Nominal Launch Height (NLH):

Starting an F5K plane is very similar to starting an F3K DLG plane. Launches are sort and spectacular. Difference is the speed which is applied during start and end of the launch. At F3K the start speed is very high (leaving hand) and the end speed is low (flying speed DLG). At F5K the start speed is low (leaving hand with motor on) and the end speed is high. Every second the plane flies, the speed is increasing. Result is an additional "zoom" height after the stop of the motor due to the "kinetic energy".

The motor stop is arranged by two parameters: the ***"Nominal Launch Height"*** and the ***"Motor time"***. Both parameters can be set in an altitude device such as an Altis Nano from Aerobtec. Both height as motor time are announced by the Contest Director.

Please find all information about the Altis NANO device on their website: https://aerobtec.com/altis-nano/

AEROBTEC

Altis nano

ALTIS NANO

Ultra miniature Altimeter for everyone

- No Compromise
  Get all what you expect from an altimeter in a ultra miniature form. Unlimited competition settings, live screen on integrated OLED display, telemetry, recording and more ...
- Live Screen
  Live screen allows you to read the data easily from the integrated OLED display all the time ...
- Beat your Friends
  Simply choose your competition from the list and show your friends who's the best pilot ...
- Record and Analyze
  Integrated flash memory allows you to record your flights and later to analyze them comfortably using Altis Flight Manager ...
- Rich Telemetry Support
  Have the flight data always in view using telemetry of various brands, with fast reacting vario you didn't miss your best performance ...

Specification

General
- Dimensions: 29 x 11.5 x 6.5mm, cable length approx. 6cm
- Weight: 6g with JR cable
- Power supply range: 4 – 12.6V
- High contrast OLED display
- Integrated USB
- Upgradeable firmware
- Altis Flight Manager software for Windows

Competitions
- Support for all existing competition rules – FW2.x
- Special competition firmwares:
  - F5J FAI (FAI certified firmware) – FW5.x
  - ALES – (100, 150, 200m preset, configurable via keypad or PWM in) – FW6.x
  - F5J Greek (local Greek F5J like competition) – FW7.x
  - RCEV – (like F5J FAI but with motor restart option) – FW8.x

Recording
- Memory: 7.91MB (Several days)
- Sample time: 0.1 – 25.5s (user selectable with step 0.1s)
- Logging:
  - altitude
  - voltage
  - temperature
  - PWM In/Out

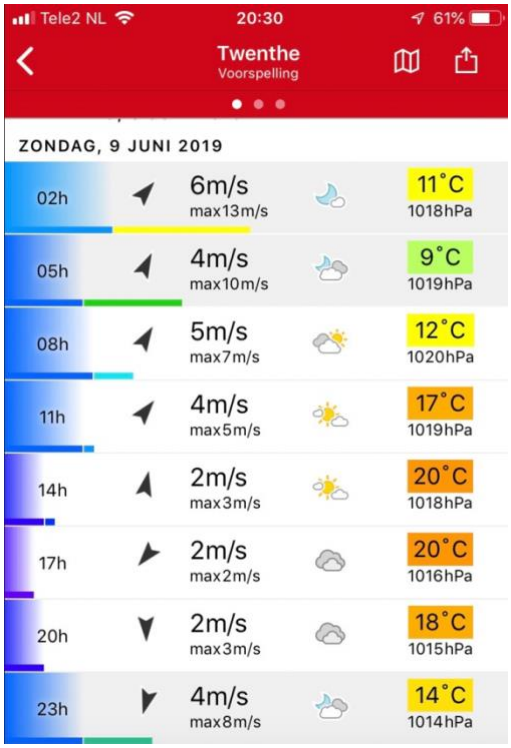
Telemetry
- Rich telemetry support for all relevant RC systems
- Available telemetry data:
  - High precision altimeter
  - Fast reacting vario with auto adaptive filter
  - Pressure
  - PWM In/Out value
  - F5J height

Settings Altis - Nominal Launch Height (NLH) and Motor time:

Wind Forecast	Between [m/s]		Nominal Launch Height (NLH) in ALTIS	Motor time [sec] in ALTIS
Light breeze	0	3	**60**	**7**
Moderate wind	4	6	**70**	**8**
Strong wind	7	9	**80**	**9**

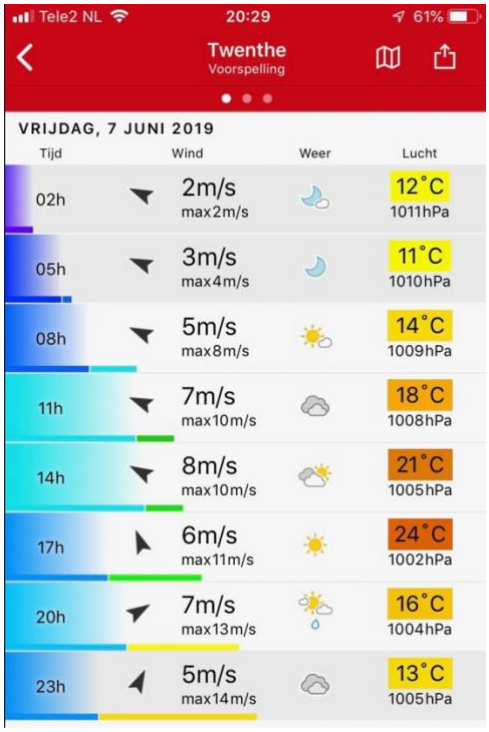
The wind forecast site from Windfinder will be used to define the expected average wind speed during the contest day. All details can be found on their website https://www.windfinder.com/forecast/twenthe

One (1) day before the beginning of the contest the Contest Director (CD) will announce the nominal launch height for the contest day. For this he will take the average windspeed between 11h and 17h. Some examples:



Windspeed 11h: 4 m/s
Windspeed 14h: 2 m/s
Windspeed 17h: 2 m/s
Average speed: 2,7 m/s

Nominal launch height: 60 mtr.



Windspeed 11h: 7 m/s
Windspeed 14h: 8 m/s
Windspeed 17h: 6 m/s
Average speed: 7 m/s

Nominal launch height: 80 mtr.

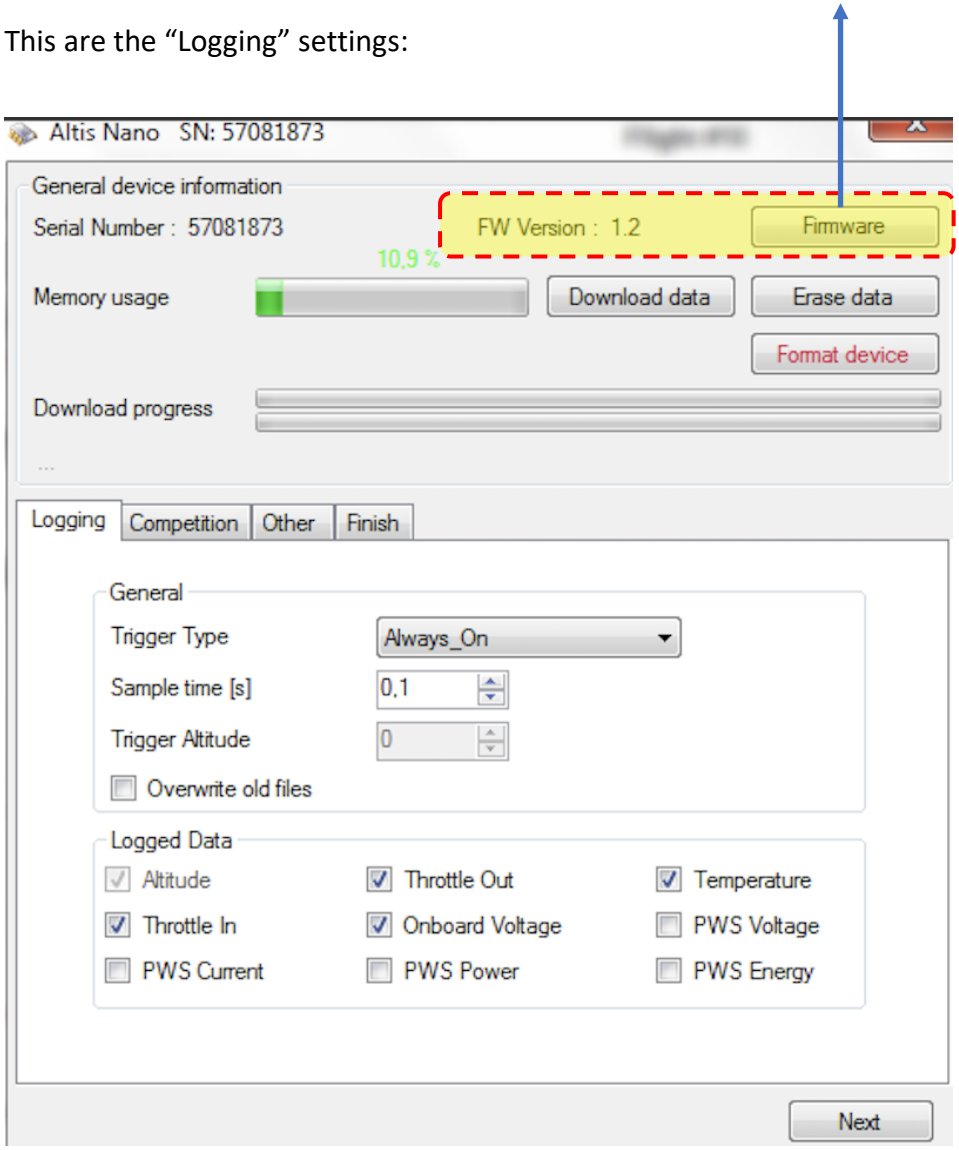
The CD may decide to change the nominal launch height in the event that the actual wind speed is very different compared to the expected wind speed.

Altis settings:

The Altis NANO Altimeter can be programmed with the free Aerobtec software called "Flightmanager". Please find all information on their website https://aerobtec.com/altis-flight-manager/ **For F5K you need to download version V4.4.0, which is released on the 20th September 2019.**

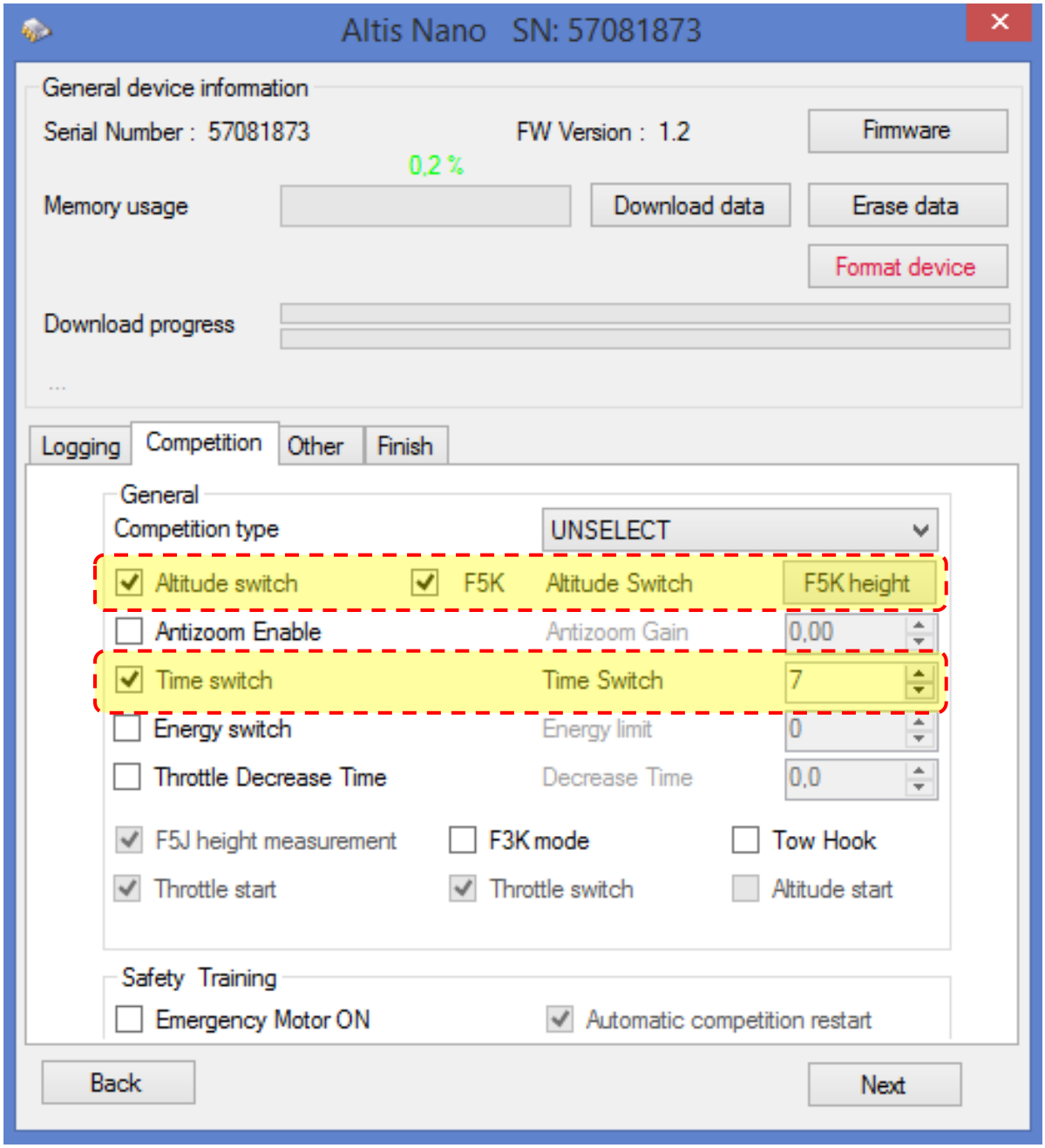
BE SURE YOU HAVE UPDATED THE ALTIS NANO WITH THE LATEST FIRMWARE ! IF NECESSARY UPDATE THE FIRMWARE. THE F5K SETTINGS ARE INTEGRATED IN VERSION FW1.2 (20 SEPTEMBER 2019)

This are the "Logging" settings:

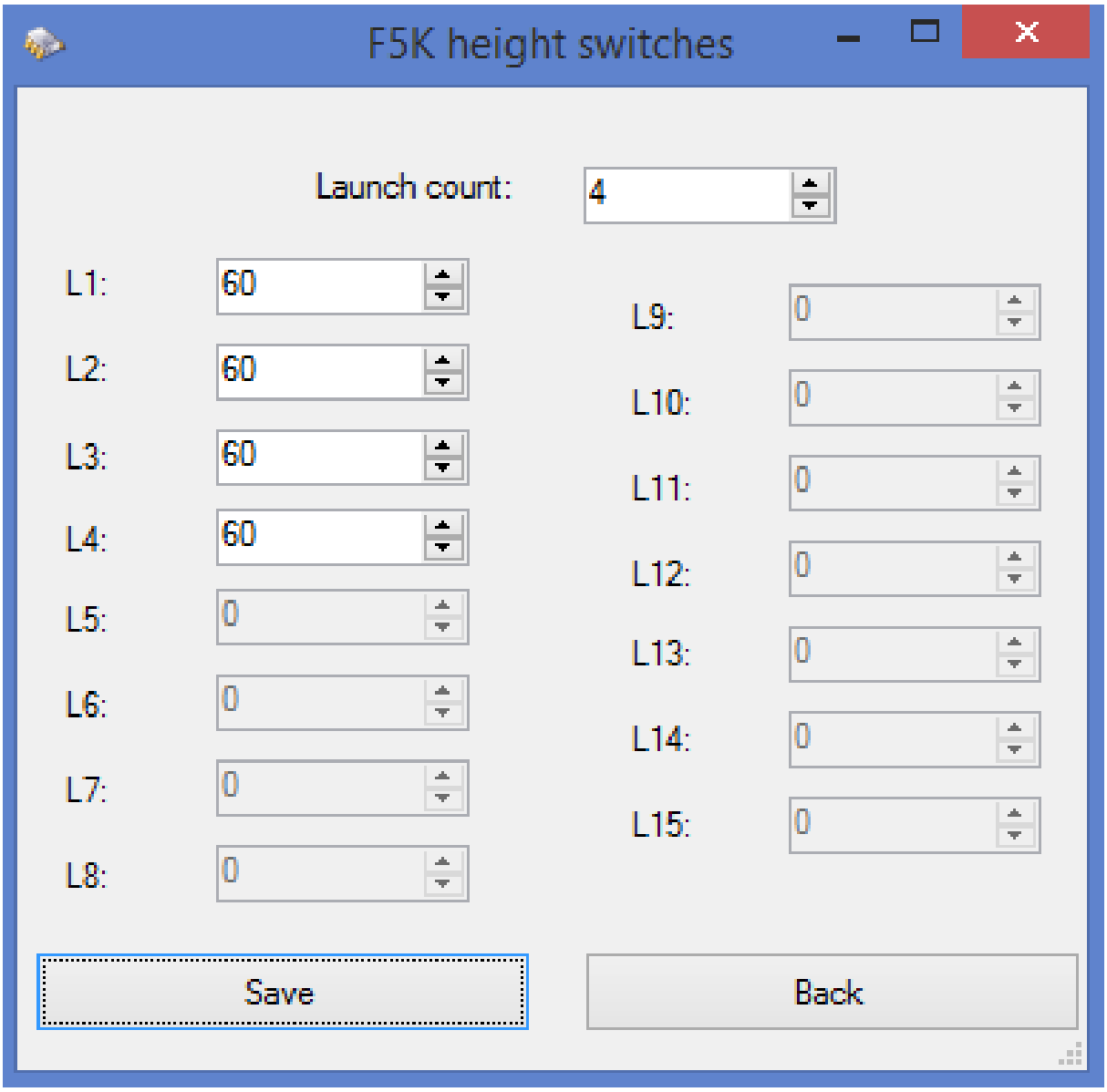


The next tab is the most important: Competition settings:

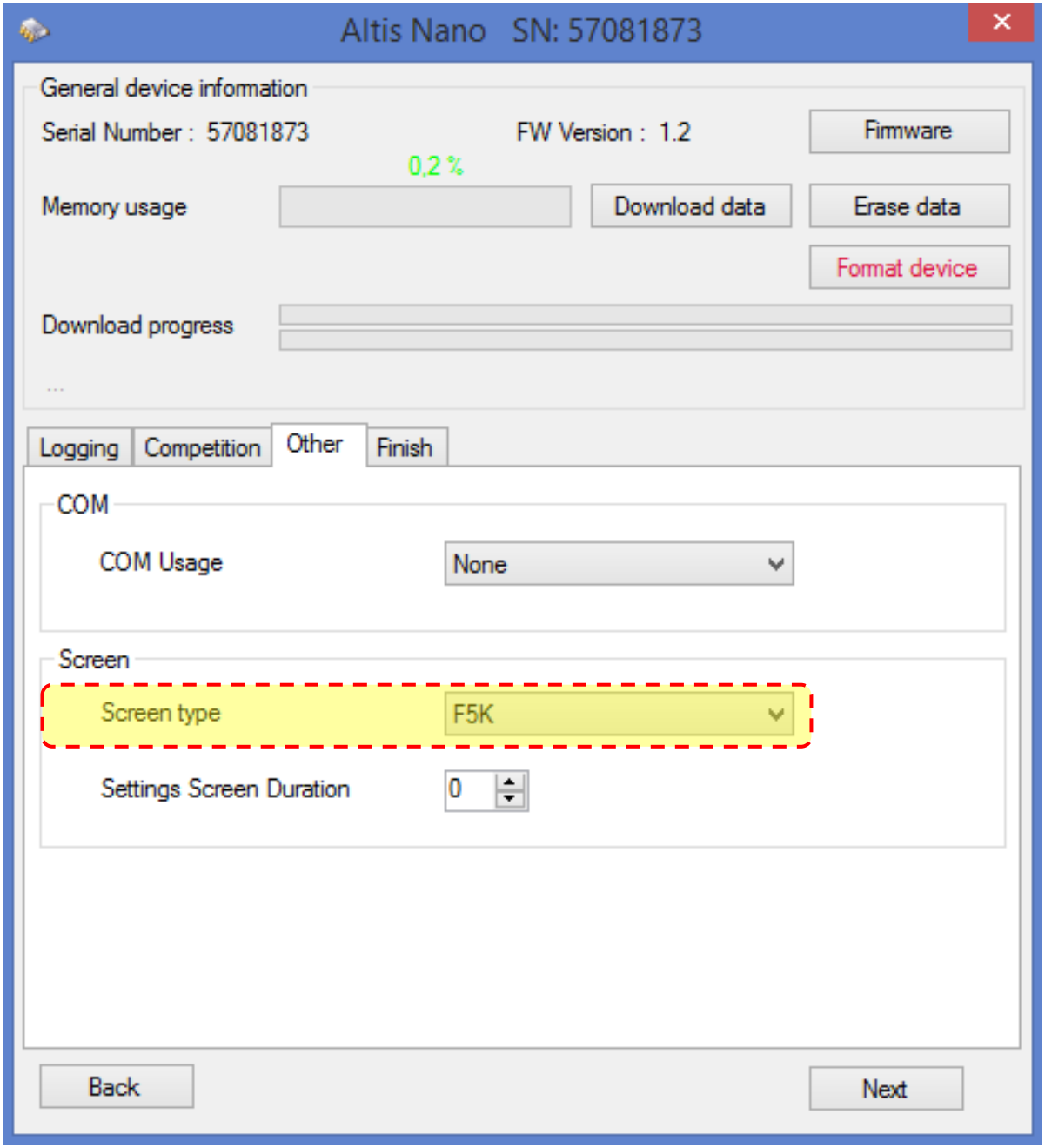
In this menu you have to program the Nominal Launch Height. In this example the NLH is 60 meter and the Time Switch is set on 7 seconds. Select ***"Altitude switch and F5K".*** With these settings, the Altis is automatically reset in case the height is below 8 mtr. This setting is important as we fly multiple starts during one F5K task. Also select ***"Time switch"*** and set it to ***7 seconds***.



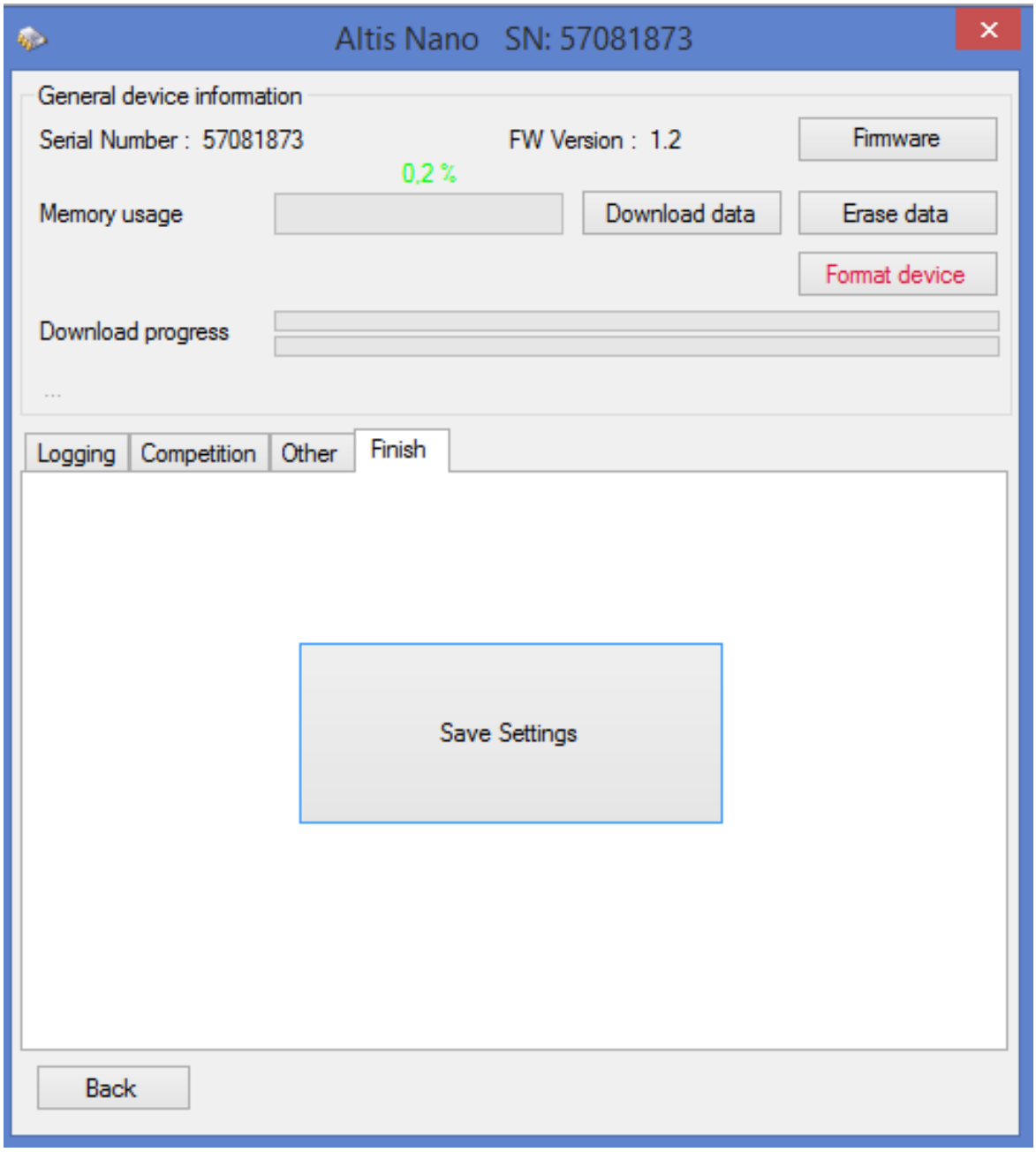
Select the ***"F5K height"*** button. Enter the maximum number of starts for which the Altis Nano should capture the height. During the F5K contest the maximum number of starts is 4. The Altis Nano will capture 4 launches. It is possible to have more than 4 starts, but this launch height will not be captured. Save this settings and push the "Back" button.



In the tab “Other” you can program the Screen type. Select ***“F5K”*** at the Screen type.



In the last Tab “Finish” you can save the settings:



«

After installing the F5K software your Altis Nano should look like this:

Display shows competition settings:

F5K competition
Firmware FW1.2

Display shows first launch height:

L1 (first launch)
067 (launch altitude)

Display shows F5K settings:

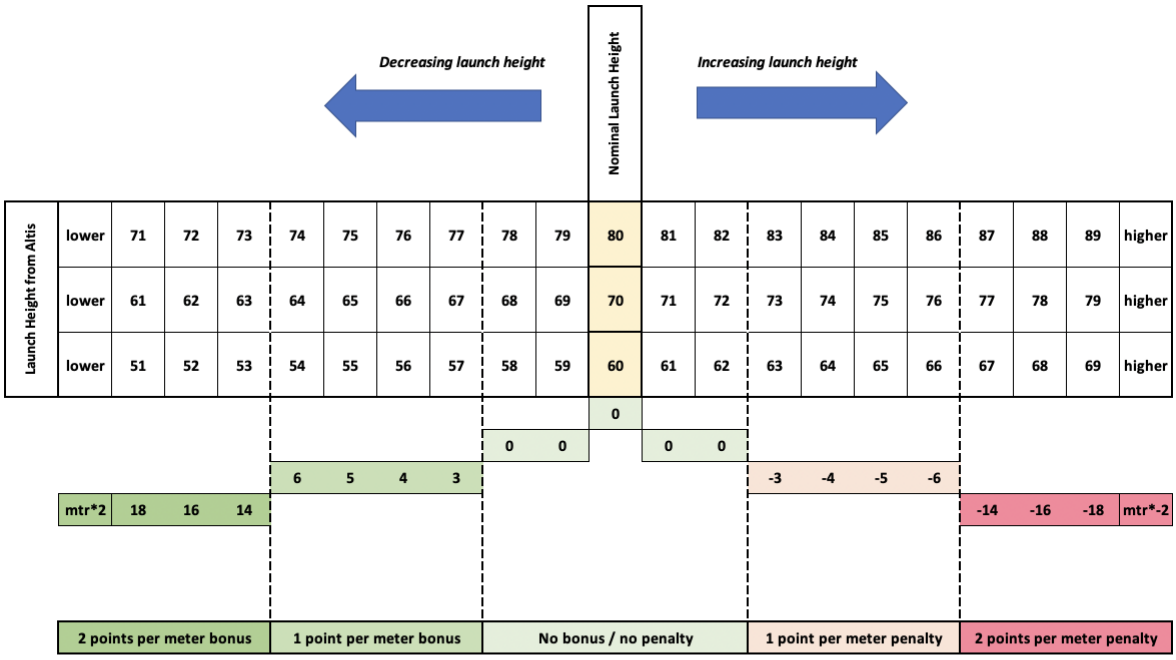
L01 (first launch)
A60 (Nominal Launch Height 60 mtr)
T07 (Motortime)

Penalty and bonus rules during launch:

As described before the Nominal Launch Height and motor time settings are saved in the Altis *before* the contest. During launch a penalty or bonus rule applies. No penalty applies in the event the zoom after motor stop is equal or less than 2 meter related to the Nominal Launch Height.

In the event the zoom is more than 2 meter and less than 6 meter a ***penalty*** of 1 point per meter will be applied. If the zoom is more than 6 meter a penalty of 2 points per meter will be applied. All counted from the nominal launch height.

In the event the height is less than the Nominal Launch Height a launch ***bonus*** is applied. In the event the launch height is less than 2 meter and less than 6 meter a bonus of 1 point per meter will be applied. If the launch is less than 6 meter a bonus of 2 points per meter will be applied. All counted from the nominal launch height. You can find all details below.



Explanation	
2	2 points launch **bonus** per meter zone
1	1 point launch **bonus** per meter zone
0	no penalty / no bonus launch zone
1	-1 point launch **penalty** per meter zone
-2	-2 points launch **penalty** per meter zone

Penalty examples with different launch heights:

The Contest Director announced a nominal launch height of 60 mtr, **PENALTY** rules:

No launch penalty for heights	: 61 (0 points) and 62 (0 points)
1 point per meter penalty	: 63 (-3 penalty), 64 (-4 penalty), 65 (-5 penalty), 66 (-6 penalty)
2 point per meter penalty	: 67 (-14 penalty), 68 (-16 penalty), 69 (-18 penalty), 69 (-19 penalty), etc

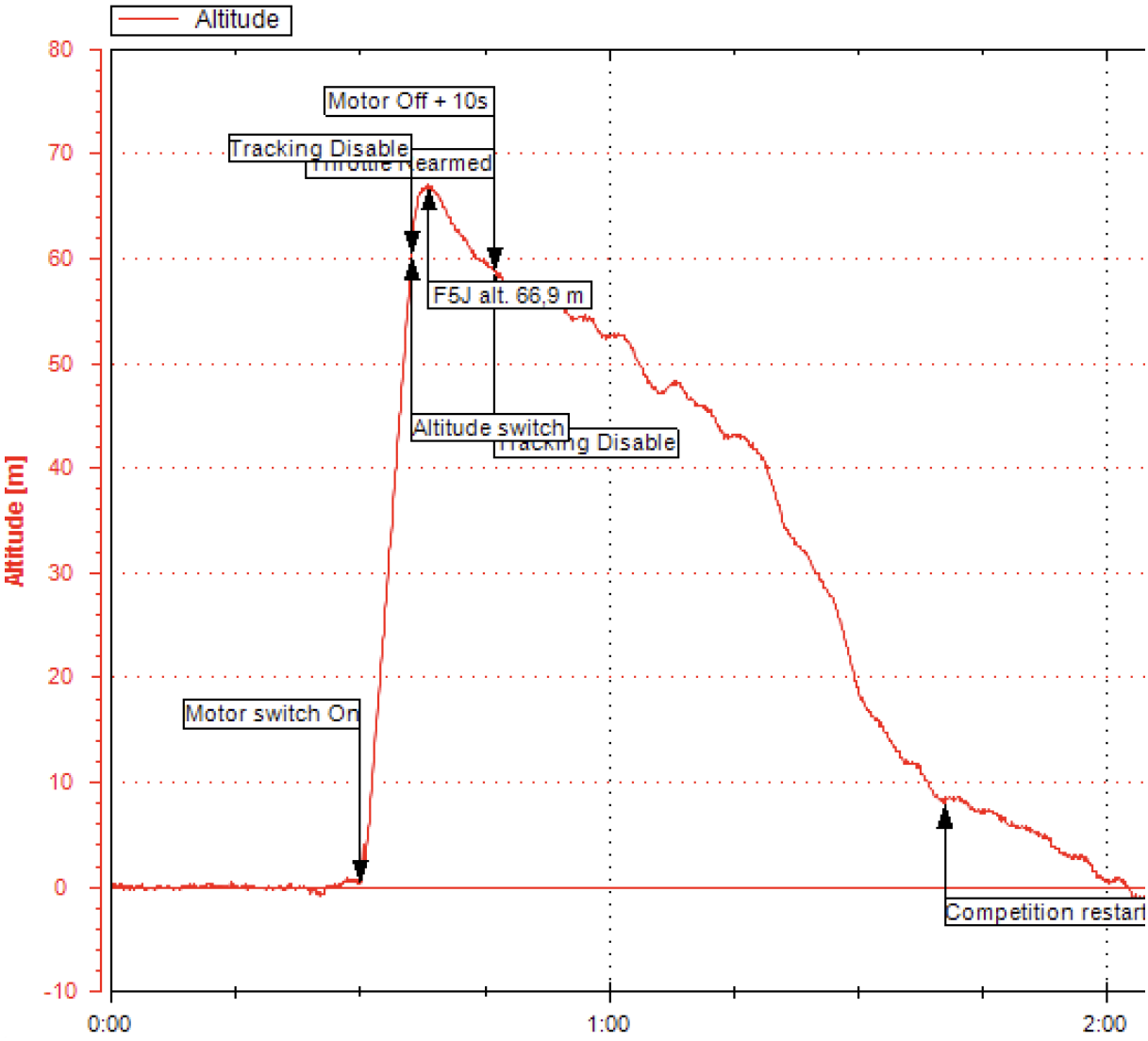
The Contest Director announced a nominal launch height of 60 mtr, **BONUS** rulse:

No bonus penalty for heights	: 59 (0 points) and 58 (0 points)
1 point per meter penalty	: 57 (-3 bonus), 56 (-4 bonus), 55 (-5 bonus), 54 (-6 bonus)
2 point per meter penalty	: 53 (14 bonus), 52 (16 bonus), 51 (18 penalty), 51 (18 penalty), etc

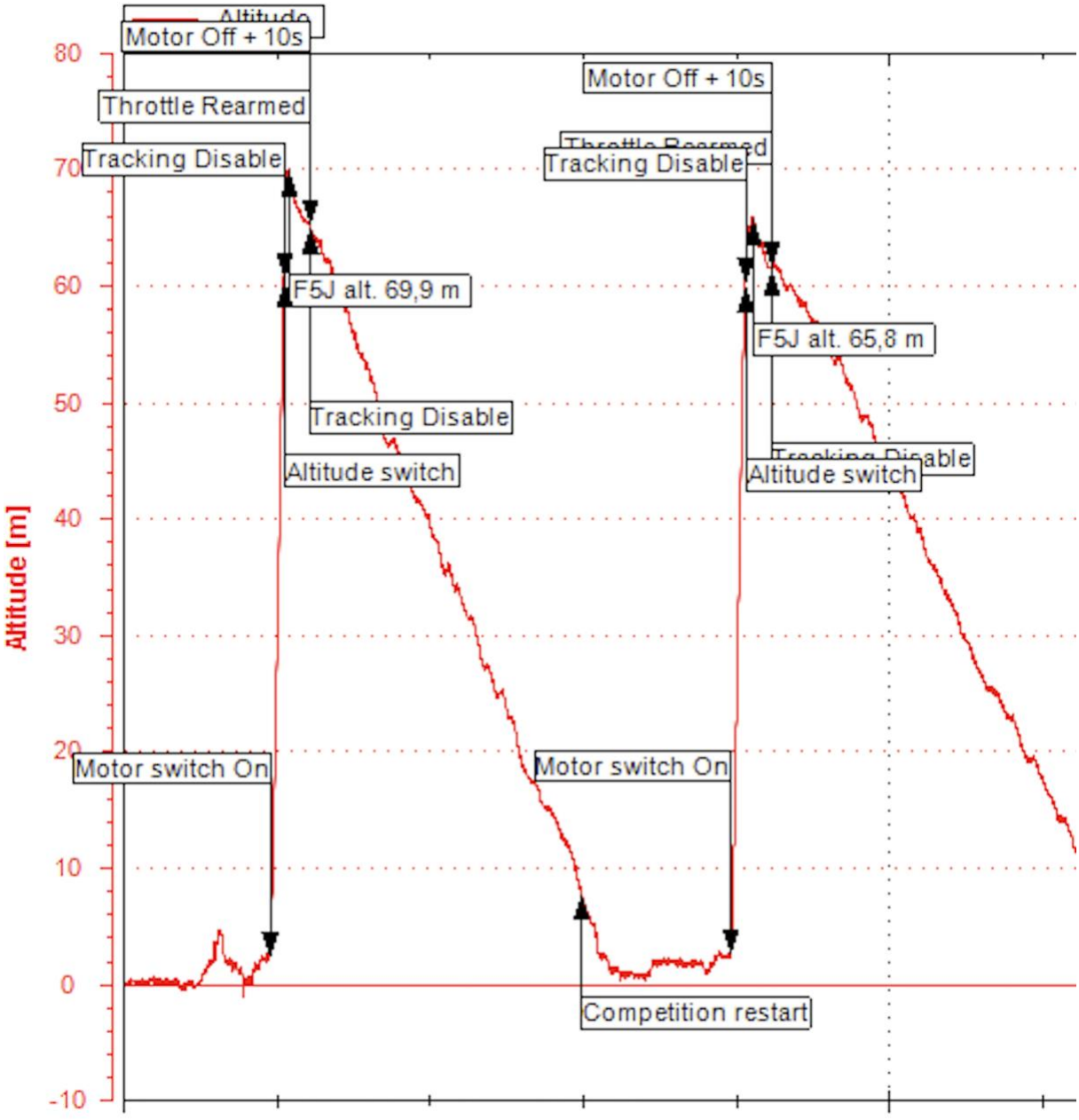
For the NLH 70 and 80 meter the same penalty range / bonus is applicable (see table)

The launch altitude is recorded and captured in the Altitude device (Altis). After the task, the different launch altitudes are shown on the display. The pilot only has to put his launch scores on the score card. The Competition software counts the penalty or bonus points in the task score.

Be aware the launch height is measured during the 10 seconds after you have switched off the motor. The highest altitude is captured. In this example 66 mtr. This altitude was at the end of the zoom phase. The launch penalty for this example is -6 points.



Another examples, which shows that it is important to control your zoom altitude to avoid launch penalties.


Altitude
Motor Off + 10s
Throttle Rearmed
Tracking Disable
F5J alt. 69,9 m
Tracking Disable
Altitude switch
Motor switch On
Motor Off + 10s
Tracking Disable
F5J alt. 65,8 m
Altitude switch
Motor switch On
Competition restart
Altitude [m]
80
70
60
50
40
30
20
10
0
-10