Attachment 31 Typhoon H Binding Verification

72. Verify camera LED flashing green and only green.



73. Select "System Settings".



74. Select OK on the "WARNING!!" pop-up.



75. Verify the flight settings menu appears.



76. Wait ~ 7 seconds.

77. Verify you hear a "down tone" from the Typhoon H.

78. Verify Main (rear) LED returns to rapid blue flashing.

79. Select "Camera Select" on the flight setting menu.



80. Select "C-GO3-Pro" on the menu.

Welcome, Pilot	
Choose a camera:	
C-G03	Name :
C-G03-Pro	
C-GOET	
C-G04	

Attachment 31 Typhoon H Binding Verification

81. Select the "Select" button at the lower right of the screen.



82. Verify "Set Status" pop-up displays "Setup Complete!"

83. Select OK on the "Set Status" pop-up.



84. Select "Bind" on the upper left of the screen.



85. Verify the "Bind" page appears.



86. Verify the words "Not connected" appear in orange letters, directly below the word "Camera".



87. Verify the camera ID is displayed in white letters below the orange "Not connected" label in the "Camera" column.



Attachment 31 Typhoon H Binding Verification

88. Select the camera ID in the "Camera" column.



89. Select "Bind" on lower right of screen.



90. IF the "User Login" pop-up appears, do the following:

- h) Select the checkbox beside "Show password".
- i) Select the blue line beside the word "Password".
- j) Use the Touch Screen to enter the camera password. (standard password:1234567890)
- k) Select the blue "Done" button at the lower right of the screen.
- 1) Verify User Login screen returns.
- m) Verify the password is entered correctly.
- n) Select OK on the User Login screen.
- 91. Verify the "Connection Status" pop-up appears.
- 92. Verify the "Connection Status" pop-up displays "Connection Established!".
- 93. Select OK on the "Connection Status" pop-up.



- 94. Select ST16 return.
- 95. Allow time for camera and ST16 to finish binding.
- 96. Verify video appears on-screen.
- 97. Turn off the Typhoon H.
- 98. Turn off the ST16.

If all verifications were as expected, the system should now be ready for flight.

Attachment 32 ST-10/ST-10+ Flight Control Board Calibration Use of this information is at your own risk.

Purpose: Provide guidance for calibration of the Yuneec Controllers ST-10 and ST-10+ Flight Control Boards. **Introduction:** Bias errors noted on the ST-10 / ST-10+ hardware monitor screen are normally corrected by cycling, cleaning or replacing the affected control component. However, the problem is not always within the affected component(s). All of the flight control components feed through the Flight Control Board. This board requires calibration if a new Flight Control Board is installed, if the current board is out of calibration for any reason, or if flight control components have been replaced. Under these circumstances, the following instructions may assist in returning the Flight Control Board to normal calibration.

This process will not work to correct damaged or dirty control components, or a damaged Flight Control Board. Application of this process under such circumstances may significantly worsen the situation.

Calibration of the board with damaged or dirty (unstable) control components may result in the controller TEMPORARILY appearing to work normally. The problem may reappear, without warning, while in flight, with unpredictable results. For these reasons or any other:

Use of these instructions is at your own risk.

Calibration Sequence:

- 1). Turn on the controller.
- 2). Let the controller fully boot to the main screen.
- 3). When the main screen is displayed, select "System Settings":



4). Select "About Flight Mode Control":

Battery		
A. Language		
• Reset		
() Date & time		
About Flight Mode Control		

5). Repeatedly tap the "Android Version" line until the "SECRET MENU" opens:

Model number		/	
ST10+			
Android version 4.0.3	Z	>	
Kernel version 3.0.8			
Build number st10+v01b31c			
Build number st10+v01b31c			

6). Select "Controller Test":



7). Select the "Enter" button under "Controller Test":



8). Select Transmitter Version "Read" button:



9). Verify transmitter version is displayed:

Transmitter version. stru_rc_app_v00.00629
Read
Step 2 : Reading version number of Radio
Radio Version:
Read

10). Select Radio Version "Read" button:

Step 1 : Reading version number of Transmitter	
Paced	
Step 2 : Beading version number of Podio	
Radio Version:	
Read	
Next	

11). Verify radio version is displayed:

000000	Step 1 : Reading version number of Transmitter Transmitter Version: st10_rc_app_v00.00b29 Read Step 2 : Reading version number of Radio Radio Version: st24_transmitter_rf_v01.19
	Next 55

12). Select "Next":



13). Select "Start" to begin Calibration:

2	Step 3 : 0	Calibratior				
1	JI	J2	J3	J4)
	кı	К2)
6						
					Start Next	ST)
Contraction				-		
-						

14). Cycle each indicated control device. (Refer to Addendum 1 as required to locate each device.)



15). **CRITICAL STEP:** Ensure both control sticks and both manual sliders are returned to center positions.

- NOTE: When "Finish" is selected in the following step, the current positions will be locked in as the reference point for each of these controllers.
- 16). When all indicators are green, and all controllers are centered, select "Finish":



17).Select "Next":

e -	Step 3 :	Calibratior					- 2
j.	JI	J2	J3	J4			3
5	К1	К2					2
6							1
(Finish	Next	1
					4		

CAUTION: Do **NOT** cycle the main power switch in the following step.

18). Cycle each indicated control device until the associated indicator shows "PASS". (Refer to Addendum 1 as required to locate each device.)

J2 1744 FAIL B1 1 FAIL J3 2473 FAIL B2 1 FAIL J4 1779 FAIL B3 1 FAIL K1 2200 FAIL K2 1900 FAIL Reset Finish	JI	2108	FAIL	S1	1	FAIL		
J3 2473 FAIL B2 1 FAIL J4 1779 FAIL B3 1 FAIL K1 2200 FAIL K2 1900 FAIL Reset Finish	J2	1744	FAIL	B1	1	FAIL		
J4 1779 FAIL B3 1 FAIL K1 2200 FAIL K2 1900 FAIL Reset Finish	J3	2473	FAIL	B2	۱	FAIL		
K1 2200 FAIL K2 1900 FAIL Reset Finish	J4	1779	FAIL	B3	۱	FAIL		
K2 1900 FAIL Reset Finish				KI	2200	FAIL		
Reset Finish				K2	1900	FAIL		
Reset Finish								
Finish							Reset	
							Finish	

19). When all indicators show "PASS", select "Finish":



- 20). Use the "Back" button to return to the Main Menu.
- 21).Go to "Hardware Monitor".
- 22). Verify all control devices are operating as expected.

Attachment 32 Addendum 1 Control Device Locations



- K1 Camera Tilt
- B1 Photo
- **B3** Start/Stop
- J1 Throttle
- J2 Rudder (Yaw)

- K2 Rabbit/Turtle
- **B2** Video Record
- S1 Mode Switch
- J3 Elevator (Pitch)
- J4 Aileron (Roll)

Attachment 32 Addendum 2 FC Calibration Recommended Videos

There are many YouTube videos for performing the flight control calibration on the ST10 /ST10+. Almost all are either incomplete, or actually wrong. Either can result in serious problems with your controller. The following videos are among the few known to be correct.

https://www.youtube.com/watch?v=zi131w8Nn2s - Most complete. English

language.

https://www.youtube.com/watch?v=4pd55EOjitM – Universal language. Does

not check results in Hardware Monitor after calibration.

Purpose: To clarify the instructions provided by Yuneec.

Introduction: The overall process is not complicated, but there are areas that can create issues with this update:

- 1). The currently available ST10+ firmware is NOT compatible with the earlier ST10 controller. Attempting to load ST10+ firmware onto an ST10 will result in an essentially "bricked" ST10. Note ST10 firmware is no longer available. If you have the earlier ST10, you should stop now, and exit this document.
- 2). The generic instructions include the phrase "Do not extract it." The presence of that phrase has created confusion, since it refers to a second zip file that is inside the downloaded zip file. Follow the instructions below, and they will provide the correct interpretation of the Yuneec statement.
- 3). There are many ways to process the files through your system and onto the ST10+ SD card. These instructions will cover only one of them. Other means are available, and may be more compatible with your habits.
- 4). The images, text and file structures depicted in this document pertain to an update from US firmware version "st10+v01b30c" to US firmware version "st10+v01b31c", which includes transmitter (Radio Controller) update version "st10plus_tx_b32.bin". Updates from and to other firmware versions may include somewhat different file structures and file names.

Use of this information is at your own risk.

Sequence:

1). <u>Create a new folder on your computer for this task</u>, and provide it with a name you can recognize:



- 2). Download the current version firmware for your region to the new folder
 - a. US version: <u>https://us.yuneec.com/downloads-typhoon-q500</u> (ST10+ Build st10+v01b31c)
 - b. EU version: <u>https://www.yuneec.com/en_GB/support/downloads/typhoon-4k-en.html</u> (ST10+Firmware Vst10+v01b30c)



3). Extract the zip file.

4). Expand the new folder.



5). Expand the NEXT new folder.

✓ 🗖 Desktop	st10+v01b31c
🗙 📜 10+ Firmware Folder	st10+v01b31c.zip
✓] st10+v01b31c	
> 1 st10+v01b31c	
> st10+v01b31c.zip	

NOTE: The file set displayed for different firmware versions may differ from the following example. The following example is from US update version ST10+v01b31c.

6). These are the files you will need:

🗸 🗖 Desktop	firmware
🗸 🏓 10+ Firmware Folder	ST10+ firmware update instructions.pdf
✓	update.zip
> 📙 st10+v01b31c	
> 👔 st10+v01b31c.zip	
> 🗄 Documents	

7). Copy the files to a formatted SD Card:



8). Remove ST10+ Battery.

- 9). Place SD Card in SD Card Slot of ST10+ Battery Compartment.
- 10). Install Battery.
- 11). Turn on ST10+ and let it boot up.





- 13). Click "OK".
- 14). Select "About Flight Mode Control":



15). Scroll down:



16). Note the current "Build number" for future reference:

About Flight Mode Control	
3.0.0 Redd cameber	
Hardware version P1.4	
Radio Control Update	
System Update	

17). Select "Radio Control Update":

C About Flight Mode Control	
3.0.8	
Build number et10+v01b30c	
Hardware version P1.4	
Radio Control Update	
System Update	

18). Tap the Bin number:

Choose Tx File	Choose Rf File	Bootloader: stm32_boot der_v00.00b04
errophus_incus/2.0	\rightarrow	No TX File was Selected
1		Update TX
		No RF File was Selected
		Update RF
		Finish

19). Verify selection updates to selected number:



20). Select "Update TX":



21). Allow time for update to proceed.



22). Verify Update Success:

Choose Tx File Choose Rf File st10plus_tx_b32.bin Update Result Update Success OK			
Update Result Update Success OK	Choose Tx File st10plus_tx_b32.	Choose Rf File	
Update Success ox	L	Jpdate Result	
OK		Ipdate Success	
		ОК	

23). Click "OK":



NOTE: Most updates do not include an RF update. If no RF file is listed under "Choose Rf File", then no RF update is included.

- 24). IF no update is listed under "Choose Rf File", THEN SKIP TO Step 26).
- 25). IF a file number is shown under "Choose Rf File", THEN:
 - a. Select file name under "Choose Rf File".
 - b. Verify RF selection updates to selected number.
 - c. Select "Update RF".
 - d. Verify Update Success.
 - e. Click "OK".
- 26). Click on "Finish':



27). Click on "System Update":

(About Flight Mode Control
-	
	Build number st10+v01b31c
	Hardware version P1.4
	Radio Control Update
(System Update

28). Click on "OK":

uild num		
t10+v01b30	Warning	
Hardware v 21.4	Are you sure you w system?	ant to upgrade
adio Con	Cancel	OK

29). The system will go through a sequence of screens **SIMILAR TO** the following sequence. Some screens may seem to freeze at times. Some screens take more time than others:





30). When the Main Screen appears, select "System Settings":



31). Click "OK".

32). Verify "Build number" updated to the build number of the firmware update you just installed:

<(About Flight Mode Control	
	Model number ST10+	
	Android version 4.0.3	
	Kemel version 3.0.8	
	Build number st10+v01b31c	
	Hardware version	

- 33). Delete any existing model(s).
- 34). Create new model for your drone.
- 35). Bind your drone to the new model.

Attachment 34 ST16 Signal Processing Overview

General discussion about Hardware Monitor and the final outputs:

Hardware Monitor is an EXCELLENT tool for its purpose, which is essentially checking the nearly raw output of each controller. Its main drawback is not in itself, but in us, the pilots. Many pilots believe what is shown in Hardware Monitor is what is going to the drone. It is not. And sometimes dangerously not.

This drawing might help explain why checking the final output display is a better indication of what the controller is sending:





Typical Values for ST16 ONLY, Mode 2 ONLY

Channel	Function	Hardware	Typical Range (%)	Notes
CH01	Throttle	J1 / (B1)	0 to +100* /(-25)	J1-Up/Down / B1-Start/Stop motors
CH02	Roll	J4	-100 to +100*	Left /Right
CH03	Pitch	J3	-100 to +100*	Travel Forward / Backward
CH04	Yaw	J2	-80 to +80*	Drone Pan
CH05	Mode Switch	S4	-100 / 0 /+100	All Switch Positions
CH06	Mode Switch	S4	0/0/+150	Home Position +150
CH07	Camera Tilt	K2	-100 to +100	Manual Camera Pitch
CH08	Camera Pan	K1	-100 to +100	Manual Camera Yaw
CH09	Camera Tilt Mode	S1	+10/+10/+100	Three Switch Positions
CH10	Camera Pan Mode	S2	-100/-40/+100	Three Switch Positions
CH11	Landing Gear	S5	-100/+100	Raise/Lower Landing Gear
CH12	None	B2	-100/+100	No function currently assigned
N/A	Rate Slider	К3	N/A	Rabbit / Turtle (No Display)
N/A	OBS	S3	N/A	No Display
N/A	Trim Tabs	T1,T2,T3,T4	N/A	No Display
N/A	Snapshot	B3	N/A	No Display
N/A	Record	B4	N/A	No Display

Attachment 34 ST16 Signal Processing Overview

Note: This version of the chart provides extra detail by showing which signals are actually affected by each process, and which signals are not actually transmitted (Do not show an effect on the ST16 final display.)



Use of this information is at your own risk.

NOTE: The Typhoon H does not need to be powered on for this process.

1). Power on the ST16 and let it come to the main screen.



3). Select "OK":



4). Rapidly and repeatedly tap "About Controller":



5). Select "Enter Test":

Enter Test	
HW Test	
Wifi Test	
Calibrate Test	
HDMI Setting	
Firmware Upgrade	

6). Select "GPS info test":	
Apk Version : st16_app_v01.00.45	
Transmit Test Gps Test data_test	
Enter Enter data_test	
Controller Test	
Enter	
Signal Test	
Enter	
GPS Info test GPS Info Count	
Enter Enter	
Wifi ADB Test	
Enter	
Wifi Tx/Rf Test	
Enter	

7). Slide the bar to "Detailed":

GPS Information				
Test Type: Detailed	Satellite Total: 22 No.	gnssld	svld	strength
lon : -81.38442				
alt : 290.0				
lat : 35.368507				
accuracy : 29.0				
speed : 0.0				
angle : -166.0				
no_satelites : 9				
data from : M4 Board				

8). Upload a screenshot of the results to the Forum:

No. gnssld svld strengt 1 0 15 38 2 0 21 37 1 0 18 35 2 0 13 33 1 0 13 33 1 0 13 33 1 2 0 13 33 1 138 32 33 33 1 138 32 33 33 1 138 32 33 33 1 138 32 33 33 1 138 32 33 33 1 138 32 33 33 1 138 32 33 33 33 1 13 13 33 33 33 33 1 13 13 13 33 33 33 33 1 13 13 13	BPS Information				
Test Type:DetailedNo.gnssldsvldstrengt101538202137lon : -81.38442301835401333alt : 290.05113832602031lat : 35.368507702931accuracy : 29.096125speed : 0.01062425angle : -166.012020130501330no_satelites : 91411330		Satellite Total: 22			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	est Type: Detailed	No.	gnssld	svld	strength
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		1	0	15	38
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		2	0	21	37
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	on : -81.38442	3	0	18	35
alt : 290.05113832 6 02031lat : 35.368507702931accuracy : 29.0862329 9 6125speed : 0.01062425 10 62425 11 02424angle : -166.012020 13 050 10 13050		4	0	13	33
$\begin{array}{c cccc} & 6 & 0 & 20 & 31 \\ \hline lat: 35.368507 & 7 & 0 & 29 & 31 \\ \hline accuracy: 29.0 & 9 & 6 & 1 & 25 \\ speed: 0.0 & 10 & 6 & 24 & 25 \\ speed: 0.0 & 11 & 0 & 24 & 25 \\ \hline angle: -166.0 & 12 & 0 & 2 & 0 \\ \hline no_satelites: 9 & 14 & 1 & 133 & 0 \end{array}$	lt : 290.0	5	1	138	32
lat : 35.368507 702931accuracy : 29.0 862329g6125speed : 0.0 1062425angle : -166.01202424angle : -166.013050no_satelites : 91411330		6	0	20	31
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	at : 35.368507	7	0	29	31
accuracy: 29.0 9 6 1 25 speed: 0.0 10 6 24 25 angle: -166.0 12 0 24 24 no_satelites: 9 14 1 133 0		8	6	23	29
speed: 0.0 10 6 24 25 11 0 24 24 angle: -166.0 12 0 2 0 13 0 5 0 no_satelites: 9 14 1 133 0	ccuracy: 29.0	9	6	1	25
angle : -166.0 11 0 24 24 angle : -166.0 12 0 2 0 13 0 5 0 no_satelites : 9 14 1 133 0	need · 0.0	10	6	24	25
angle : -166.0 12 0 2 0 13 0 5 0 no_satelites : 9 14 1 133 0	speed : 0.0	11	0	24	24
13 0 5 0 no_satelites : 9 14 1 133 0	nale : -166.0	12	0	2	0
no_satelites : 9 14 1 133 0	- John State	13	0	5	0
15 1 105 0	o_satelites : 9	14	1	133	0
15 I <u>135 U</u>		15	1	135	0
data from : M4 Board 16 5 1 0	ata from : M4 Board	16	5	1	0
17 5 4 0		17	5	4	0