Information about new functions of QBase Tactical 2.31.22

1 GNSS Denied Mode

1.1 Option to Disable/Enable GNSS

This QBase Tactical version introduces the option to turn the drone's GNSS reception on or off. However, it is strongly recommended to always fly with GNSS guidance. *GNSS Auto* should always be enabled if possible. The satellite symbol was added to the QBase header for this reason. By clicking on this icon, a drop-down menu appears. Here you have the option of selecting *GNSS Auto* and *GNSS Disable*. A status field below the button indicates the current status. If GNSS assistance is turned on, GNSS Auto is displayed.

The following options are available to the operator:

Mode	Description
GNSS Auto	This is the default setting. We recommend flying always with this setting. In case there is no GNSS reception during aero flight the Vector automatically switches to GNSS denied operation. If the autopilot receives GNSS signal again during the flight, it automatically switches back to GNSS guided automatic flight.
Disable GNSS	The GNSS of the Vector is switched off and the Vector operates in GNSS denied operation (not recommended). For more information see Vector Manual chapter 7.1.8. The TOF (Time of Flight) signal is used for a more precise position estimation of the Vector.

Please note the following important recommendations:

- Only use the *Disable GNSS* function after you have received an appropriate training, since hovering this function requires significantly higher control skills from the pilot.
- Flying with the Scorpion with *Disable GNSS* Settings is very challenging.
- Always fly in automatic GNSS mode (*GNSS Auto*) if possible.
- Landing including descent circle should always be flown in automatic GNSS mode (*GNSS Auto*).
- The switchover between *GNSS Auto* and *Disable GNSS* must always be made in Cruise Flight.

Figure 1: New GNSS function and Icon

Note that after enabling the *GNSS Auto* again, 10 seconds will pass until the autopilot starts using the GNSS signal again for flight control. In QBase, however, Auto GNSS is displayed immediately after clicking the Enable GNSS button.

Our recommendation is to fly the Vector in Auto GNSS mode (previous regular mode where the Vector flew with satellite guidance), since this mode has been further improved and the Vector now remains in Full Nav in Auto GNSS mode even with a lower satellite number.

Please be aware that a large drift of the Vector's position can occur if GNSS support is disabled.

1.2 Hover in GNSS denied Mode

With the following steps, you can safely hover in GNSS denied mode, nevertheless we recommend to always leave GNSS on Auto.

If you fly in GNSS denied mode during the hover, after the retransition, you can take over the Vector manually. The manual flight mode is then active. In manual flight, the operator must control the attitude of the aircraft. When you release the right stick, the Vector goes into a neutral flight attitude of 0° for both roll and pitch. You should align the Vector so that the nose of the drone points into the wind. To do this, you can yaw the Vector around the vertical axis by moving the left stick to the left or right. As soon as the drone is pointing into the wind you have to pitch the Vector down with the right stick (moving right stick up), so that a part of the thrust vector points into the wind. This causes the Vector to better maintain its position and not be drifted away by the wind.

2 Adjusting the time of the manual flight

The latest QBase Tactical update introduced the feature of setting a maximum time for the drone to remain in manual mode. During this time, the operator can make control inputs via the Skynav or Gaming Controller and fly the drone manually. After this set time has passed, the drone will switch to automatic flight mode and fly the shortest way to the last set waypoint.

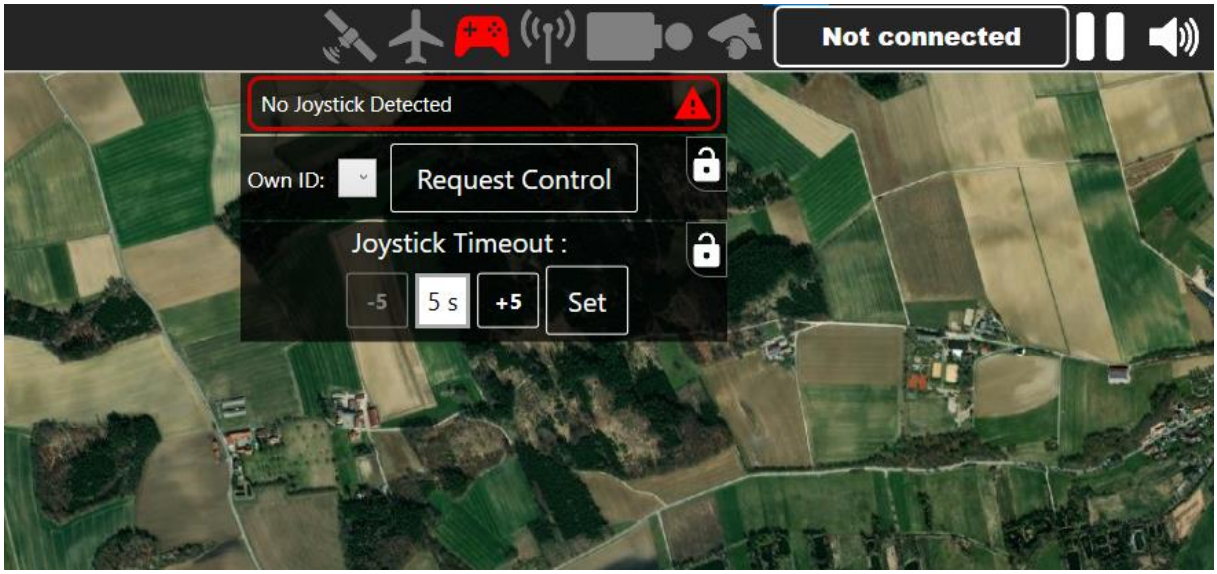

Figure 2: Menu to set the time the drone stays in manual flight mode

A maximum of 60 seconds can be set. This setting can also be changed in flight.

3 Using a second Silvus Ground Station as a relay

If you use a second Silvus as an relay station, note the following points:

- Place the Relay Silvus max. 100 m away from your take off point
- Set the ID of the relay station in QBase for your ground station

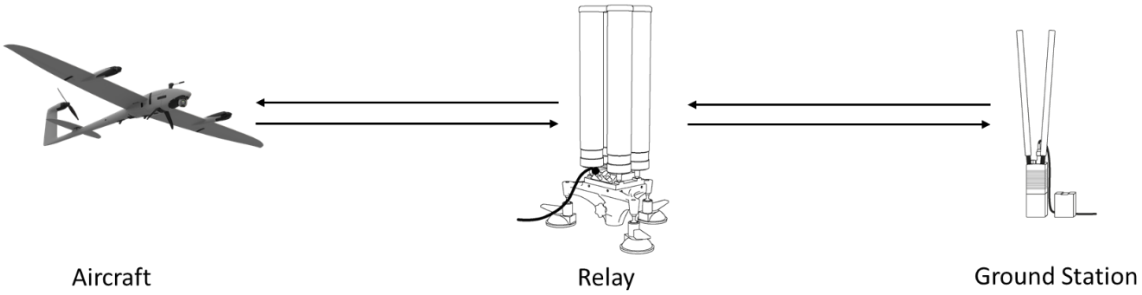

Figure 3: Scheme of a link setup with a Silvus modem as a Relay Station

If GNSS assistance has been disabled, the runtime of the data link is used for position estimation. In order to ensure that the position estimation works accurate, NO relay station should be used if possible and the link should only be realized with a Silvus.

A warning will be shown if no direct link between selected Silvus ground modem and aircraft exists, as no TOF messages will be sent in this case.