The TBS TANGO 2 remote control is an all-in-one system made for R/C enthusiasts. It features a built-in TBS Crossfire MicroTX radio module. Input controls are provided by full-size hall gimbals. A bright display shows the radio status and telemetry.

**Key features**

- Compact and ergonomic All-in-one (AIO) radio
- Integrated TBS CROSSFIRE MicroTX - up to 250mW
- Runs TBS FreedomTX, a temporary OpenTX fork
- Industry's lowest latency - only achievable with an AIO solution!
- Travel and beginner friendly
- Full-size digital hall gimbals
- Unconventional low-profile switches for transportability, reliability and durability
- Foldable antenna - also doubles as a kickstand
- TBS CLOUD ready (future proof)
- Digital trims (compatible with traditional R/C aircraft)
- Solid build with quality components
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## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type:</strong></td>
<td>All-in-one (AIO) integrated radio</td>
</tr>
<tr>
<td><strong>RC system:</strong></td>
<td>Built-in TBS CROSSFIRE MicroTX</td>
</tr>
<tr>
<td><strong>Output power:</strong></td>
<td>25mW to 250mW</td>
</tr>
<tr>
<td><strong>Frequency Bands:</strong></td>
<td>868MHz (EU, Russia), 915MHz (USA, Asia, Australia)</td>
</tr>
</tbody>
</table>
| **Antenna:**           | Standard full-size TX antenna  
                        | Switchable antenna polarization - horizontal / vertical  
                        | Optional external SMA port |
| **Holding style:**     | Pinch, thumb, and hybrid friendly |
| **Default stick mode:**| Mode 2, throttle and yaw left (user-changeable) |
| **Display:**           | High-resolution 1.2" OLED-panel, 128 x 96 pixels |
| **Models:**            | Standard and Pro model. PRO model has folding gimbals |
| **Battery:**           | Lithium-polymer 3.7V 5000mAh internal battery pack, USB-C charging |
| **Runtime:**           | Approx. 8 hours |
| **Channels:**          | 8- or 12-channels (CROSSFIRE) |
| **Operating range:**   | Variable depending on output power and radio environment |
| **Gimbals**            | Full-size hall sensor gimbals, Adjustable vertical range, Adjustable spring tension, Foldable sticks (PRO version only), m3 threading |
| **Controls:**          | 2x Quad full-size hall gimbals  
                        | 2x Two-position switches  
                        | 2x Three-position switches  
                        | 2x Lower-shoulder momentary buttons  
                        | 3x Configuration buttons  
                        | 1x Rocker switch  
                        | 1x Power-on button |
| **Ports:**             | 3.5mm headphone audio-jack for OpenTX voice support  
                        | USB-C for software updates and charging |
| **Neck-strap mounting:** | Screw on mount - sold separately |
| **Speaker:**           | 1W, for OpenTX voice support |
| **Simulator compatibility:** | Yes, over USB-C |
| **Working temperature:** | 0 - 40°C |
| **Size:**              | W 157 x L130 x H70 mm (H50 mm folded) |
| **Weight:**            | 345 grams |
| **Kit contents:**      | 1x TBS TANGO 2 Radio Controller, 1x SD-card pre-setup |
Overview

The following diagrams indicate the essential input controls (green) and features (red) of the radio.
Detailed overview

Power button, status LED, neck-strap hook and OLED display

Left gimbal and configuration menu buttons

Radio control buttons

Rocker switch, power button, ports and speaker

Left two-position (A/L1) and three-position (B/L2) switch

Right two-position (D/R1) switch and three-position (C/R2) switch
Getting ready
Getting set up and ready to fly is a quick and simple task. In most cases plug&play when using TBS equipment.

Power up
Press and hold the Power-button for three seconds until the animation completes. The TBS TANGO II screen will welcome you and the power button lights up yellow.

USB Joystick
Plug-in a USB-C cable and a menu will appear where you can activate USB joystick mode. This mode will work with the most common simulators available.

SD card content
The latest SD card content for sound files and scripts can be found on the TBS website.

How to update the sd card (video)

The maximum allowed size is 32GB. Card with higher capacity must be formatted in FAT32 format (only 32GB will be available then).

FAQ
If you got any question after reading this manual you should visit the TBS FAQ section

How-To videos
A short playlist on how to backup and update the sd card, Crossfire and the Tango 2 fw, as well as how setup the switch warnings can be found here

Note
This manual is written based on the FreedomTx fw 1.14 and Crossfire 3.73. If some functions are not available for you, please update your build in Crossfire and the Tango II fw to these (beta) firmwares.
Configuration controls

To navigate and configure the radio, the left-side buttons and right-side selector wheel are used. These are the control inputs for the configuration menu system:

- **Menu**
  - Quick-press enters the model setup. First page is the TBS CROSSFIRE configuration (LUA)
  - Long-press enters the radio configuration
- **Page**
  - Quick-press skips through the different configuration views
  - Long-press enters the telemetry view or navigate to the previous page (in the menu)
- **Exit**
  - Go backwards or exit the configuration menus
- **Enter**
  - Single-press engages a configuration menu item
  - Double-press enters stick trim menu
  - Long-press enters the model select menu
- **Rocker**
  - Scroll through the available menu items or setting options
**Setup**

The radio comes ready to go. Simply bind (push MENU, enter Crossfire TX menu, and select the BIND command) to your favorite model and you're ready to fly. However, if you are not a Mode 2 (throttle left) pilot, you will need to make some changes.

**Changing stick mode**

When talking about stick modes we are referring to how the remote is configured to control the airplane i.e. which sticks operate which controls on the aircraft. You can swap the stick gimbals by opening up the remote, covered later on in the manual.

By default the remote is set up with Mode 2, which is the most common type used.

1. Long-press the Menu-button to enter the Radio Setup
2. Scroll down to the end using the Rocker-switch
3. Change the Mode to the desired type
4. Follow the instructions later in the manual to change the throttle stick to the other side, if required
Changing channel mixing and end-points

For detailed channel mixing, rates, and end-point settings, it is recommended to set up these on the flight controller side (CleanFlight, BetaFlight, RaceFlight, APM, PX4, Pixhawk, etc.), for anything else than flying wings.

Flying Wings

The TBS TANGO 2 supports channel mixing for flying wings. The mixing, end-point, and reverse settings can be configured in channel settings, after you have set up a new flying wing model.

<table>
<thead>
<tr>
<th>MIXES</th>
<th>CH1</th>
<th>Thr</th>
<th>Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH2</td>
<td>100</td>
<td>Ele</td>
<td>D-EleR</td>
</tr>
<tr>
<td>CH3</td>
<td>50</td>
<td>Ail</td>
<td>D-AilR</td>
</tr>
<tr>
<td>CH4</td>
<td>50</td>
<td>Ele</td>
<td>D-EleL</td>
</tr>
<tr>
<td>CH5</td>
<td>100</td>
<td>Ail</td>
<td>D-AilR</td>
</tr>
<tr>
<td>CH31</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH32</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Quick-press the Menu-button to enter the Model Setup
2. Change to the Mixer screen by pressing the Page-button
3. Use the Rocker and Enter-switch to select a channel

More information can be found in relevant online tutorials explaining the operating and mixing principles of OpenTX

If you create a new model, you can follow the wizard which will help you set it up by selecting Delta as type.
Radio configuration menu

Changing settings on the TBS TANGO 2 is done using the OLED display and controlled using the Rocker-switch/Enter-button. **Long-press the Menu-button** to enter the radio configuration menu.

Tools

Browse your LUA tools

- Here you can quickly access you LUA tools scripts like the BetaFlight or Kiss Lua.
- To be listed in this place they need to be located under *SD card\SCRIPTS\TOOLS*.
Memory card

Browse and look up the contents of the SD-card

- Use the Rocker-wheel and Enter-button to browse
- You can update the SD card contents by connecting the USB and selecting the SD card operation mode. The SD card will be recognized as PC drive. For the latest SD card contents, visit the TBS Shop Page.

Radio setup

Configures the major features of the radio

- **Date** - Current date
- **Time** - Current time, no timezone or daylight
- **Battery range** - Span of the graphical radio battery meter on the main views, must be 3.4 to 4.2V for TANGO II
- **Sound** - Mode, Master volume, individual volumes of all mixed sources (Beeps, sound files, variometer, background music), beep duration and pitch

Continuation of radio setup

- **Vario** - Generates the tone/sound of a glider variometer, uses altitude or vertical speed telemetry data
- **Haptic** - For physical tactile feedback
Continue of radio setup

- **Alarms** - Audible alarms
  - **Battery low** - Beep when battery reaches this threshold
  - **Inactivity** - Reminder if you have forgotten to turn the radio off
  - **Memory low** - Be notified when the SD-card runs low on memory
  - **Sound off** - If the alarms inadvertently have been turned off
  - **RSSI shutdown** - Warning is announced when the radio is being shutdown with a receiver on and connected

Continuation of radio setup

- **Splash screen** - How long to display the start-up screen
- **PWR off delay** - How long you need to hold the power button to start the radio
- **PWR on delay** - How long you need to hold the power button to shut the radio down
- **Time zone** - specifies Universal Time Coordinated (UTC) offset for local longitudinal time zone
- **Adjust RTC** - Correct built-in real-time clock by GPS
- **GPS coords** - GPS format for telemetry sensor
- **Voice language** - Which audible package to use for alerts
- **Units** - Metric and imperial units for telemetry values
- **Play delay** - Delays for playing any sound
- **USB mode** - Set which mode to use when USB-C cable is connected

Continuation of radio setup

- **Rx channel order** - Determines the order in which the four primary controls (Rudder, Elevator, Aileron, and Throttle) are inserted on channels 1-4 when creating a new model

- **Mode** - Determines which sticks move which controls on the airplane

Global functions

This is the place where switches can be used to trigger special functions such as soundtrack playback, speech output of variables etc.

- Global functions are special functions that are applied across all planes.

Hardware

Configure all the installed input sticks, switches and buttons

- **Sticks** - Perform the calibration of the hall-effect magnetic gimbals

- **Switches** - Sets the type of switches
- **Battery calibration** - Use a multimeter to measure and input the voltage
- **RTC battery** - shows the actual RTC battery voltage
- **Serial port** - not yet supported
- **Max. bauds** - Specify communication baud rate between the T2 and the build-in Crossfire modul, must be set to 400000
- **RAS** - not used by the Tango 2
- **Debug** - shows the raw values of the switches and keys

### Version

Current build and version of the OpenTX firmware

- As the TANGO II is branch of the OpenTX codebase it needs it specific build
- **Firmware Options** - shows the included software modules

### Calibration

Re-perform the gimbal stick calibration

- The calibration can be entered on page 6 of the [CALIBRATION] section.
- If the initial calibration was incorrect, re-do it by pressing the Enter-button and follow the instructions.
- **IMPORTANT**: on the final step, do NOT move the sticks to their combined extremes (e.g. top-left, top-right, bottom-left, bottom-right). Move the sticks in a “+” pattern.
**Model configuration menu**

All the model specific settings are accessible by pushing the Menu-button. Here you configure the currently active model (name visible on the home screen).

To change the active model, **long-press Enter** and choose the “Select Model” view.

**General overview**

<table>
<thead>
<tr>
<th>Perform model actions and see metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Model Select</strong> - Create/select/delete models</td>
</tr>
<tr>
<td>• <strong>Reset</strong> - Clear flight, timers and telemetry</td>
</tr>
<tr>
<td>• <strong>Statistics</strong> - Metrics on the model and radio</td>
</tr>
</tbody>
</table>

**Model select**

Manage your models and categories

| • **Left column** - Lists categories, navigate through them with PAGE |
| • **Right column** - Lists individual models for your quads, airplanes, deltas, etc. |

**Manage models**

Manage your models and categories

| • **Select model** - Activate the selected model |
| • **Create model** - Initiate the new model wizard |
| • **Duplicate model** - Copy the selected model |
| • **Move category** - moves the selected model to a new category |
| • **Delete model** - Remove the selected model |
| • **Create category** - Make a new category ‘folder’ |
- **Rename category** - Give the selected category a new name
- **Erase category** - deletes the category, only possible when there is no model in it

## Create models

When creating a new model the wizard guides you through step-by-step.

Press the Page-button to go to the next screen

- **Select model type** - Pick the base for the new model, the type of aircraft

Answer each step to generate the final model base

- **Got an engine** - Determines whether to assign throttle - select which channel to use, here CH3.

Summary of the selections made, can be changed afterwards

- **Control surface** - Assigned to the designated channel
Detailed configuration

Enter the more detailed model configuration menu by quick-pressing the Menu-button.

TBS Crossfire menu

For those familiar with the TBS CROSSFIRE LUA script on OpenTX, this is the same menu.

CROSSFIRE configuration for TANGO II

- **Set failsafe** - Set a stick position on signal loss. Only if fs type is set to POS
- **Bind** - Initialize the CROSSFIRE receiver binding procedure
- **General** - Operating parameters
  - **Region** - Select your region to set the right frequency band and power
  - **Max. power** - Manually adjust the max. RF power output
  - **Dynamic power** - Automatically adjust RF power output in accordance to received signal indicators
  - **Frequency** - Frequency band to use, 868MHz (Europe, Russia) or 915MHz (USA, Asia, Australia)
  - **Operation mode** - Normal (recommended) or Forced telemetry

For more detailed informations on the TBS CROSSFIRE please visit the [TBS CROSSFIRE manual](#).
OpenTX configuration menu

Changing detailed OpenTX settings can be done in the main OpenTX configuration menu. Quick-pressing the Menu-button to enter the configuration menu and switch screens with the Page-button.

OpenTX setup

Configures the general OpenTX features

- **Model name** - Specify profile name
- **Timer1/Timer2/Timer3** - Countdown timers
  - **Name** - Specify timer name
  - **Persistent** - When the timer will be set to 0
  - **Minute** - Notification every minute passed
  - **Countdown** - notification style when the time is over
- **Extended limits** - Allows servo travel past 100%
- **Extended trims** - Allows trims to cover the full stick range
- **Show trims** - Display trims on main screen
- **Trim step** - Graduality of trims
- **T-Reverse** - Throttle direction reversed
- **T-Source** - Throttle input control source
- **T-Trim** - Throttle trim allowed
- **Preflight** - Trigger alert when the following checks fail
  - Checklist - Display contents of text file
  - T-Warning - Throttle high warning
  - S-Warning - Defined switch state warning
- **Center beep** - Beep when passing the center position of the sticks
- **Global functions** - Use global functions
- **Model Match** - allows you to bind a receiver to just these model. With ID 00 it will bind to any receiver that is not bound to a model with a other ID

### Flight modes

Create flight presets that can activate a particular attitude or characteristics of the model

- **FM0-FM8** - Flight mode slots
  - Each of the flight mode slots can be named, has a selectable activation switch (physical or logical), a trim selection array, and slow up/down parameters for smooth transitions between modes.
Configure the selected flight mode

- **Mode name** - Identifiable name
- **Trims** - R, E, T, A when shown mean the mode has its own trim setting for that control
- **Fade in** - Smooth transition time in-between mode change
- **Fade out** - Same delay for transition out
- **Global variables** - Commonly shared values
  - G1-G9 - Specific configuration screens

### Inputs

Allows setting one or more input formatting rules to each stick axis

- **Rud/Ele/Thr/Ail** - Specific input configuration screens

### Mixer

This is where the actions on the controls will be mapped to servos

- **CH1-CH32** - Servo/output control channel, specific configuration screens
- Note: If no mixer is set up you will not see any stick movement on the receiver side

<table>
<thead>
<tr>
<th>FLIGHT MODE</th>
<th>FM0</th>
<th>4/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trims</td>
<td>:0 :0 :0 :0</td>
<td></td>
</tr>
<tr>
<td>Fade in</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Fade out</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Global variables</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>Own</td>
<td>0</td>
</tr>
<tr>
<td>G2</td>
<td>Own</td>
<td>0</td>
</tr>
<tr>
<td>G3</td>
<td>Own</td>
<td>0</td>
</tr>
<tr>
<td>..</td>
<td>..</td>
<td></td>
</tr>
<tr>
<td>G8</td>
<td>Own</td>
<td>0</td>
</tr>
<tr>
<td>G9</td>
<td>Own</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>4/64</th>
<th>5/13</th>
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</thead>
<tbody>
<tr>
<td>Rud</td>
<td>100 Rud</td>
<td>---</td>
</tr>
<tr>
<td>Ele</td>
<td>100 Ele</td>
<td>---</td>
</tr>
<tr>
<td>Thr</td>
<td>100 Thr</td>
<td>---</td>
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<tr>
<td>Ail</td>
<td>100 Ail</td>
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<td>06</td>
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<td>07</td>
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<tr>
<td>32</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MIXER</th>
<th>4/64</th>
<th>6/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH1</td>
<td>100 Rud</td>
<td></td>
</tr>
<tr>
<td>CH2</td>
<td>100 Ele</td>
<td></td>
</tr>
<tr>
<td>CH3</td>
<td>100 Thr</td>
<td></td>
</tr>
<tr>
<td>CH4</td>
<td>100 Ail</td>
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<tr>
<td>CH5</td>
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<td>CH6</td>
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<td>CH7</td>
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<tr>
<td>CH31</td>
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<tr>
<td>CH32</td>
<td></td>
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</tr>
</tbody>
</table>
**Outputs**

On the output screen each channel can be adapted to the mechanical characteristics of the model

- CH1-CH32 - Servo/output control channel, specific configuration screens

**Curves**

Custom curves can be used either in input formatting or mixers

- CV1-CH16 - Curves, specific configuration screens

**Logical switches**

These are logic switches that are used to compare values and combine various conditions

- L01-L64 - Logical switch, specific configuration screens
Special functions

This is the place where switches can be used to trigger special functions such as soundtrack playback, speech output of variables etc.

- **1-64** - Special function, specific configuration screens

Custom scripts

Select and configure Lua scripts and their inputs, these can be used to perform complex mixes

- **LUA1-LUA7** - LUA script, specific configuration screens

Telemetry

This groups all the basic telemetry-related settings.

- **RSSI** - Receiver Received Signal Strength Indicator
  - **Source** - Specify data source
  - **Low alarm** - Threshold low
  - **Critical alarm** - Threshold critical
  - **Disable alarms** - Inhibit alarms
- **Sensors** - Detailed informations on the Crossfire related Sensors can be found in the CROSSFIRE manual
Start/ Stop discovery - Start/ End sensor search
Add a new sensor - Manually add sensor
Delete all sensors - Remove all
No insta. - disable it for the TANGO II

- Vario - Generates the tone/sound of a glider variometer
  - Source - Specify data source
  - Range - Usable signal range
  - Center - Equilibrium value

Display

The display screen is where the telemetry view screens are configured

- Screen 1-4 - Specific telemetry values
- Show them by long pressing the page button on the main screen
Usage

Neck-strap

The optional neck-strap hooks into the center of the radio. It is made of metal, so it will last a life-time. You will need to purchase the neck-strap hook to attach to the radio, and then you can use a neckstrap of your choice. We recommend the ETHIX neck strap, which is available from TBS or your favorite FPV dealer.

Bind

Connecting to a new CROSSFIRE receiver is simple and done via the CROSSFIRE menu.

1. Press the Menu-button and select CROSSFIRE Menu, then select TANGO II XF
2. Connect power to the CROSSFIRE receiver and press the Bind-button on the unit
3. Select the Bind-menu item and wait for the binding process to complete

If you got issues during the binding, make sure you are on the Crossfire fw 3.73 (beta) or later.
Also check the FAQ section for other problems.
**Model ID**

When you bind a receiver you can set up if it should only bind to a specific receiver. This feature is useful if you use Model without flight controller or different fc types or model settings. The ID must be set up **before** the binding! Otherwise you need to rebind your receiver.

1. Navigate to the model settings
2. Scroll down to Receiver ID
3. ID = 0: this model can bind to any receiver
   
   ID = 1..99: this model will only bind to the specific receiver

---

**Set failsafe**

Configuring the CROSSFIRE failsafe state settings is done via the CROSSFIRE menu. Your model needs to be bound and running for the failsafe setting to work. This setting is only needed on model without FC. On all other models, navigate in the receiver settings to failsafe type and set it to CUT.

1. Press the Menu-button and select CROSSFIRE Menu, select TANGO II XF
2. Arrange the switches and sticks into the desired failsafe state
3. Select the Set failsafe-menu item and wait for the failsafe to be stored on the receiver
Set up switch warning

1. Press the Menu-button and navigate with the PAGE-button to the SETUP page
2. Scroll down to the switch warning setup (S-Warning)
3. Bring all your switches in the position you want them to be monitored
4. Hold the Enter button. Now the positions are saved
5. To disable it on certain switches, short press enter
6. With the scroll wheel you can navigate to the switch
7. Hit the enter button to disable this switch warning or enable it again

A previously disabled switch will not be activated again by this steps. You need to enable it by yourself.

Status indicator

When the remote is powered on, the LED behind the button will show the actual status of the remote. The built-in LiPo battery is charged every time a 5V power source is connected to the USB-C connector.

<table>
<thead>
<tr>
<th>Button LED indicator</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶▶▶ Green</td>
<td>Remote powered on and receiver is bound or battery is fully charged (radio turned off)</td>
</tr>
<tr>
<td>Color</td>
<td>Status</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Green blinking</td>
<td>Crossfire in bind mode</td>
</tr>
<tr>
<td>Yellow</td>
<td>Remote powered on and no receiver is bound/ active</td>
</tr>
<tr>
<td>Blue</td>
<td>Crossfire receiver update is running</td>
</tr>
<tr>
<td>Red</td>
<td>Battery is charging (radio turned off)</td>
</tr>
<tr>
<td>Soon</td>
<td>Race mode with 25mW active (150Hz mode active)*</td>
</tr>
<tr>
<td>Soon</td>
<td>Race mode with 100mW active (150Hz mode active)*</td>
</tr>
</tbody>
</table>

* for further information, please see the TBS CROSSFIRE manual
**Stick trim**

Adjusting the stick trim while in use is easy. Double-press the Rocker-switch/Enter-button, an audible feedback will sound and the corresponding stick direction will highlight on the display. Just the rocker-switch to adjust the trim. Double-press to change to a different stick direction. Press Exit when finished.

![Stick trim](image)

**Battery protection**

The battery protection in the remote is based on nominal voltage, as follows:

<table>
<thead>
<tr>
<th>Battery voltage</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.81V and over</td>
<td>Battery level 4, fully charged</td>
</tr>
<tr>
<td>3.71V</td>
<td>Battery level 3</td>
</tr>
<tr>
<td>3.61V</td>
<td>Battery level 2</td>
</tr>
<tr>
<td>3.41V</td>
<td>Battery level 1, beep tone and battery icon flashing</td>
</tr>
<tr>
<td>3.38V</td>
<td>Power on allowed, critical level, beep tone and battery icon flashing</td>
</tr>
<tr>
<td>3.34V</td>
<td>Shutdown voltage, 20 seconds countdown prompt, recharge as soon as possible</td>
</tr>
</tbody>
</table>

The TANGO II can be charged during the flight. In case your battery becomes empty while you are in the air, simply connect a power bank with 2a power.
Alert prompts

The remote will raise an alert when one of the following events happen:

1. Battery low alert - described in the previous section
2. Telemetry data about the low RSSI
3. Telemetry lost alert
4. When a timer is expired
5. Inactivity alarm

More alerts can be programmed by the OpenTX “Special Function” menu.
Inside the radio

To change the battery, stick mode, travel range, throttle ratchet, or gimbals, you will need to open up the remote control. Warranty will still intact, of course.

First remove the two rubber covers on the back-side by using a plastic spudger to lift the tabs out of the housing.

Then remove the six (6) screws, as indicated in the following photo with a M1.5 hex driver. Now, the back housing lifts off.
Removing the battery

The battery is attached to the radio using a special hook & loop pad - making it easily removable to service the internals. It has a temperature sensor to keep it safe while in use and charging. If your battery is broken, you can get a replacement from TBS (or make a custom one) and install it directly in place of the original pack. The stock battery provide 5000mAh for approx. 8 hours of runtime.

Changing the flight stick mode

Different flight modes will have the throttle on either the left- or right-side, requiring it to be non-sprung. Modifying it is a matter of screwing in the throttle-lock screw and loosening the other. The rest is changed in the radio configuration menu.
Adjusting throttle ratchet strength

The radio comes with a smooth throttle from the factory. Adjusting how easy it moves can be adjusted by using a screwdriver and turning the left screw on the metal bracket, as shown in the following photo. Counter-clockwise to decrease the tension and clockwise to increase the tension.

If you rather prefer a ratchet/clicking stick, loosen the left screw entirely and increase the tension of the right screw.

Adjusting stick tension

If the sticks feel too rigid or too soft, the tension of the springs can be changed by adjusting the tensions screws. The locations are shown in the following photos.

Turn clockwise to increase the tension (more rigid), counter-clockwise to decrease the tension (softer).
Adjusting stick range
The range of motion of the elevator and throttle can be adjusted (on the standard model, the range screws need to be purchased separately.) The default is no limit. Adjust the screws shown in the following photo. Clockwise to increase the limit. There are 2x M1.4x6 machine thread screws included with every Tango 2 PRO. Recalibration is required after adjustment!

Upgrading / changing the gimbals
Remove the twelve (12) screws holding the mainboard to the housing and gimbals, disconnect the speaker cable battery, display flex-cable. It is also recommended to disconnect the antenna antenna rubber-strap and the u.FL connector to the antenna. Extra care is required if not disconnected!
Lift the mainboard along with the gimbals out of the housing. The gimbal support pegs are inserted on the mainboard holes and easily pulls out. Insert the new gimbal(s) and re-assemble the radio. There are no electrical connections between the gimbal and the remote. Recalibration will be required after this step!

Changing gimbal springs
The radio comes with a set of softer springs (pro only, on the standard they need to be sold separately) that provide less tension sticks. The difference from the stock springs is that these are approx. 20-30% less stiff, giving a smooth soft response.
Remove the gimbals from the radio and unscrew the spring tension holder, as shown in the following photo. Unhook the stock springs and re-attach the new ones. This can be a bit tedious and only recommended for experienced users. A special trick is to first attach the springs to the lever, keeping tension on it with a tweezer, and then installing back the plastic holster and looping in the spring. This can be performed without removing the gimbals from the radio, but it is recommended to disassemble the radio for this step.
Swapping antenna type

The radio comes with a built-in antenna, but it can be changed to an external SMA connector so different antennas can be used. Remove the mainboard from the housing to expose the housing - be careful when unhooking the U.FL antenna connector, remove the rubber retainer first.

Unscrew the two screws holding the stock antenna in place, remove the antenna and metal bracket. Put the rubber retainer on the new connector and put the plastic adapter on the back of the SMA connector.

Screw the new SMA connector in place using the same screws and re-assemble the radio.
Firmware upgrade

Download the Agent X installer from team-blacksheep.com/products/prod:agentx (Windows7/8/10 and macOS) - no drivers needed to use the application, but an Internet connection is required to download the latest firmware versions. **Make sure you use the Agent X version 2.0.33 or later.**

Detailed informations on how to use the Agent X can be found [here](#). A video series on how to upgrade your radio can be found [here](#).

Note:
Use **FreedomTx 1.13** (or later) and **Crossfire 3.73** (or later). If you are on a older release, please update to this or later versions.

Backing-up the SD-card content

This backup is not necessary for the update itself, but it can save you some trouble if something goes wrong. Keep it save on your pc.

1. Power up your Tango 2 and connect it by USB-C
2. In the prompt, select **USB Storage (SD)**
3. Wait for your pc to mount the drive
4. Copy the following folders to your pc:
   - /Models
   - /Radio
   - /Crossfire
   - /Logs
Update Freedomtx

1. Power up your Tango 2 and connect it by USB-C
2. open the Agent X
3. In the prompt, select *USB Agent (HID)*
4. Wait for the Tango II to show up (green/orange dot)
5. Click on *Manage*
6. Navigate to the *Firmware* tab
7. Select a firmware version and click on *Upgrade/refresh/downgrade*
8. Hit *Update* and wait for the Agent to finish it

Update the build in Crossfire

1. Power up your Tango 2 and connect it by USB-C
2. In the prompt, select *USB Agent (HID)*
3. Wait for the Tango II XF to show up (green/orange dot)
4. Click on *Manage*
5. Navigate to the *Firmware* tab
6. Select a firmware version and click on *Upgrade/refresh/downgrade*
7. Hit *Update* and wait for the Agent to finish it
Update the SD card content

With FreedomTx 1.10 and later, you need this SD card content. You can download it manually from the Tango 2 shop page.

1. Power up your Tango 2 and connect it by USB-C
2. In the prompt, select USB Storage (SD)
3. Wait for your pc to mount the drive
4. Copy the complete content in to the SD card of the Tango 2 and override the existing files

Attention

These Long Range Systems are capable to use radio frequency transmissions and output power that may be not allowed in your country. The radio will arrive locked to your country's regulations!

Please always check your local RF legislation to set the frequency and output power according with the regulation.

A general rule for RC aircrafts is that they must be controlled always under sight of view, check your RC regulation to keep up to date with regulations.
FAQ

● My Tango does not bind to the receiver - both are blinking slowly green
  ○ Update your build-in Crossfire to 3.73 (beta) or later and retry

● After binding, the receiver shows a double pattern and i get no signals in BF/ INAV/ ...
  ○ This is an authentication error on the crossfire. To solve it:
    ■ Shut down your drone and the Tango
    ■ Power up the Tango
    ■ Set it in Bind-mode
    ■ Power up the receiver
    ■ Push the bind button on the receiver

After a few seconds the green led on the receiver should switch to a constant green light

● I get movements BF/ INAV/ ... on the 4 sticks but not from any switch
  ○ You need to assign the switches in the “Mixer” page of you model to a channel you'd like it to be. For detailed informations on the mixer page, have a look at Painless360’s opentx video series

● I can no longer see the Frequency setting and the output power is limited
  ○ Your Crossfire is in a region-lock mode. This mode makes sure that non-allowed settings are not available. If you have set it the by accident, here is how you can unlock it

Manual written and designed by ivc.no in cooperation with TBS and Kamikatze-fpv.de.