Hornet 460

Instruction Manual · 使用说明



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Thank you

Thank you for selecting the Hornet 460 from Dualsky! This kit is designed to be fun to fly and uses top quality parts for durability and performance. This instruction manual you are reading was designed to be easy to follow, yet thorough in its explanations. Dualsky wants you to enjoy the performance and experience of using our products. If you have come across any problems or require further assistance, contact us or one of our international distributors and we will do our very best to help you. You can also contact us on the internet at www.dualsky.com

• This is a high performance R/C kit, and it requires regular maintenance for best performance. If you don't do regular maintenance the performance will suffer. Dualsky has all the necessary parts and accessories available to keep your aircraft performing at its best.

The caution or attention symbols will warn you about steps that can be very dangerous. Please read and understand the instructions carefully before proceeding.



Failure to follow these instructions can damage your kit, and cause serious bodily injury or death.



Failure to follow these instructions can cause injury to yourself or others. You might also cause property damage or damage your kit.



Before Flying

- · Please read manual with parent or guardian (responsible adult).
- Turn ON transmitter first, and then turn ON the receiver. This will prevent the aircraft from losing control.

Before Operating

- · Make sure that all screws and nuts are properly tightened.
- · Always use fully charged batteries in your transmitter and receiver to avoid losing control of the model.
- · Make sure no one else is using the same radio frequency that you are using.
- · Please confirm the range of the radio operation.

During Flying

- · Please do not fly in a public area, this could cause serious accidents, personal injuries and/or property damage.
- · Please do not fly near pedestrians or small children.
- · Please do not fly in small and confined areas.

After Flying

· Turn OFF receiver first, then turn OFF transmitter. This will prevent the aircraft from losing control.

Battery Safety

• Please be careful when handling the battery. It could be hot after running. As part of a regular maintenance routine, be sure to check all wiring including battery wire and terminals.

感谢您选择双天的Hornet 460!这款套件力求让您体验到飞行的乐趣,在设计时我们选用顶级材料与配件以保证 最佳的可靠性和飞行表现。您正在阅读的这份使用说明力求通过简单易懂的描述让您对本产品有一个全面细致的了解。 我们希望您能够喜欢我们的产品。如果您在使用过程中遇到问题,或者需要一些帮助来完成某一步骤,请您致电我们 公司,我们会竭诚为您服务。您也可以通过我们公司的网站(www.dualsky.com)来联系我们。

·这是一款高性能的遥控模型套件,它需要一定的常规维护来使其保持在最佳状态。如果您不进行常规维护,那么产品的性能将会受到影响。双天 公司提供完备的产品配件及附属装备来保证您的飞行器始终工作在最佳状态下。

警告及注意事项符号将会提醒您哪些安装或使用步骤会变得十分危险。 请在操作前仔细阅读并完全理解这些说明。



未能按照说明操作将会损坏您的套件, 并会造成严重的身体伤害甚至死亡。



未能按照说明操作将会伤害到您或他人。 您也有可能会造成财产损失或损坏到您 的套件。



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1 Equipment Needed 所需设备

Electronics 电子设备

The Hornet 460 requires the following items to complete: at minimum a 4-channel radio system (we recommend a 6-channel or higher radio system), Lithium Polymer (LiPo) battery pack (recommend Dualsky 1700-5000mAh 11.1V) and battery charger. 您需要准备一套4通道(或以上的)遥控设备、锂电池组和电池充电器。









Assembly Instruction 安装指南









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Please notice the direction of the flight control unit 请留意飞控的安装 方向



Please use the double sided tape included with the flight control unit 请务必使用随飞控 附赠的双面胶





Layout 3 布局3

Easier to change/adjust receiver and flight control unit 便于拆装和调整接收机与飞控







Transmitter Setting 遥控器设置

- · The Hornet 460 needs a 4-channel or higher radio controller to operate;
- Set the radio to "Airplane Mode", turn off all the mixing functions, set all channel's D/R to 100%;
- · Set all channel's trim, sub-trim and mechanical trim to "0";
- · Set all channel's direction according to the below chart;
- If you are using a 4-channel radio controller, the sensitivity of sticks can be set in Flight Control Unit. If you are using a 5-channel or higher radio controller, please connect the RATE to CH5/GEAR channel on the receiver, then sign a 3-position or 2-position switch on the radio to CH5/GEAR channel, set this switch to Low. This channel is used to adjust the sensitivity of the sticks. Please check the diagram on the right for corresponding value of this channel.

	Futaba	JR	Spektrum	нотт
AILERON	NOR	REV	REV	REV
ELEVATOR	REV	NOR	NOR	NOR
THROTTLE	REV	NOR	NOR	NOR
RUDDER	NOR	REV	REV	REV
CH5/GEAR	NOR	REV	NOR	REV

- •双天H460四旋翼需要一台四通道或以上的遥控设备;
- 设定遥控器为固定翼模式,如果遥控器有混控功能,请关闭所有混控,将各通道行程都设为100%:
- •各通道的电子微调(TRIM或SUBTRIM菜单)和摇杆的机械微调都归"0";
- •如下图所示,根据品牌设定遥控器各通道正反向;
- 如果使用四通道遥控器,操纵杆灵敏度可在飞控中设定。如果您使用五通道或以上的 遥控器,请将 RATE 连接至CH5/GEAR通道,并在遥控器上与三段或两段开关关联,开 关拨至最小。该通道用来调节飞行过程中操纵杆灵敏度。开关通道对应数值,请参考 下图:



ESC Initial Setting 电调行程设定

- Turn on the radio controller, push the throttle stick to the top, turn on power to the Hornet 460, when L1 shows blue in color, it means the ESC is in initial setting mode;
- Wait until the ESC's long beep (it means the top point of throttle has been confirmed), then pull the throttle stick to lowest point;
- Wait about 1 second for a short beep (it means the lowest point of throttle has also been confirmed), the ESC initial setting is finished;
- Don't move the throttle stick after initial setting, turn the power off to the Hornet 460, then reconnect the power after 5 seconds, the new setting will be applied.

- •开启遥控器,将油门推至最高,接通四旋翼飞行器的电源,L1蓝灯亮时,即进入电调 行程设定模式;
- •等待电调发出"滴"声(长声),表明油门最高点已经确认,此时应立即将油门收至 最低:
- 等待约1秒,电调再次发出"滴"声(短声,约0.2秒),表明油门最低点确认,即完成电调行程设定。电调设定完成后请勿推高油门(为确保安全,建议断开电源后重新接通)。

Flight Control Setting 飞控设置



ALL SETTINGS ARE OPTIMIZED TO FIT HORNET 460, DON'T CHANGE THEM UNLESS IT'S NECESSARY. 设定项目根据双天H460已做最优化处理,如非特殊情况无需设定。

· How to enter Setting Mode: Turn on radio controller. move the throttle to lowest position: turn on power to the Hornet 460, wait until the L1 LED finishes flashing Green and then changes to RED (Now the flight control is in Lock Mode); press the "SET" button on the flight control to enter Setting Mode. After you enter Setting Mode, L1 displays the corresponding SETTING ITEM menu attributes (color). and L2 displays the corresponding SETTING VALUE menu attribute (color).

· "SET" Button usage:

- 1) Long Press (more than 2 sec) under Lock Mode: enter Setting Mode
- 2) Single Click under Setting Mode: switch between SETTING ITEM
- 3) Double Click (finish within 0.5 sec) under Setting Mode: change SETTING VALUE
- 4) Long Press (more than 2 sec) under Setting Mode: Save and Quit to Lock Mode
- · Please check the below chart for all settings.

	L1 Setting Item 设定选项	HEAD DIRECTION
Blue 蓝色	D/R 杆量	
Green 绿色	ESC PWM Freq. 电调PWM频率	
Red 红色	Gyro Direction 陀螺仪方向	((FC430)) 3-axis Flight Control
Yellow 黄色	Potentiometer Lock 电位器锁定	
Purple 紫色	Flying Mode 飞行器模式	ESC1 ESC2 ESC3 ESC4 NET SYS
White 白色	Factory Reset 恢复出厂设置	
· Some se	ettings will take effect a	fter the Hornet 460 is restarted. Cut

•如何进入设定模式:打开遥控器,油门收至最低,接通四旋翼飞行 器的电源,等待飞控L1绿灯闪烁结束红灯常亮(此时为锁定状态) 后,长按飞控上的"SET"按钮进入设定模式。此时,L1的颜色指示 设定项目,L2的颜色指示该设定项当前设定值。

• 按键操作说明:

- 1. 锁定状态下长按(大干两秒): 进入设定模式
- 2. 设定状态下单击: 改变设定项
- 3. 设定状态下双击(双击有效间隔小于0.5秒):改变该项设定值
- 4. 设定状态下长按:保存并退出
- 具体设定项如下表所示

L1				L2				
	Setting Item		HEAD DIRECTION	Setting Value 设定值				
	设定选项			Blue 蓝色	Green 绿色	Red 红色	Yellow 黄色	
Blue 蓝色	D/R 杆量		€	Low 小杆量	<i>Middle</i> 中杆量	High 大杆量		
Green 绿色	<i>ESC PWM Freq.</i> 电调PWM频率	←		400Hz	200Hz	266Hz	333Hz	
Red 红色	Gyro Direction 陀螺仪方向		((FC430)) 3-axis Flight Control	Front face upward 正面向上	Back face upward 背面向上	Front face to left 正面向左	Front face to right 正面向右	
Yellow 黄色	Potentiometer Lock 电位器锁定			<i>Not Lock</i> 未锁定	Lock 锁定			
Purple 紫色	Flying Mode 飞行器模式			Х Туре X型	Cross Type 十字型			
White 白色 Factory Reset 恢复出厂设置				Reset 恢复设置	* Blue color setting in * 蓝色设定值是默认值	dicates default values		
	Some settings will take effect after the Hornet 460 is restarted. Cut the power to the Hornet 460 and reconnect after 5 seconds to apply the new settings. • 部分设定需重启飞控后才能生效,因此在飞控设定完成后,请断开 四旋翼飞行器的电源,稍等5秒钟再重新接通电源以应用新的设定值。							



Unlock & Propeller Direction Check 解锁与螺旋桨方向检查

- · Make sure the Hornet 460's battery is fully charged, and you are in a wide, flat area;
- Turn on the radio, pull the throttle stick to lowest position, plug in the power to the Hornet 460. L1 LED on FC430 Flight Control will flash Green (initial startup process), don't move sticks on the radio controller, keep the Hornet 460 still. When the L1 LED changes to Red, it means the initial startup process has finished and the Hornet 460 is now in Lock Mode (throttle will not operate). Move the sticks as shown in the diagram (below) and hold for about 0.5 sec to unlock the Hornet 460. After unlock, motors will reach idle speed for about 1 sec. If you don't do any stick movements during this period after "unlock" (5-seconds) the Hornet 460 will return to Lock Mode again.

·确保Hornet 460的动力电池电量充足,飞行器四周没有障碍物;

 打开遥控器,油门收至最低,接通Hornet 460的电源。飞控上的L1绿灯闪烁时为飞 控初始化过程,此过程中请勿拨动操纵杆,并保持飞行器静止。L1绿灯闪烁结束红 灯常亮后即进入锁定状态,此时推油门无效。执行下图中的拨杆动作并保持约0.5秒 即可解锁,解锁后电机保持怠速约一秒。解锁后五秒内如不将油门推高或执行拨杆 动作,飞控将会重新进入锁定状态。



* This movement is the same for both Mode I and Mode II transmitters to "unlock" the Hornet 460 *模式1和模式2的用户都可以使用这个动作来解锁 After unlock, push the throttle a fraction above idle speed, check if the propellers run in correct direction like shown in below diagram. 解锁后,将油门推至略高于怠速,查看螺旋桨旋转方向是否与下图所示一致。



Ground Test 地面测试

- Put the 3-position switch on the radio to low, Put the remote control CH5/GEAR switch to low. After initialization or toggle this switch, L2 LED indicates the state of the current switch position : blue indicates low stick input, green indicates middle stick input, red indicates high stick input. set all sensitivity potentiometers on FC430 Flight Control Unit to neutral;
- Direction check: Controlling the throttle, make sure the Hornet 460 doesn't leave the ground. Slightly move each stick to observe if the Hornet 460 moves with your stick input direction. If the direction is opposite, please change the channel direction on the radio. If the stick returns to neutral point and the Hornet 460 remains in a "tilted" position, it means the flight control is working properly.
- Adjust the sensitivity 调节感度
- The weight on the Hornet 460 can differ depending on the choice of battery. This will impact center of gravity, and the flight characteristics. To improve flight performance you can address the below.
- Normally, if the sensitivity is set too high on the "pitch" (elevator) axis, the opposing axis (i.e., aileron) will vibrate; if the sensitivity is set too low on the "pitch" (elevator) axis, the opposing axis (i.e., aileron) will respond with delay to stick movement.
- If the sensitivity is set too high on the rudder axis it will cause the motors to over react, which will make the Hornet 460 unstable in pitch and yaw direction; if the sensitivity is set too low on the rudder axis, the Hornet 460 will have difficulty on tail lock.

- 将遥控器上的三段开关拨至最小,将遥控器CH5/GEAR对应的开关拨至低位。初始化结束 或拨动此开关,L2会指示当前开关位置对应的杆量:蓝色表示低杆量,绿色表示中杆量, 红色表示高杆量。飞控上的感度电位器都旋至中间。
- 控制油门,保证飞行器不要离开地面,依次轻微拨动各通道操纵杆,观察飞行器在地面的倾斜状态与操纵杆的方向是否一致,如不一致,请在遥控器上更改相应通道的正反;在操纵杆回中后飞行器如果能保持倾斜状态,表明飞控工作正常。

- When adjusting the sensitivity don't change the setting too much, 5-10 degrees is enough. When you find a stable range, then tweak it for optimum performance.
- 不同的四旋翼飞行器因为重量、重心、马达和螺旋浆的不同会导致感度也不同。
- 一般俯仰轴和横滚轴的感度过大会导致在该轴上的震荡:感度过低会导致在该轴上 的动作偏软,突然打杆时飞行器停止不干脆、难以控制。
- 航向轴的感度过大会导致电机的加减速过于激烈,导致其他方向上的不稳定;过低则对航向的锁定有影响,打杆时飞行器停止不干脆;
- ·每次感度调节请勿过大,每次旋转电位器5-10度即可,基本稳定后可继续进行细微调节。

Caution of the Low Voltage Protection 低电压保护的注意事项

All ESCs on the Hornet 460 have low voltage protection function, but if one of the ESCs starts low voltage protection, the quadcopter will lose balance immediately. To prevent accident during flying, flight times should be kept to a conservative time in relation to the operating batteries capacity. You can check the sheet at right side as a reference of your flight time. Hornet 460的四颗电子调速器都具备低电压保护功能, 但是任意一颗调速器 的保护功能启动, 都将会立即导致Hornet 460的飞行状态失调。为了防止在 飞行中发生意外, 请根据您所使用的电池容量将飞行时间控制在一个保守的 范围之内。请将右侧的表格中的数据作为您预估飞行时间的参考。

	Dualsky XP17003EX	Dualsky XP22503GT-S	Dualsky XP46003HED
	(1700mAh 11.1V)	(2250mAh 11.1V)	(4600mAh 11.1V)
Suggested Flight Time 建议飞行时间	6 min.	8 min.	15 min.

* Suggested Flight Time is tested with new and fully charged Dualsky battery, under zero payload weight. Please estimate a safety flight time according to battery condition, payload weight and flight condition.

建议飞行时间为使用全新充满电的Dualsky电池,在空载状态下测得。请根据电池状况、负载重量及场地环境 来预估合理安全的飞行时间。







配件清单 Parts List No. Description 配件编号 品名 21002 H-Arm. 2pcs. without rings 21002 机臂 2件装(不带话配环) 21003 H-Arm ring, 2 pcs 21003 机臂话配环 2件装 H-Arm board, 2pcs 21004 21004 机臂电路板 2件装 21005 H-Landing gear. 2 pcs 21005 起落架 2件装 H460主板(带插头) 21006 H460-Mainboard, with plugs 21006 21007 H460-Upper deck 21007 H460二楼板 H460-Lower case. w/ battery mount 21008 21008 H460底壳(带电池架) 21009 H460-Canopy. w/ screw set 21009 H460头罩(带固定螺丝套件) 21010 H460-Wire set 21010 H460接线套件 21011 H-Hex screw 3x6, 20pcs 21011 内六角螺丝 3x6 20颗装 21012 H-Screw 3x6, 20pcs 21012 十字螺丝 3x6 20颗装 21013 H-Screw 3x8, 20pcs 21013 十字螺丝 3x8 20颗装 21014 H-Screw 3x10, 20pcs 21014 十字螺丝 3x10 20颗装 XM2830CA-Hornet, 830RPM/V 51015 XM2830CA-Hornet专用无刷马达(830RPM/V) 51015 41016 PM32S - Propeller Mount Set PM32S 桨座组件 41016 41029 XC-22-MR, 22 amps ESC 41029 XC-22-MR四旋翼专用电调(22A) 21017 H460-Propeller 9", Black, 1 pair 21017 H460螺旋桨 (9″黑色 一对装) 21018 H460-Propeller 9", White, 1 pair H460螺旋桨 (9″ 白色 一对装) 21018 FC430 Flight Control Unit for Quad Rotor FC430四旋翼专用飞控 21021 21021 21022 FC430-Wire set 21022 FC430接线套件





21039 - H460-Tail Set, 1 pair 尾翼套件 一对



21041 - H-LED, Green, Large, 10 pcs 绿色LED 大号 十颗装



21042 - H-LED, Red, Large, 10 pcs 红色LED 大号 十颗装



21019 - H460-Propeller 10", Black, 1 pair 10寸螺旋桨 黑色 一对装



21020 - H460-Propeller 10", White, 1 pair 10寸螺旋桨 白色 一对装



21023 - FC430-Wire Set L FC430接线套件 长型



21026 - H460-Camera Mount 相机架



35494 - XP17003EX 3S 1700mAh, Light Weight 轻量化锂电池



32838 - XP46003HED Light Weight & Durable 耐久性轻量化锂电池

For more Optional Parts information, please visit our website

更多选装配件信息请访问我们的网站



www.Dualsky.com

Pictures, features and specifications are subject to change without notice.

Hornet 460 The Innovative Quadcopter



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