

Qualcomm Technologies, Inc.

Qualcomm® Snapdragon Flight™

COTS 4-in-1 ESC Integration Instructions

Overview

For developers who wish to use certain commercial-off-the-shelf (COTS) electronic speed controllers (ESCs) with a custom frame, the following steps are provided as a guideline on modifications needed to integrate with your [Qualcomm® Snapdragon™ Flight Kit](#).

These instructions are specifically for the [4-in-1 ESC: 200 QX \(BLH7709\)](#). According to available information, this ESC supports the following motors: [Brushless Motor: 200 QX \(BLH7705\)](#) and [Brushless Motor, Reverse Thread: 200 QX \(BLH7706\)](#).

Equipment needed

Alternative sources or substitutions may be made for any item but care must be taken to ensure that parts retain proper functionality.

The following parts and items are required in addition to the above:

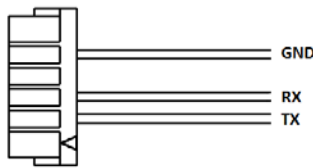
- (1) [Hirose 6pos DF13 housing](#)
- (3) [Hirose 6in DF13 jumper](#)

You will need wire cutters/strippers, a soldering iron, and superglue (not included or pictured).

Step 1

Strip and tin the ends of each wire.

Create the wire assembly as shown below using the (1) *Hirose 6pos DF13 housing* and (3) *Hirose 6in DF13 jumper*.

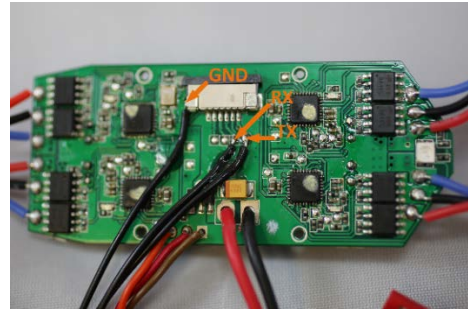


Pin 2 = TX, Pin 3 = RX, Pin 5 = GND

Step 2

Solder the exposed ends of each wire of the connector to the board in the three indicated locations.

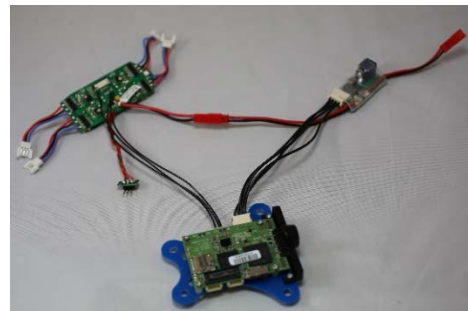
Use super glue to adhere the insulated portion of the wire directly to PCB approximately 0.25 inch from the solder joints to provide mechanical strain relief.



From left to right: GND, RX, TX

Step 3

Connect the COTS ESC, Snapdragon Flight Development Board, and APM.



Not shown: Motors, battery, and required frame

Qualcomm Snapdragon Flight is a product of Qualcomm Technologies, Inc. Other Qualcomm products referenced herein are products of Qualcomm Technologies, Inc. or its other subsidiaries.

Qualcomm, Snapdragon, and Snapdragon Flight are trademarks of Qualcomm Incorporated, registered in the United States and other countries. Other product and brand names may be trademarks or registered trademarks of their respective owners. This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited.

Use of this document is subject to the terms set forth in Appendix A.

Qualcomm Technologies, Inc.
5775 Morehouse Drive
San Diego, CA 92121
U.S.A.

© 2017 Qualcomm Technologies, Inc. All rights reserved.

Appendix A

THIS TERMS AND CONDITIONS OF USE (THE "AGREEMENT") IS A LEGALLY BINDING AGREEMENT BETWEEN QUALCOMM TECHNOLOGIES, INC. ("QTI") AND YOU OR THE LEGAL ENTITY YOU REPRESENT ("You" or "Your"). QTI IS WILLING TO PROVIDE THESE INSTRUCTION SETS AND ANY ASSOCIATED DOCUMENTATION (COLLECTIVELY REFERRED TO AS THE "INSTRUCTIONS") TO YOU ONLY ON THE CONDITION THAT YOU ACCEPT AND AGREE TO ALL OF THE TERMS AND CONDITIONS IN THIS AGREEMENT. BY DOWNLOADING AND USING THE INSTRUCTIONS YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THESE TERMS, QTI IS UNWILLING TO AND DOES NOT LICENSE THE INSTRUCTIONS TO YOU. IF YOU DO NOT AGREE TO THESE TERMS YOU MUST DISCONTINUE THE USE OF THE INSTRUCTIONS AND YOU SHALL NOT USE THE INSTRUCTIONS OR RETAIN ANY COPIES OF THE INSTRUCTIONS. ANY USE OR POSSESSION OF THE INSTRUCTIONS BY YOU IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH IN THIS AGREEMENT.

BY USING THE INSTRUCTIONS, YOU REPRESENT, WARRANT AND CERTIFY THAT: YOU ARE AN AUTHORIZED REPRESENTATIVE OF THE LEGAL ENTITY YOU REPRESENT; YOU HAVE READ THIS AGREEMENT AND UNDERSTAND IT, INCLUDING THE CIVIL CODE SECTION BELOW; YOU HAVE THE AUTHORITY TO BIND THE LEGAL ENTITY YOU REPRESENT TO THE TERMS AND CONDITIONS OF THIS AGREEMENT; AND YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS.

1. **DESIGN OF YOUR PRODUCTS.** You acknowledge that QTI has had and will have no participation in or control over – and no responsibility for – the design or assembly of Your products, including drones, the integration of any of the attached Materials into Your products, including drones, or the sale or marketing of Your products, including drones.
2. **ASSUMPTION OF RISK.** You acknowledge that the operation of the Materials, alone or in a product, including drones, is a potentially dangerous activity and may result in significant harm to property or injury or death to persons. You agree to include on Your products prominent warnings of such risks, as may be required by law or regulation and as may be necessary or prudent to advise users of such risks. You, and not QTI, assume all risks and liabilities that may result from the use of the Materials, whether or not modified by You and whether or not implemented in connection with a reference design provided by QTI or any of its Affiliates.
3. **SAFETY PRECAUTIONS AND PROCEDURES.** You will operate Your products, including drones, in compliance with any and all safety procedures and precautions as are reasonable for the operation of Your products, including drones. This may include using blade guards on drones or operating any drone sufficiently far away from people, property or other hazardous structures e.g., electricity lines. In addition, You will operate Your products, including drones, in compliance with all applicable laws and regulations, including safety and operational guidelines, that apply to the use of Your products, including drones.
4. **WARRANTY.** THE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAWS, QTI AND ITS AFFILIATES EXPRESSLY DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES THAT THE MATERIALS ARE FREE FROM THE RIGHTFUL CLAIM OF ANY THIRD PARTY, BY WAY OF INFRINGEMENT OR THE LIKE. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY QTI OR ITS AUTHORIZED REPRESENTATIVES SHALL CREATE OR EXTEND ANY WARRANTY.
5. **LIMITATION OF LIABILITY.** IN NO EVENT SHALL QTI OR ANY OF ITS AFFILIATES BE LIABLE TO YOU FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE USE OR INABILITY TO USE, OR THE DELIVERY OF OR FAILURE TO DELIVER THE MATERIALS EVEN IF QTI OR ITS AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. QTI'S TOTAL, CUMULATIVE LIABILITY FOR DIRECT DAMAGES ARISING FROM OR IN CONNECTION WITH THIS AGREEMENT, WILL BE LIMITED TO A TOTAL AMOUNT OF ONE HUNDRED UNITED STATES DOLLARS (US \$100). MULTIPLE CLAIMS

WILL BE AGGREGATED TO DETERMINE THE SATISFACTION OF THIS LIMIT.

6. **INDEMNITY.** You agree to defend, indemnify and hold QTI, its Affiliates, employees, directors, agents, licensors, successors and assignees (each an "Indemnified Party") harmless from any and all claims, penalties, demands, causes of action, liabilities, lawsuits, or damages, including attorneys' fees and costs, that result from or relate to the Materials or any product, including drones, made, used, sold, imported, exported, or distributed by You which uses the Materials or any part or derivative work thereof, even where such product uses the Materials without modification and even where the design of such product is identical to the design of any reference product, including drones. This indemnification includes, without limitation, any claims for damages to property or injury or death to persons and any investigation, enforcement action, civil penalty, or other action conducted or cost imposed by the United States Federal Aviation Administration (FAA) or any governmental entity of the United States or any other government.
If any third party asserts a claim or initiates an action against an Indemnified Party for which You are responsible under this Section, QTI shall promptly notify You when it becomes aware of such claim or action, provided, however, that any delay in notification shall not relieve You from Your indemnification obligations under this Agreement. QTI shall have the right to participate in the defense of such claim or action, including any related settlement negotiations. No such claim or action may be settled or compromised without QTI's express written consent, which may be conditioned upon the execution of a release of all claims against the Indemnified Parties by the party bringing such claim or action.
7. **GENERAL RELEASE.**
 - a. **Release.** In consideration of QTI's allowing You to use the Materials, You on behalf of Yourself, Your, affiliates, agents, successors and assigns, hereby fully and forever release and discharge QTI (and all of its officers, directors, employees, agents, successors, assigns, control persons, subsidiaries and Affiliated companies, together the "Released Parties"), from any and all claims, demands, liabilities, obligations, responsibilities, suits, actions and causes of action against any of the Released Parties, whether liquidated or unliquidated, fixed or contingent, known or unknown, presently existing or which, through the passage of time, might arise in the future, related to or arising out of Your use of the Materials.
 - b. **Waiver and Acknowledgement.** You hereby expressly waive all rights under Section 1542 of the Civil Code of the State of California, and under any and all similar laws of any governmental entity. You hereby confirm that you are aware that said Section 1542 of the Civil Code provides as follows:
"A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."
8. **INSURANCE:** If You make or distribute drones, or participate in making or distributing drones, You agree to and will maintain (throughout the time You are using any of the Materials in connection with such drones) insurance providing adequate coverage for potential product liability, personal injury, property damage, and privacy claims and litigation associated with such drones and/or Materials.