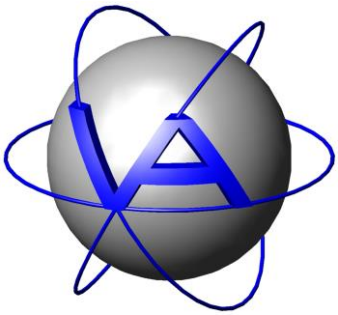

Project:

TT5 Globalstar

Trap Transmitter

Title:

User's Manual

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Issue	Date	Item(s) Affected	Description
1	05.06.2020	-	Initial Issue
2	18.06.2020	Chapter 6	Added chapter 6

1 Table of Contents

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1 The Transmitter

The Trap Transmitter TT5 is a small grey box as shown in Figure 1. The top side is labelled "TOP" and must not be covered or painted since this would obstruct satellite communication. In the corners you find several mounting holes to attach the TT5 to a mounting structure. **Make sure that the TOP-side points away from the mounting structure and towards the sky.**

The sticker on the top of the TT5 gives you information about the 'ESN', ID and 'CH'. ESN is the communication ID of the transmitter. Write down this number as this will help you identify the transmitter once you receive status or alarm messages. The ID is the serial number of the TT5 and can also be used to identify the transmitter. CH is the transmission channel of the Globalstar transmitter. Transmission channel is either A (North America) or C (rest of the world).

On one side there is a patch of hook-and-loop tape. Here you can attach the standby magnet which is used to switch the transmitter ON (Normal Mode, magnet is removed) or OFF (Stand-By Mode, magnet is attached).

The trigger magnet is located opposite of the standby magnet. This magnet is the connection between trap and trap transmitter.

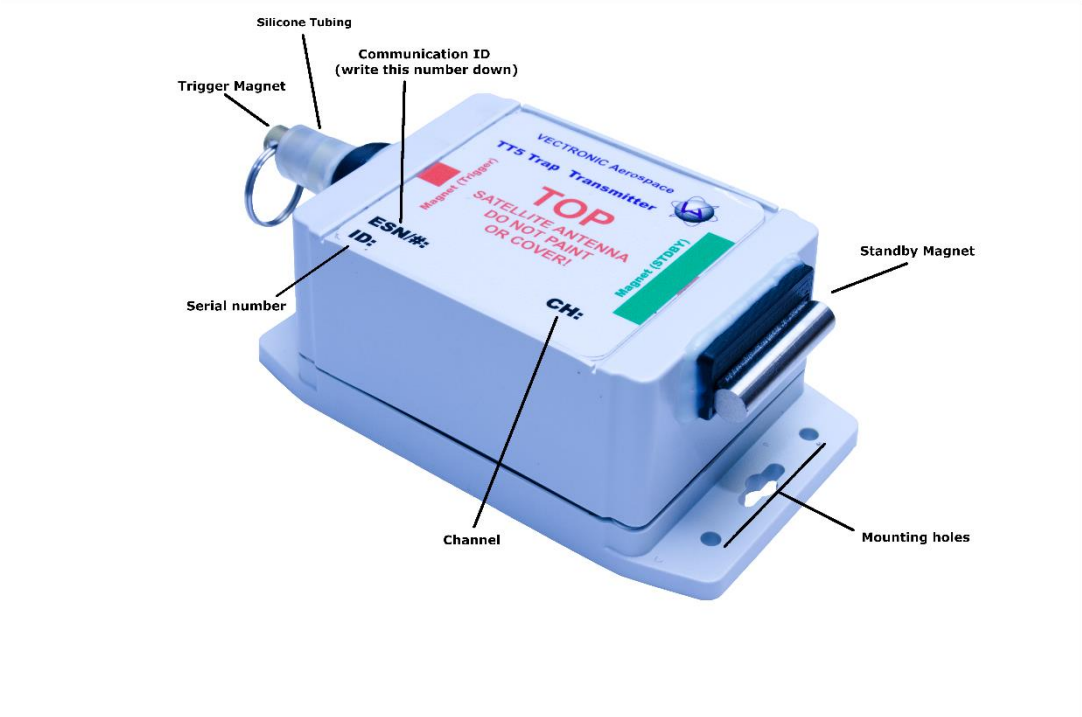

Figure 1: TT5 Trap Transmitter in Stand-by mode

2 Mounting Instructions

2.1 Connecting the trap

The trigger magnet consists of an elongated magnet that reaches into the TT5 body. To trigger an alarm, it has to be pulled out of the box (Figure 2).

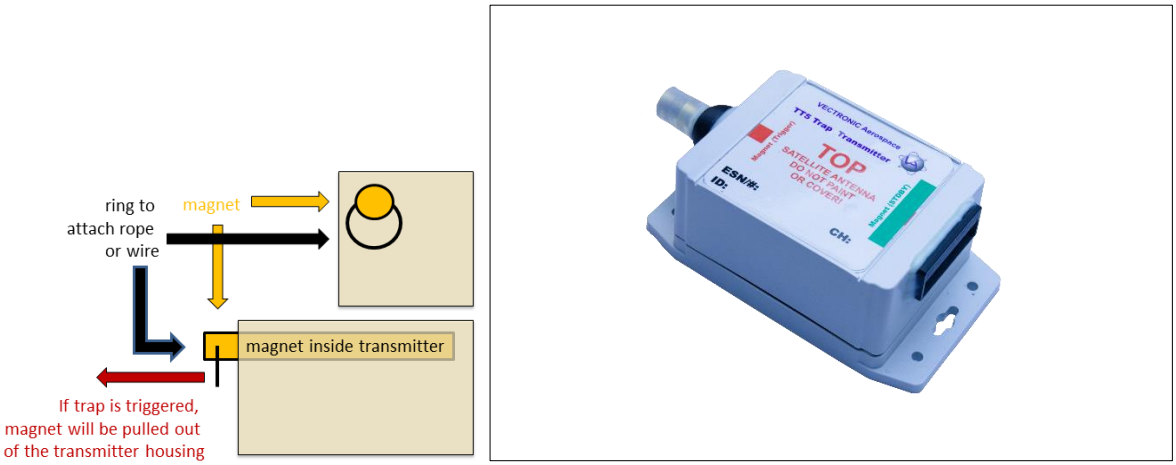

Figure 2: Left: The elongated magnet is inserted into the transmitter box and can be attached to the trap by a rope or wire. If the trap is triggered, the magnet has to be pulled out of the box by the rope to set off an alarm. Right: Triggered trap transmitter, elongated magnet is removed from transmitter box.

The magnet can be connected to the trap with a rope. Make sure that the rope connecting the trap to the magnet is

1. stretched tightly enough to pull the magnet out of the box if the trap is triggered (see Figure 3),
2. can move freely and cannot be entangled when the rope is moved by the triggered trap.

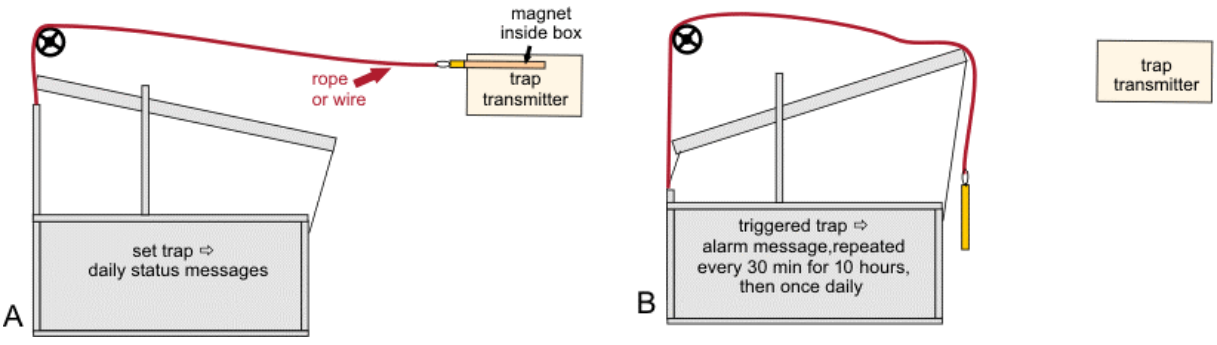

Figure 3: Example for triggering the trap: A) The trap is connected to the transmitter's magnet by a rope or wire. B) When the trap is triggered, the rope/wire pulls the magnet out of the transmitter box. The transmitter sends an alarm message every 30 minutes for 10 hours. After that you will receive one Email per day.

2.2 Positioning of the transmitter

Mount the transmitter in a way that the side labelled 'TOP' is always pointing upwards. This side MUST NOT be covered or painted. Always make sure that the top side has a view to the sky that is as clear and unobstructed as possible (e.g. not covered by rocks, trees, …) otherwise transmission performance might be degraded or even impossible!

To trigger the transmitter, the magnet has to be pulled out of the transmitter box. Make sure that the box is mounted in an angle that allows the magnet to be pulled out of the box and that nothing obstructs the path of the magnet or the rope!

2.3 Resetting the trap

After the trap has been triggered, it is necessary to attach the external magnet for at least two minutes to reset the transmitter to Stand-by mode. After removing the magnet, it will return to Normal mode. If this is not done, the transmitter will stay in Alarm Mode and will not send a new alarm message if the trap is triggered again.

Figure 4: Trigger Magnet

3 Operation

The Trap Transmitter is always in one of three operating modes:

- Standby Mode
- Normal Mode
- Alarm Mode

3.1 Standby Mode

When the exterior standby magnet is attached, the Trap Transmitter is in 'Standby Mode'. In this mode the transmitter does not transmit any messages. Once the magnet is removed, the transmitter will enter 'Normal Mode'.

3.2 Normal Mode

In this mode the transmitter will send two status messages per day, which are transferred to you by email. The first of these messages will be sent immediately (max. 40 seconds) after the magnet has been removed. When the trigger magnet is removed (i.e. the trap has been triggered), the transmitter will switch to 'Alarm Mode'.

3.3 Alarm Mode

In 'Alarm Mode', the transmitter will send a status message every 30 minutes for 10 hours (20 messages in total), indicating that the trap has been triggered, and the transmitter will start counting the time since the trigger event. These messages will be transferred to you as email and optional as text message (SMS).

When the exterior standby magnet is attached to the transmitter again, the transmitter will return to 'Standby Mode' (after a maximum of 40 seconds) and the time since the last triggering of the trap will be reset.

When the trap transmitter is not reset manually, the transmitter will automatically return to 'Normal Mode' after 10 hours; it will transmit two status messages a day. The time since the last trigger event will still be counted and given in the status messages.

4 Status Messages

Every message that is sent by the trap transmitter is received by VECTRONIC Aerospace and forwarded to you via email. Once a status message (trap has not triggered) is received, you will get an email like this if HTML is enabled in your mail application (actual appearance of the email might vary, depending on your mail application):

VECTRONIC Aerospace

Trap has NOT yet triggered.

Trap ESN:	0-367220
Sequence number:	258
Estimated remaining lifetime:	13633 days

Figure 5: Status email in HTML

If display of HTML email is disabled, you will see

```
VECTRONIC Aerospace
Trap has NOT yet triggered.
Trap ESN:       0-367220
Sequence number:       258
Estimated remaining lifetime:  13633 days
```

In case of an alarm message (trap has triggered) you will get an email like this:

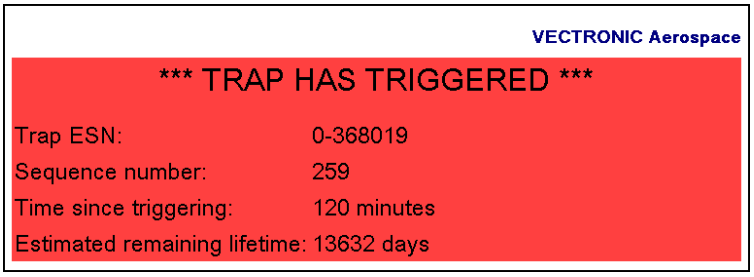

Figure 6: Alarm email

If display of HTML email is disabled in your mail application, you will see

```
VECTRONIC Aerospace
*** TRAP HAS TRIGGERED ***

Trap ESN:       0-368019
Sequence number:       259
Time since triggering: 120 minutes
Estimated remaining lifetime:  13632 days
```

In addition to the status and alarm emails, VECTRONIC Aerospace can send a text message (SMS) to the (mobile) phone number(s) provided, upon reception of the first two alarm messages received for a single ESN. This service is liable of charges. The content of the text message (SMS) will be like this:

```
TRAP HAS TRIGGERED!

ESN: 0-368019
Trigger is 120 minutes old
```

5 Lifetime calculation

With each message you will receive the "Estimated remaining lifetime". The number of days given here is the number of days the Trap Transmitter would work in Stand-by Mode.

Each sent message needs the same amount of energy as one day in Standby Mode. As a result, in Normal Mode, "Estimated remaining lifetime" will reduced by two days per day. If the trap is triggered (Alarm Mode), "Estimated remaining lifetime" will be reduced by one day per message, which would be a maximum of 20 days, if the Trap Transmitter is not reset to Normal Mode within the first 10 hours after the trap has been triggered.

6 Adjustment of pull-out force

Each TT5 comes with silicone tubes with two different wall thicknesses. With these tubes one can adjust the force necessary to pull out the trigger magnet. Smaller traps with lighter doors could bring up too less force to pull out the magnet with the thick wall tube. For this scenario you can use the silicone tube with thinner wall thickness.

Just pull off the silicone tubing and exchange it with the one you need.

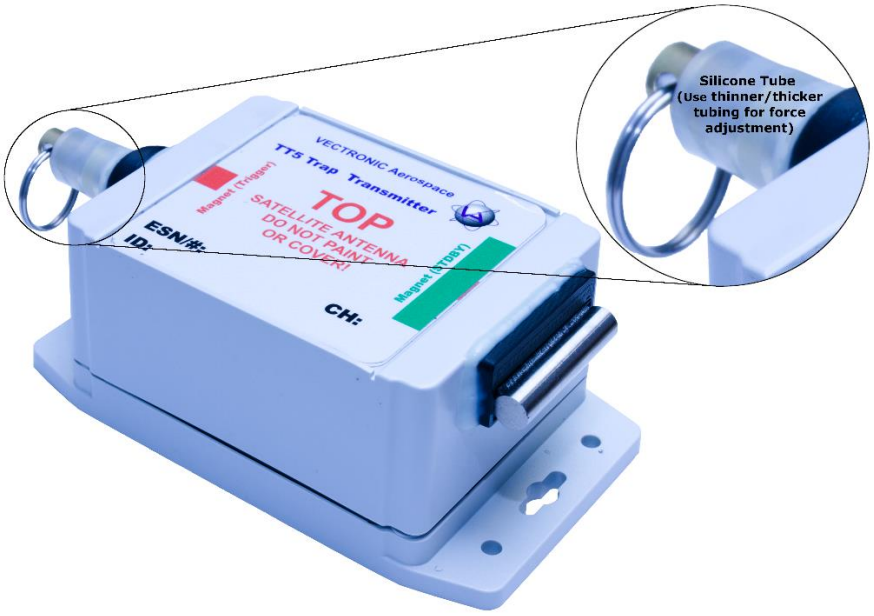

Figure 7: Exchangeable Silicone Tube

We also recommend to use a little bit of Vaseline, silicone grease or other lubricant suitable for silicone on the trigger magnet before use. The lubricant reduces the retention force to pull out the trigger magnet.