

Recipients :	All Markets
Release date :	June 19 th , 2025
Update Purpose :	Initial release
Object :	SE5000 Smart 2, positioning of External GNSS Antenna

The Smart 2 tachograph introduced by Annex 1C will transition to **OSNMA** or “Final” for all trucks **registered** after a certain date. This deadline is currently set to no earlier than December 2025, as communicated by DGMove and CORTE May 21st, 2025.

For such OSNMA tachographs to reliably receive an OSNMA Authenticated signal, the use of an external GNSS antenna is mandatory.

For that reason, Stoneridge created new variants of the SE5000 Smart 2 **OSNMA** tachographs, equipped with a FAKRA-C connector. It is **MANDATORY** to install those Tachographs with and only with an **EXTERNAL GNSS Antenna**.

For aftermarket, these are variants 37 and 38 (ADR). On the contrary, if you are using a Tachograph without FAKRA connector, the unit must remain *Transitional*. Please refer to SIL24_007 for these variants installation guidelines.

Guidelines for fitting a SE5000 Smart 2 OSNMA & its External GNSS Antenna

Key success points:

1. Tachograph position can be standard
2. Use Stoneridge recommended GNSS Antenna
3. GNSS Antenna must be facing the sky
4. WARNING – Heated windshields
5. Routing of Antenna cable to the tachograph is sensitive to interference and bending radius
6. Successful installation will report a HDOP of 0.9 or less on Optimo workshop tool or equivalent
7. Efficient OSNMA Authentication requires the Tachograph UTC clock to be set by the second
8. The OSNMA Public Keys must be up to date in the tachograph
9. If the installation is tested in a hangar, use of a ROGER GNSS repeater is mandatory
10. After installation, control the OSNMA Authentication

1. Tachograph position can be standard

Tachograph variants with a FAKRA connector can be installed in any position. For variants with internal GNSS antenna, please refer to SIL24_007.

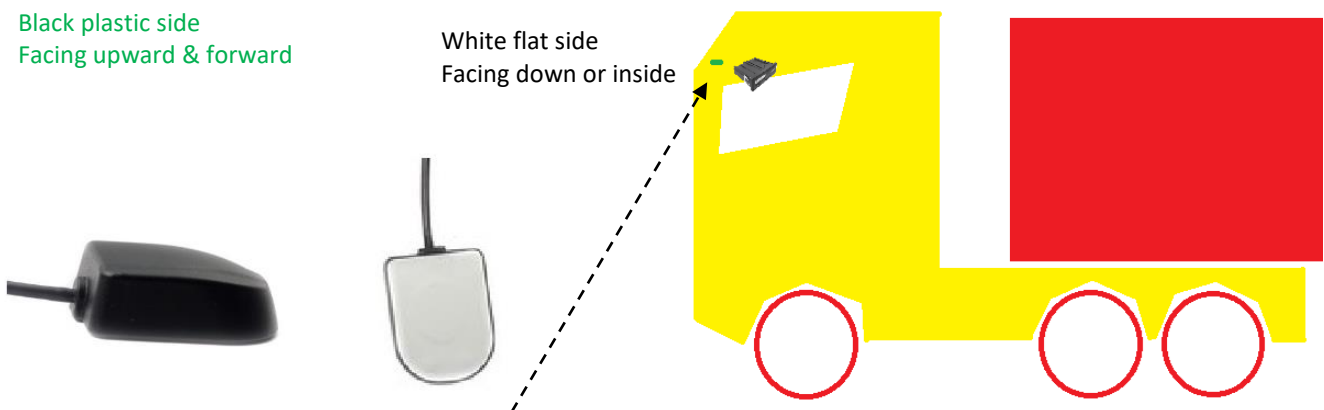
2. Choice of GNSS Antenna

For best performance, use STONERIDGE supplied External GNSS Antenna.

3. GNSS Antenna must be facing the sky

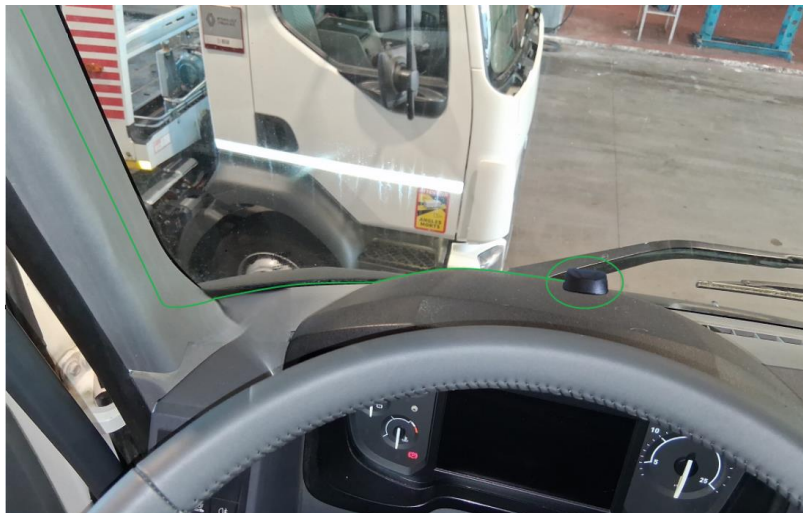
The Stoneridge recommended antenna is IP67. So, it can be roof-mounted, using its integrated magnet.

If mounting the antenna inside, use double-sided tape to fix the antenna in a position where the black plastic side is facing forward and upward. Avoid placing metal items above the antenna, especially if less than 8 cm away from the antenna. But you can install the antenna **on top** of a metal surface.



For instance, you can mount the antenna **in** the upper shelf, behind the tachograph.

If your testing shows this is not sufficient for good reception, optimal location is on the dashboard “horizontal” surface, as pictured below. Ideally, place it in between the A-pilar and any ECU mounted in the center. So, above the steering wheel:



4. WARNING – Heated windshields

Heated windshields may cause reception disturbances. Do NOT install the antenna **on** a heated windshield. The closer the antenna is to the heated windshield wiring-matrix, the more it may disturb the signal reception.

Installers must check the reception in different locations: unheated area of the windshield, or not directly on the heated windshield, as pictured above.

5. Routing of Antenna cable to the tachograph is sensitive to interference and bending radius

Respect a bending radius of minimum 25mm.

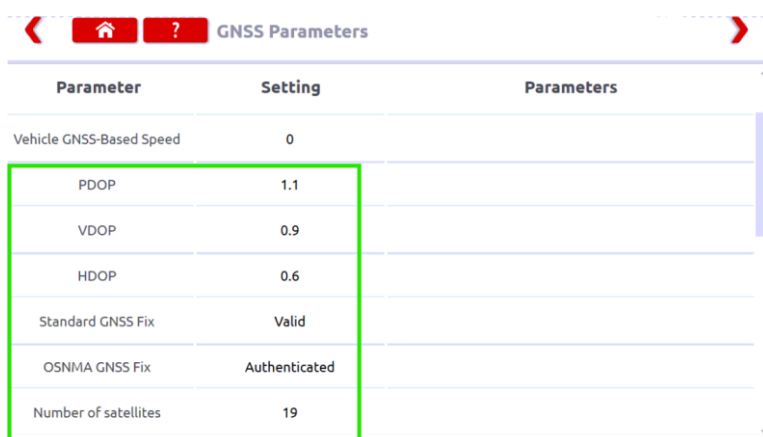
Do not route the cable alongside other coaxial cables.

Avoid routing the cable nearby potentially interfering ECUs, such as:

- Other active antennas
- Tolling devices,
- Telematic units,
- WLAN routers in Busses,
- Radios, Microwave, etc...

6. Successful installation will report a HDOP of 0.9 or less on Optimo workshop tool or equivalent

For Workshop Technician to evaluate the instalation, insert a card in drawer 1 and verify HDOP value and the number of satellites seen by the tachograph, via Optimo **MKIII** Application, **Read & Modify**:



Parameter	Setting	Parameters
Vehicle GNSS-Based Speed	0	
PDOP	1.1	
VDOP	0.9	
HDOP	0.6	
Standard GNSS Fix	Valid	
OSNMA GNSS Fix	Authenticated	
Number of satellites	19	

7. Efficient OSNMA Authentication requires the Tachograph UTC clock to be set by the second

Always set the workshop calibration tool to UTC, and by the second. This ensures the correct UTC time is pushed to the Tachograph, providing faster time to first fix, TTFF.

Especially, an internal clock more that 120 seconds from actual UTC time will by law never acquire an Authenticated OSNMA fix.

8. The OSNMA Public Keys must be up-to-date in the tachograph

Since May 2025, Stoneridge SE5000 Smart 2 tachograph Revision F are produced with the OSNMA Public Keys integrated.

The Public Keys may change at any moment decided by EU-SPACE, but this is not foreseen to happen any time soon.

For tachographs produced before May 2025, Stoneridge recommend to not set the VUs as OSNMA but keep them as *Transitional*. However, Public keys will still be downloaded from the satellites.

Also, if the Public Keys were to change in the future, they are transmitted by the satellites to the Tachographs every 6 hours at 00:00, 06:00, 12:00 and 18:00 UTC. Consequently, a VU would not be able to acquire an Authenticated OSNMA fix for up to 6 hours in the worst case scenario. In such case, a unit from stock installed in-between those times, can leave the workshop with no authenticated OSNMA fix, provided HDOP is below 0.9.

9. If the installation is tested in a hangar, use of a ROGER GNSS repeater is mandatory

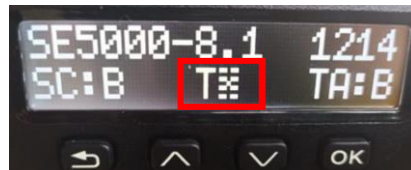
Building facilities will at best attenuate if not block the GNSS signal. In particular, Authenticated OSNMA signal requires a much stronger signal than normal GNSS fix.

So, even those workshops used to calibrate Smart 1 and *Transitional* tachographs inside their facility will now require a GNSS ROGER repeater. Or they will have to bring the vehicle outside.

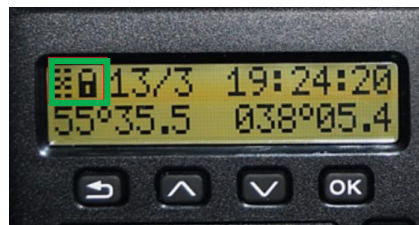
10. Control the OSNMA Authentication

To confirm you are correctly receiving an OSNMA authenticated signal, please check the following:

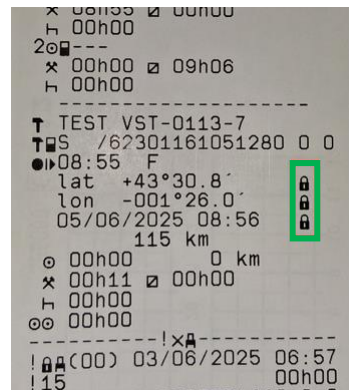
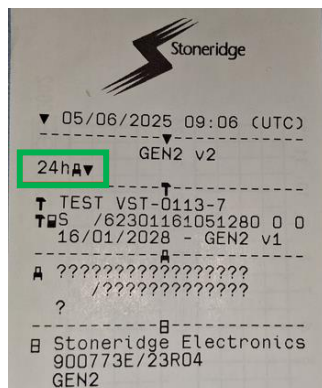
- VU **Version INFO** Screen does **not** show anymore the “T” for *Transitional*



- And VU **GNSS INFO** Screen displays a padlock next to the Latitude/Longitude position



- Or VU **24h Print-out** shows padlocks next to at least one Latitude/Longitude position



- Or Optimo **GNSS Test** does show an Authenticated OSNMA GNSS Fix

