent.

1.2. Drill and tap two holes in the test specimen using the spacing shown in Fig. 2.

1.3. Lay sensor on surface with logo facing up. Insert two screws and tighten.

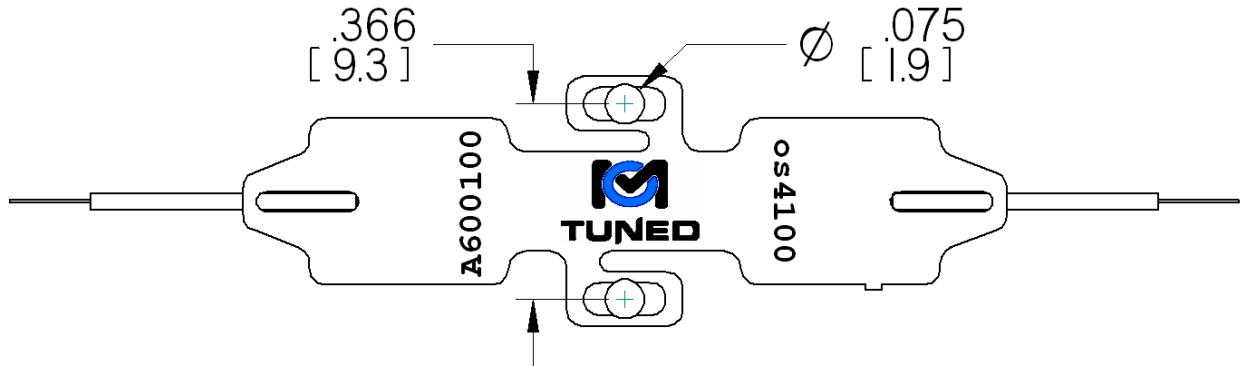


Figure 2 – Sensor Mounting Holes

2. Spot Weld Mount

The os4100 temperature compensation sensor may also be fastened to steel surfaces using spot welds. A portable capacitive-discharge spot welder having 50 watt-seconds minimum energy rating is recommended for best results. The spot welder should be equipped with a small welding electrode having a spherical tip measuring approximately .030 inches [.76 mm] in diameter. It is often helpful to practice weld technique using a blank os4100 sensor. Best results are usually obtained with a setting of 50 watt-seconds and firm pressure on the electrode. After making a practice weld, pull the sensor off of the surface. A properly formed weld will result in a small piece of the surface or sensor to break away. If needed, adjust the weld energy and electrode pressure until a satisfactory weld is obtained. (Contact Micron Optics for Welder recommendation)

2.1. Mounting surface must be reasonably flat and free of surface defects. The surface should be free of rust, scale, oxides, loose paint, or other coatings. Start by degreasing the surface with a degreaser compatible with the specimen. Abrade the surface as necessary to remove surface irregularities and contamination. It may be necessary to start with a coarse paper or grinder if the surface is very rough. Continue abrading surface with 220 grit silicone carbide paper to remove any surface defects, scale, and oxide. Wipe the surface clean with a compatible solvent and inspect the surface to ensure that all surface defects have been removed. Thoroughly clean surface using a clean cloth saturated with a compatible solvent.

- 2.2. Position the sensor on the surface to be tested. The sensor may be held into position with cellophane tape. When applying tape, do not cover weld pockets.
- 2.3. Weld the sensor in place at the 4 positions shown in Fig. 3.

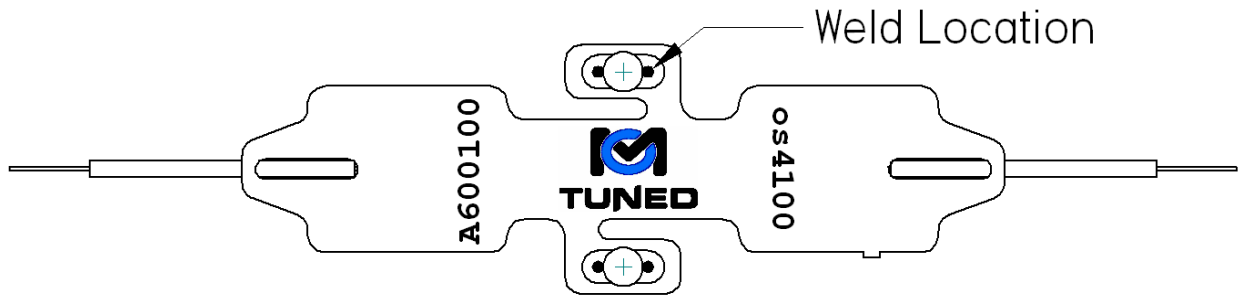


Figure 3 – Weld Location

3. Epoxy Mount

The os4100 temperature compensation sensor may also be fastened to a variety of surfaces using epoxy. When using epoxy, it is important that epoxy contacts the sensor only on the area indicated in Fig. 4.

- 3.1. Mounting surface must be reasonably flat and free of surface defects. The surface should be free of rust, scale, oxides, loose paint, or other coatings. Start by degreasing the surface with a degreaser compatible with the specimen. Abrade the surface as necessary to remove surface irregularities and contamination. It may be necessary to start with a coarse paper or grinder if the surface is very rough. Continue abrading surface with 220 grit silicone carbide paper to remove any surface defects, scale, and oxide. Wipe the surface clean with a compatible solvent and inspect the surface to ensure that all surface defects have been removed. Continue to abrade surface with 400 grit silicone carbide paper to polish the surface. Thoroughly clean surface using a clean cloth saturated with a compatible solvent.
- 3.2. Mix epoxy according to manufactures instructions. Apply a thin film of epoxy to the epoxy application area as shown in Fig. 4. Be careful not to allow epoxy to come in contact with other areas of the sensor. Position the sensor on the specimen surface. Cellophane tape may be used to hold sensor in position until clamp is applied. Place a strip of polyethylene film over the sensor to prevent any epoxy that is squeezed out from under the sensor from adhering to the clamp pad.
- 3.3. Place a soft pad (Durometer A40-60, 1/4" minimum thickness) over the sensor installation. If needed place a backup plate over the pad to evenly spread clamping pressure over the sensor area. Apply clamping force to a pressure of approximately 10 psi. Make sure the sensor is clamped with uniform pressure over the entire sensor.

3.4. Allow epoxy to cure for a sufficient amount of time before removing clamp.

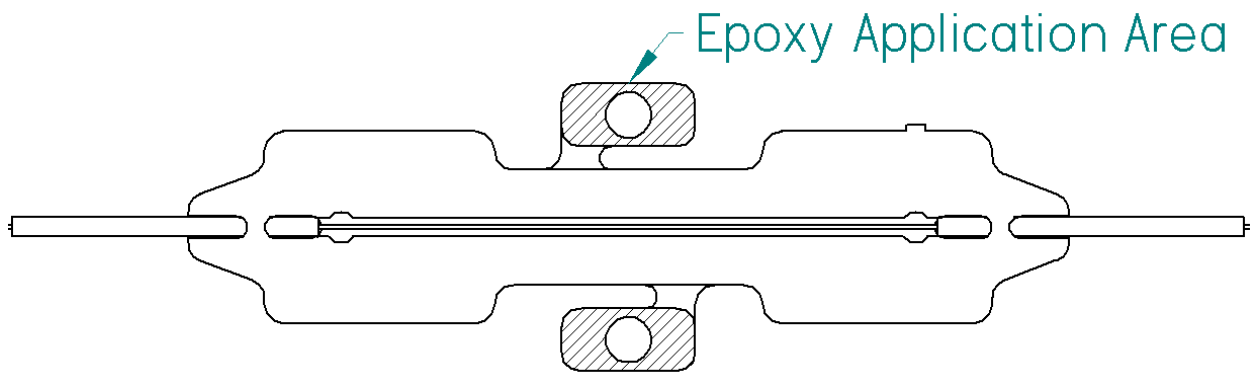


Figure 4 – Sensor Bottom View