Product mounting advice

How to install Sensolus products

Sensolus product mounting advice

This document is for all installers of our products and gives an overview and advice for the mounting options of standard Sensolus products.

Choosing the right mounting method is important to make sure the product doesn't get damaged or falls of.

Mounting options per product

Product	Rivets	Bolts/screws	Glue	Double sided tape	Tie wraps	Holder	Magnet mounting kit
Battery powered trackers							
• TRACK 1000	✓	✓	✓	✓	✓		✓
• TRACK 1020	✓	✓			✓		
• TRACK 1030	✓	✓			✓		
• TRACK 1100	✓	✓	✓	✓	✓		✓
• TRACK 1140	✓	✓	✓	✓	✓		✓
• TRACK 1110	✓	✓	✓	✓	✓		
• TRACK 1130	✓	✓	✓	✓	✓		
• TRACK 1101	✓	✓	✓	✓	✓		✓
• TRACK 1141	✓	✓	✓	✓	✓		✓
Vehicle trackers							
• TRACK 1203			✓	✓	✓		
• TRACK 1210	✓	✓	✓	✓	✓		✓
Tag trackers							
• TAG 2001	✓	✓	✓	✓	✓		
• TAG 2002			✓	✓		✓	
• TAG 2002	✓	✓	✓	✓	✓		
• TAG 2007			✓	✓			
Sensors							
• SENSE T 4000			✓	✓		✓	
• SENSE HT 4050			✓	✓		✓	
• SENSE M 4201			✓	✓		✓	
• SENSE T 4004			✓	✓		✓	
• SENSE FL 4300			✓	✓	✓	✓	✓
Infrastructure							
• GB 3000	✓	✓	✓	✓			
• ZA 3500		✓	✓	✓			
• ZA 3505	✓	✓	✓	✓	✓		✓
• ZA 3510		✓		✓	✓		✓

Rivets

We recommend rivets because they are easy in installation and strong.

Use the appropriate size and length of the rivets. So how to choose the correct dimension of your rivets?
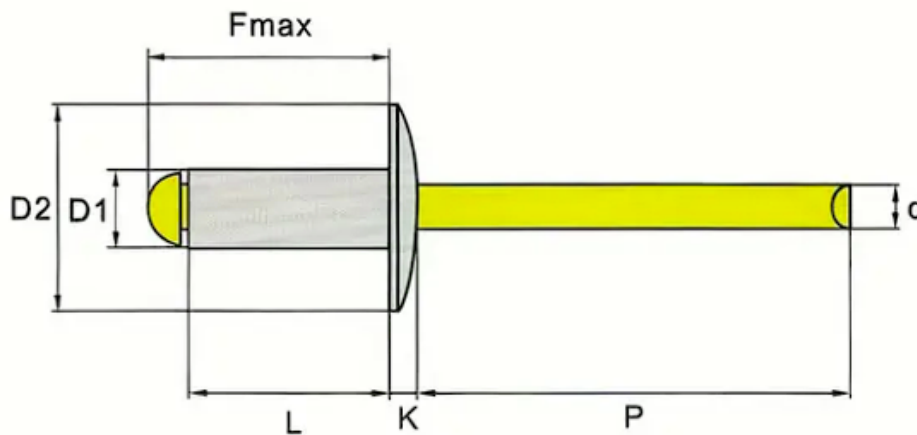
Rivet dimensions

Figure 1: Rivet dimensions

D2: 12-14 mm is a good head diameter for 1100/1101 (dome or flat head)

D1: 5-6 mm is a good diameter for 1100/1101

L: Rivet body length (decision depends on S)

S: Grip range Rivet manufacturers give you the dimensions in D1 x L (e.g. 6 x 20). The rivet manufacturer gives the grip range for the different rivet dimensions that he provides,

> e.g. GESIPA Blind rivets alu/steel dome head 6 x 20 has a Grip range of 13,00 - 15,00 mm

Tracker Thickes 8mm

Asset material thickness

Drillhole diameter: D1 + 0,1mm

d: Mandrel diameter (needs to fit in your tool, a lot of rivet manufacturer/dealers don't have/show this information)

For example: The length of the rivet should be equal to the thickness of both objects you are fastening the tracker to (mounting holes height + thickness material), plus 1.5 times the diameter of the rivet's stem.

Do not use rivets with a smaller diameter, this will not firmly attach the tracker. Do not use rivets with bigger diameter as you might damage the casing.

The way to find your rivets

- Choose the correct material of the rivet body
- Determine the correct grip range (S) by adding tracker material thickness 8mm + material thickness of the asset
- Choose your preferred rivet body diameter (5 or 6 mm)
- Choose your preferred rivet head diameter (12 or 14 mm)
- Make sure the mandrel diameter fits into your rivet tool. If you don't know the maximum mandrel diameter that your tool can handle, you can determine that by sticking drills with different diameters into your rivet tool. There are often values on the rivet inserts of the riveting tool. These usually refer to rivet body diameters. However, since there are hundreds of different rivet variants on the market and almost every manufacturer does what they want, you should ignore this information and follow the recommendations in this document. Measuring is the best way. Other than others, GESIPA gives you the diameter of the mandrels).
- Make sure you have enough drills with correct diameter, it can happen that you will break one or the other drill (rivet body diameter + 0,1mm (e.g. 6,1mm).

GESIPA – The experts in blind riveting: Standard blind rivets

> ℹ️ GESIPA is a good manufacturer of high quality rivets and has a wizard on their website to

Tracker mount hole Diameters and height overview

Product	Distance between mounting holes	Rivet diameter	Height of mounting holes
TRACK 1110	90 mm	5 mm	5 mm
TRACK 1130	125 mm	5 mm	5mm
TRACK 1100/1101/1140/1141	115 mm	6 mm	8 mm
SENSE FL 4300	111,5 mm	4 mm	5 mm
TAG 2001	49 mm	4 mm	3 mm
TAG 2006	60 mm	4 mm	7 mm
GB 3000	84 mm	4 mm	2 mm
ZA 3505	115 mm	5 mm	8 mm

Rivet material

Stainless steel

Use Stainless steel rivets when mounting trackers on outdoor assets.

> ⚠ Do not use stainless steel rivets on aluminium assets. They cause corrosion on the asset .

Steel

Steel rivets can be used for **indoor purposes** when mounting on steel assets.

> ⚠ Do not use steel rivets on aluminium assets. They can cause corrosion on the asset.

Aluminium

Use aluminum rivets for mountin the tracker on materials such as aluminum, fabrics, plastics, leather,

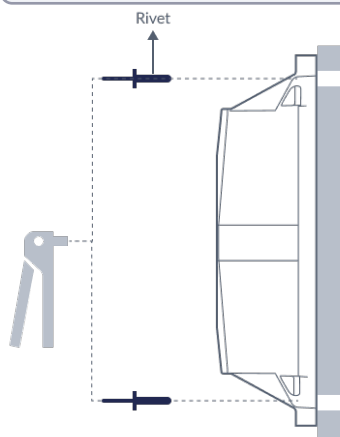> ⚠ Using aluminium rivets on steel can cause the rivet to corrode.

Figure 2 Mounting with rivets

Bolts and screws

Bolts and screws are harder to install than rivets because you need access to both the bolt and the nut. This is not always possible, for example when installing tracker on sidewall of a large container. The advantage of bolts and screws is that it is easier to remove them, rivets/glue/tape is harder.

Using glue in combination with bolts and screws is common practice but requires more work.

1. Use the appropriate size of screws, see table below. If you don't use the correct sizes you risk damaging the tracker or having an unsafe installation.
2. It is recommended to use thread locking glue on the bolts. Thread locking glue is used to prevent bolts coming lose due to vibrations. Pay additional attention to this if you are installing the tracker on a vibrating asset. We recommend Loctite Thread Locker Blue 242.
3. Protect the tracker casing appropriately: protect the casing with a washer and use a spring washer to mitigate the effects of vibration and temperature variations.
4. Do not apply more torque than found in the below table. You risk to damage the casing if you exceed it.

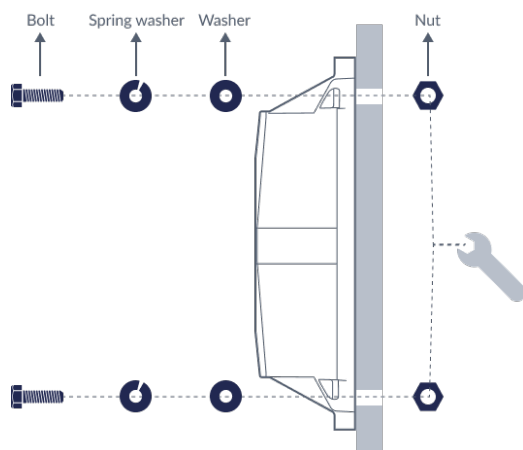| Product	Distance between holes	Bolt type	Height of mounting holes	Max applied torque
TRACK 1110	90 mm	M5	5 mm	2.5 Nm
TRACK 1130	125 mm	M5	5 mm	2.5 Nm
TRACK 1100/1101/1140/1141	115 mm	M6	8 mm	3.5 Nm
SENSE FL 4300	111,5 mm	M4	5 mm	3 Nm
TAG 2001	49 mm	M4	3 mm	2.5 Nm
TAG 2006	60 mm	M4	7 mm	
GB 3000	84 mm	Comes with the product		
ZA 3505/3510	115 mm	M6	8 mm	3.5 Nm
ZA 3500	86 mm	M4	/	/

Figure 3 Mounting with bots and screws

Double sided tape

Double sided tape is easy to install and does not damage the asset unlike bolts/rivets. However you need to be sure both tracker and the surface of the asset are clean. Double sided tape is strong but not so resistant to force applied sideways. Make sure the double sided tap only covers the back of the product.

Avoid using double sided tape to attach a tracker or tag on an asset that is regularly exposed to vibrations or shocks.

Most products can be mounted with double sided tape.

Recommended tapes:

- 3M Acrylic Plus Tape Series PT1000 :   https://www.3m.com/3M/en_US/p/d/b40065692/
- 3M™ VHB™ Tape GPH-110GF :   https://www.3mbelgie.be/3M/nl_BE/p/d/b40065748

Follow these steps when applying double sided tape:

1. Make sure the surface of the asset and device are clean and dry.
2. Sand the surface of the asset.
3. Sand the backside of the device.
4. Apply the double sided tape.
5. Press the device firm onto the asset for a minute.
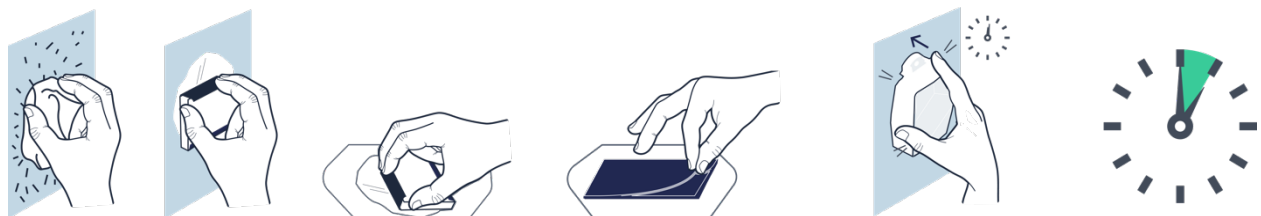6. Let it dry for at least 1 hours before moving the asset.

Figure 4 Mounting with double sided tape

⚠ TRACK 1020 and TRACK 1030 cannot be mounted with double sided tape. The anti-tamper button needs to be pushed continuously to ensure proper working of the tracker.

⚠ TAG 2007 can be mounted with double sided tape but be carefull not to tape the battery

sloth to the asset so you can still open it to replace the batteries

ℹ SENSE FL 4300 and GB 3000 already have the double sided tape from the factory.

Tie wraps

We recommend metal tie wraps with a width of 5-6 mm.

In some cases, plastic tie wraps are also useful: if you need to remove the trackers often and fast for example.

Take into account that tie wraps can be easily cut to take away the tracker

Product	Tie wrap width
TRACK 1110	6 mm
TRACK 1100/1101/1140/1141	5 mm
SENSE FL 4300 / TAG 2001	4 mm
TAG 2006	4 mm
ZA 3505	6 mm

⚠ TRACK 1020 and TRACK 1030 cannot be mounted with tie wraps. The anti-tamper button needs to be pushed continuously to ensure proper working of the tracker.
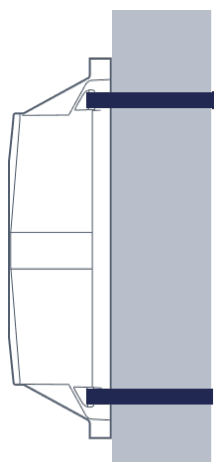

Figure 5 Mounting with tie wraps

Glue

Glue can be very strong but also once it is glued, it is very hard to remove the device. You will probably damage the device and break warranty when removing a glued device.

Avoid gluing a tracker or tag on an asset that is regularly exposed to vibrations or shocks.

Our devices are best paired with these recommended glue types.

Product	Glue type
TRACK 1100/1110/1140/1101/1141	MS Polymeer
SENSE FL 4300	MS Polymeer
SENSE T 4000/ SENSE T 4004 / SENSE M 4201	Polyurethane glue
TAG 2001	MS Polymeer
TAG 2002	Polyurethane glue
TAG 2006	MS Polymeer
TAG 2007	MS Polymeer

Apply these steps when using glue

1. Make sure the surface of the asset and device are clean and dry.
2. Sand the surface of the asset.
3. Sand the backside of the device.
4. Apply the glue to the sanded surface.
5. Press the device firm onto the asset for a minute.
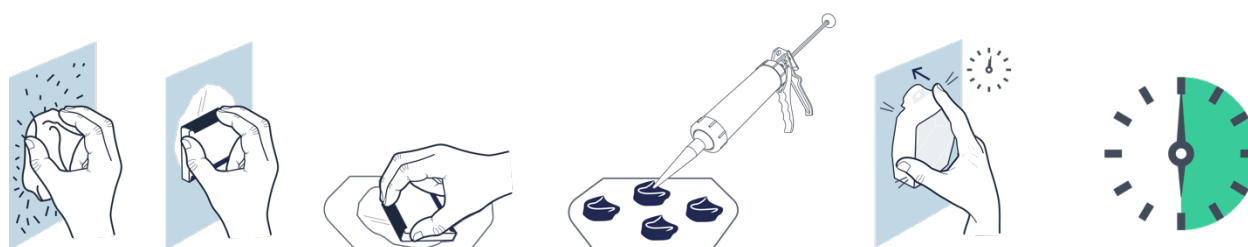6. Let it dry for at least 6 hours before moving the asset.

Figure 6 Mounting with glue

⚠ TRACK 1020 and TRACK 1030 cannot be mounted with glue. The anti-tamper button needs to be pushed continuously to ensure proper working of the tracker.

Magnet mounting kit

Magnet mounting is the perfect solution for magnetic surfaces when you require the flexibility to easily attach and detach the tracker. However, it's important to note that this method is best suited for controlled environments. In uncontrolled areas, there is a risk of malicious individuals removing the tracker, as well as potential damage to the surface of the asset.

We offer a standard magnet mounting kit for these products.

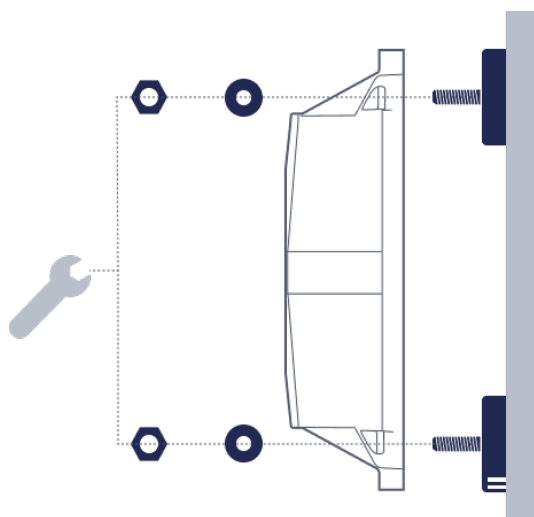| Product	Description	Sensolus reference
TRACK 1000/1100/1101/1140/1210/1141	Magnet mounting kit for 1 TRACK 1100/1101/1140 tracker	MNT MAG 8110
SENSE FL 4300	Magnet mounting kit for SENSE FL 4300	MNT MAG 8111
ZA 3510	Magnet mounting kit for 1 TRACK 1100/1101/1140 tracker	MNT MAG 8110

Figure 7 Mounting with magnet kit

⚠ All other products cannot be mounted with a magnet mounting kit.

Sensor and tag holders

Sensolus offers a holder and sticker kit to mount the sensors.

Use the holder if you can drill holes in the asset. The holder with screws is the safest mounting method for the listed sensors. Glue and double sided tape can react to heavy heat or cold temperatures.

You can mount the sensor using only the sticker (see mount with double sided tape). Or you can use the holder. You can mount the holder with double sided tape (see mount with double sided tape) or screws.

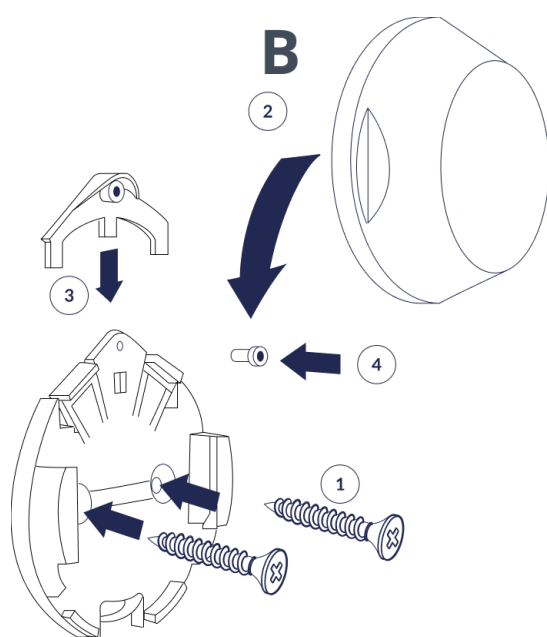| Product	Description	Sensolus reference
• SENSE T 4000 • SENSE T 4004 • SENSE HT 4050 • SENSE M 4201 • TAG 2002	ELA sensor mounting holder	MNT ELA 8140

Figure 8 Mounting with holders

Mounting advice for trackers on specific materials

Vibrating plastics in outdoor conditions

Plastic may deteriorate over time from exposure to weather and vibrations. By using a combination of glue and bolts or rivets, you can securely fasten the device to the asset.

Plastic boxes

Plastic boxes are handled by people, the stack them, let them drop sometimes, load them onto carriers and so on. Attaching trackers or Bluetooth tag trackers seems easy by gluing them. Check the material of the plastic box and look for a glue or silicone that is suited for the material. When glued, wait for at least 6 hours to handle the plastic box.

Metal in outdoor conditions

Trackers

We recommend to use mechanical mounting on metal in outdoor conditions. Rivets or blots and screws are a good solution. Please check the mounting advice for rivets and bolts.

Tags

Glueing Bluetooth tag trackers onto metal assets works fine. Use of correct glue and respect drying times is essential. You can find the correct type of glue and drying times in the glue chapter of this document.

Fill Level Sensor Installation Instructions

Mounting Overview

The fill level sensor can be securely mounted using **double-sided tape** or **industrial-grade polymer glue**. Proper adhesion and sealing are critical to ensure accurate readings and long-term durability, especially in environments exposed to moisture.

Tools and Materials Needed

- Clean cloth or isopropyl alcohol wipes
- Industrial-grade polymer glue (if chosen)
- High-quality waterproof double-sided tape (if chosen)
- Sensor unit
- Personal protective equipment (if using glue)

Installation Steps

1. **Surface Preparation**
   - Clean the mounting surface thoroughly to remove any dust, oil, or moisture.
   - Ensure the surface is smooth and dry before proceeding.

2. **Apply Adhesive (Choose One Method)**

   Option A: Double-Sided Tape

   - Cut the tape to match the size of the sensor's mounting surface.
   - **Important:** Apply the tape so it covers **100% of the mounting area**.
   - Press the tape firmly onto the back of the sensor.

   Option B: Industrial-Grade Polymer Glue

   - Apply the glue evenly across the **entire mounting surface** of the sensor.
   - **Important:** Avoid gaps or air pockets—coverage must be complete for a secure bond.

3. **Mount the Sensor**
   - Press the sensor firmly against the mounting surface.
   - Hold or support the sensor for the adhesive's recommended curing or bonding time.

4. Seal the Lens Area (If Applicable)
   o If mounting on the **lens side**, ensure that **no water can enter** between the lens and the surface.
   o Use additional sealing tape or waterproof barrier if necessary.
   o Recheck to confirm the lens is tightly sealed and protected from moisture ingress.

5. Final Check
   o Inspect the bond to ensure the sensor is flat and secure.
   o Allow glue to fully cure before exposing the sensor to operational conditions (refer to manufacturer's glue curing time).

Tips for Best Results

- Apply the sensor in dry conditions to avoid condensation during installation.
- Avoid repositioning the sensor once adhered.
- For outdoor or high-moisture applications, waterproof double-sided tape is preferred unless glue offers a more permanent solution.