Kyushu Institute of Technology

Department of Applied Science for Integrated System Engineering

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**BIRDS-3 Project**

**FM Assembly Procedure**

Revision A 2019/01/03

Revision B 2019/01/26

Laboratory of Spacecraft Environment Interaction Engineering



|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Revision Number** | **Writer** | **Annotations** |
| 2019/1/3 | A | Y.Sasaki | Initial Release |
| 2019/1/26 | B | Y.Sasaki | Add step |
|  |  |  |  |

**1. Introduction**

This document shall be used as a guide to facilitate the proper assembly of the Flight Model of the BIRDS-3 satellites. Necessary steps in the assembly are illustrated with relevant images and a checklist of parts, tools and fasteners required.

**2. Reference Documents**

[1] JX-ESPC-101132-C JEM Payload Accommodation Handbook. Vol 8

**3. Requirements**

1. Be sure to prepare on the day before assembly. Hence assume assembly work will take two days or more inevitably.
2. Perform RTV adhesion work on the preparation day and perform assembly work after 24 hours have elapsed
3. Each Satellite Shall be assembled by Country and verified by the Assembly, Integration and Testing (AIT) Team
4. The AIT team shall comprise the following personnel;

* 1 member of structure team
* 1 member of interface team
* 1 member of Safety team

1. When using a clean room, wear rubber gloves and hair cap, surgical face mask, dustproof coat.
2. The structure elements and subsystems shall not be assembled with bare hands, appropriate gloves shall be worn
3. During assembly of critical subsystem, at least one member of the critical sub-system must be present. A critical sub-system in this case shall refer to any sub-system that requires a separate assembly protocol other than indicated in this document.
4. If unsure of any procedure, ask the Structure member. Do not proceed with assembly if you do not understand any step.
5. Carefully read and observe every precaution documented for each stage of the assembly (If any)

**4. Axis Definition**

The axis of the Satellite shall be defined as shown below (Figure 1)

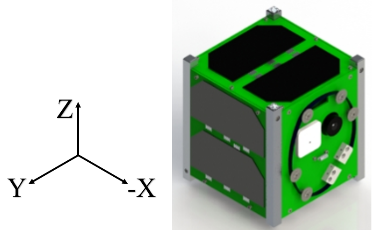


Figure 1 Satellite Axis Definition

**5. Structure Assembly Protocol**

1. **The team member that executes the Assembly shall write his initial.**
2. **The AIT/Safety/Verification・member (or any member assigned) shall confirm that all checks were executed.**
3. **A photograph of each assembly step when completed shall be taken.**
4. **The structure should be cleaned with ethanol.**
5. **Hand gloves should be used at all times.**
6. **Care should be taken in handling electronic circuit boards.** **Be sure to wear an antistatic wristband on your wrist or ankle. Make sure that the metal part of the wristband is touching the skin and connected to the ground at this time.**
7. **Pins of extra length protruding from the electronic circuit board should be cut as short as possible to prevent short circuit due to contact with other parts.**
8. **All metal parts such as electronic circuit boards and deployment switches need to be insulated by pasting Kempton tape.**

**General Precautions**

1. **As much as possible, avoid placing the structure on its side (surface finish of rails is very important.)**
2. **Confirm the torque for all fasteners before you tighten. Ensure you apply the required torque using the torque driver**
3. **Always use the Support Provided for the Satellite structure, do not place directly on the table**
4. **If unsure of a step, ask the Structure team**

**Day1 (Preparation day)**

**Working process**

1. **Preparation and confirmation of the tools to be used**
2. **Preparation and confirmation of the parts to be used and weighing each parts**
3. **Preparation and confirmation of the fasteners to be used**
4. **Preparation of electronic circuit board**

* **Fix camera and GPS module to mission board by soldering and screws.**
* **Cut all extra length pins protruding from the electronic circuit board as short as possible.**
* **Insulate all metal parts such as electronic circuit boards and deployment switches with Kempton tape.**

1. **Assembling the battery**
2. **Assembling the -X panel**
3. **Preparation and confirmation of the tools to be used**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tools Checklist** | | | |
| **No.** | **Tool** | **Picture** | **Check** |
| **Common** | | | |
| **1** | **Rubber gloves** | 関連画像 |  |
| **2** | **Hair cap** | 「川西工業 使い切りキャップ」の画像検索結果「川西工業 使い切りキャップ」の画像検索結果 |  |
| **3** | **Surgical face mask** | 「サージカルフェイスマスク」の画像検索結果「サージカルフェイスマスク」の画像検索結果 |  |
| **4** | **Dustproof coat** | **https://jp.images-monotaro.com/Monotaro3/pi/full/mono39496493-140515-02.jpg** |  |
| **5** | **Torque driver socket (2 types)** |  |  |
| **6** | **Bit conversion adapter** |  |  |
| **7** | **Extension bit** |  |  |
| **8** | **Square** |  |  |
| **9** | **Digital tester** | 「テスター」の画像検索結果 |  |
| **10** | **Wire stripper** | 「ワイヤーストリッパー」の画像検索結果 |  |
| **11** | **crimper** |  |  |
| **12** | **Vernier Caliper** | 「ノギス」の画像検索結果 |  |
| **13** | **Height gauge** | 「ハイトゲージ」の画像検索結果 |  |
| **14** | **Weighing balance** |  |  |
| **Per Team** | | | |
| **15** | **Torque Driver(Used for 0.09 N・m)** |  |  |
| **16** | **Hex Bit 1.27mm** | 56 ヘックスビットB 東日製作所 02469223 |  |
| **17** | **Hex Bit 1.5mm** |  |  |
| **18** | **Tweezers** | http://g01.a.alicdn.com/kf/HTB1CxsFKpXXXXX1aXXXq6xXFXXXa.jpg「ピンセット 逆作動」の画像検索結果 |  |
| **19** | **Scissors** | 「はさみ」の画像検索結果 |  |
| **20** | **Pliers** | 「ペンチ」の画像検索結果 |  |
| **21** | **Kempton tape** | 「カプトンテープ」の画像検索結果「カプトンテープ」の画像検索結果 |  |
| **22** | **Alcohol** | 「洗浄ボトル」の画像検索結果 |  |
| **23** | **KimWipes** | 「キムワイプ」の画像検索結果 |  |
| **24** | **Antistatic wrist strap** | 「静電気防止　リストバンド」の画像検索結果 |  |
| **25** | **Marker** | 「マッキーペン」の画像検索結果 |  |
| **26** | **Precision screwdriver** | M6SD 精密ドライバーセット モノタロウ 20366578 |  |
| **27** | **Spatula** |  |  |
| **28** | **Loctite 263** | https://jp.images-monotaro.com/Monotaro3/pi/full/mono34933543-161109-02.jpg |  |
| **29** | **araldite** | AR-S30 スタンダード 高性能エポキシ系強力接着剤 アラルダイト 33240715 |  |
| **30** | **Work table for assembly** |  |  |

1. **Preparation and confirmation of the parts to be used and weighing each parts**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Parts Checklist** | | | | | | |
| No. | Step# | Parts | Picture | Qty. | Weight | Check |
| 1 | 1 | Battery case |  | 1 |  |  |
| 2 | 1 | Battery heater |  | 1 |  |  |
| 3 | 1, | Insulator |  | 6 |  |  |
| 4 | 2 | Battery |  | 1 |  |  |
| 5 | 2 | Thermistor |  | 1 |  |  |
| 6 | 3 | Battery cover |  | 1 |  |  |
| 7 | 4 | Nichrome wire |  | 1 |  |  |
| 8 | 4 | -X panel |  | 1 |  |  |
| 9 | 6 | Antenna fixture (right) |  | 1 |  |  |
| 10 | 6 | Antenna fixture (left) |  | 1 |  |  |
| 11 | 7 | Dipole antenna 19.8mm |  | 2 |  |  |
| 12 | 8 | PE line |  | 1 |  |  |
| 13 | 11 | Rail1 (R1Vo2) |  | 2 |  |  |
| 14 | 11 | Rail2 (R2y) |  | 2 |  |  |
| 15 | 11 | Co4 |  | 8 |  |  |
| 16 | 12 | Deployment switch |  | 2 |  |  |
| 17 | 14 | Co5 |  | 2 |  |  |
| 18 | 16 | Baseplate1 (b01) | 1 hole | 2 |  |  |
| 19 | 17 | Baseplate3 (b03) |  | 2 |  |  |
| 20 | 18 | Backplane |  | 1 |  |  |
| 21 | 22 | Front  Access  Board  (FAB) |  | 1 |  |  |
| 22 | 22 | RBF pin |  | 2 |  |  |
| 23 | 25 | OBC Board |  | 1 |  |  |
| 24 | 26 | COM Board |  | 1 |  |  |
| 25 | 27 | LDM Board |  | 1 |  |  |
| 26 | 28 | Mission2 Board |  | 1 |  |  |
| 27 | 28 | Rear  Access Board  (RAB) |  | 1 |  |  |
| 28 | 40 | coaxial cable (COM) |  | 1 |  |  |
| 29 | 40 | coaxial cable (GPS) |  | 1 |  |  |
| 30 | 32 | Top plate |  | 1 |  |  |
| 31 | 34, 35 | ±Y panel |  | 2 |  |  |
| 32 | 36 | -Z panel |  | 1 |  |  |
| 33 | 37 | +Z panel |  | 1 |  |  |
| 34 | 42 | X panel | D:\assembly procedure\X.JPG | 1 |  |  |
| 35 | 4 | -X panel |  | 1 |  |  |
| 36 | 43 | Separation spring |  | 2 |  |  |

1. **Preparation and confirmation of the fasteners to be used**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Fasteners checklist** | | | | | | | |
| **No.** | **Step#** | **Type** | **Part No** | **Length** | **Qty.** | **Vendor** | **Check** |
| 1 | 3 | Screw | CBSTSR2-5 | 5 | 8 | MISUMI |  |
| 2 | 4 | Screw | SNSS-M2-4-SD | 4 | 2 | NBK |  |
| 3 | 4 | Nut | SHNS-M2 | N/A | 2 | NBK |  |
| 4 | 5 | Screw | CBSTSR3-10 | 10 | 5 | MISUMI |  |
| 5 | 5 | Washer | Antenna cover | N/A | 5 | IWATA |  |
| 6 | 5 | Spacer | CU-305PH D3-L5 | 5 | 5 | NBK |  |
| 7 | 5 | Nut | SLBNR3 | 10 | 5 | MISUMI |  |
| 8 | 6 | Screw | SSHS-M2-8 | 8 | 4 | NBK |  |
| 9 | 6 | Nut | SHNS-M2 | N/A | 4 | Hirosugi-Keiki |  |
| 10 | 7 | Screw | SSHS-M2-6 | 6 | 4 | NBK |  |
| 11 | 9 | Screw | C-302.5-5 | 2.5 | 2 | Hirosugi-Keiki |  |
| 12 | 9 | Nut | SHNS-M2 | N/A | 2 | NBK |  |
| 13 | 9 | Screw | SSHS-M2-6 | 6 | 2 | NBK |  |
| 14 | 11 | Screw | SNSS-M2-5 | 5 | 16 | NBK |  |
| 15 | 15 | Screw | SNSS-M1.6-5 | 5 | 2 | NBK |  |
| 16 | 16～20 | Screw | SNSS-M2-4 | 4 | 8 | NBK |  |
| 17 | 22 | Screw | SLHS-M2-8 | 8 | 4 | NBK |  |
| 18 | 23～29, 38 | Rod | FABS-M3-L96 | 96 | 4 | MISUMI |  |
| 19 | 23, 29 | Spacer | C-305-5 | 5 | 4 | Hirosugi-Keiki |  |
| 20 | 24, 29 | Spacer | C-3019-5 | 19 | 4 | Hirosugi-Keiki |  |
| 21 | 25, 29 | Spacer | C-305-5 | 4.5 | 4 | Hirosugi-Keiki |  |
| 22 | 26, 29 | Spacer | C-306-5 | 5.5 | 4 | Hirosugi-Keiki |  |
| 23 | 27, 29 | Spacer | C-315-5 | 15 | 4 | Hirosugi-Keiki |  |
| 24 | 28, 29 | Spacer | C-308-5 | 8 | 4 | Hirosugi-Keiki |  |
| 25, | 28, 29 | Spacer | C-309-5 | 9 | 8 | Hirosugi-Keiki |  |
| 26 | 23, 29, 30, 39 | Nut | SLBNR3 | N/A | 8 | MISUMI |  |
| 27 | 32, 37 | Screw | SLHS-M2-12 | 12 | 4 | NBK |  |
| 28 | 34-37,  42 | Screw | SNSS-M2-6-SD | 6 | 24 | NBK |  |
| 29 | 41 | Screw | CBSTSR2-6 | 6 | 4 | MISUMI |  |

* **Preparation of electronic circuit board**

|  |  |  |  |
| --- | --- | --- | --- |
| **Adhesive position** | | | |
| **No.** | **Boards** | **Position** | **Check** |
| **1** | **Mission Board** | **Camera** |  |
| **2** | **Mission Board** | **GPS connector** |  |
| **3** | **-X panel** | **GPS module** |  |
| **4** | **FAB** | **RBF pin connector** |  |
| **5** | **RAB** | **Burner circuit connector** |  |
| **6** | **-X panel** | **Photo diode** |  |

* **Cut all extra length pins protruding from the electronic circuit board as short as possible.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cutting position Checklist** | | | |
| **No.** | **Boards** | **Position** | **Check** |
| **1** | **Backplane** | **Solar cell connection pin** |  |
| **2** | **Backplane** | **All 50 pin connector** |  |
| **3** | **FAB** | **50 pin connector** |  |
| **4** | **FAB** | **Front access connector (right)** |  |
| **5** | **FAB** | **RBF** |  |
| **6** | **FAB** | **Solar cell connection pin** |  |
| **7** | **FAB** | **Front Access connector**  **(left)** |  |
| **8** | **OBC Board** | **50 pin connector** |  |
| **9** | **COM Board** | **50 pin connector** |  |
| **10** | **LDM Board** | **50 pin connector** |  |
| **11** | **Mission2 Board** | **Camera connection pin** |  |
| **12** | **RAB** | **50 pin connector** |  |
| **13** | **RAB** | **Burner circuit connection pin** |  |

* **Insulate all metal parts such as electronic circuit boards and deployment switches with Kempton tape.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pasting position Checklist** | | | |
| **No.** | **Parts** | **Position** | **Check** |
| **1** | **Backplane** | **Solar cell connection pin** |  |
| **2** | **Backplane** | **All 50 pin connector** |  |
| **3** | **Backplane** | **2 corners**  **(To prevent harness cutting of the deployment switch)** |  |
| **4** | **FAB** | **50 pin connector** |  |
| **5** | **FAB** | **Battery connector** |  |
| **6** | **FAB** | **RBF** |  |
| **7** | **FAB** | **Front Access connector** |  |
| **8** | **FAB** | **Solar cell connection pin** |  |
| **9** | **OBC Board** | **50 pin connector** |  |
| **10** | **COM Board** | **50 pin connector** |  |
| **11** | **COM Board** | **Front surface** |  |
| **12** | **COM Board** | **Back surface** |  |
| **13** | **LDM Board** | **50 pin connector** |  |
| **14** | **LDM Board** | **Front surface (Lora Module)** |  |
| **15** | **Mission2 Board** | **50 pin connector** |  |
| **16** | **Mission2 Board** | **CAMERA module connector** |  |
| **17** | **RAB** | **50 pin connector** |  |
| **18** | **RAB** | **-X panel connection pin** |  |
| **19** | **Deployment switch** | **Harness connection part** |  |
| **20** | **Monopole Antenna** | **Wire attachment part** |  |

**Precautions for tightening screws**

1. **In order to apply force as evenly as possible, please tighten the screw so that it is diagonal to the screw that you just tightened. As the order of screw tightening is stated, please follow it.**
2. **Please tighten by hand without applying torque at first.**

**Instead of tightening them all at once, please be sure to tighten them separately several cycles.**

**The depth of tightening within one cycle should be the same.**

**At this time, please stop just before the screw head hits.**

1. **Next, please apply torque in the same order as above.**
2. **If screws are difficult to fit, do not try to force them, please remove all screws once and try again. When redoing, please shorten the tightening depth and repeat several cycles and gradually tighten.**

**Precautions for Loctite (fastener bond)**

1. **Preliminarily clean the surface to be coated with Loctite by alcohol.**
2. **Fix fasteners within 20 minutes after application of the Loctite.**
3. **Maintain the satellite in a clean room for 24 hours to dry the Loctite after assembly.**
4. **Wipe off the residue when using the Loctite.**
5. **Assembling the battery**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **1** | **Install the insulator in the battery case and attach the temperature sensor** | | | | |
| **Note** |  | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Battery case | | 1 |  |
| Insulator | | 5 |  |
| Battery heater | | 1 |  |
| Harness | | | |
| Connection source | Access point | Qty. | Check |
| Battery case | - | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **2** | **Install the battery in the battery case and attach the temperature sensor** | | | | |
| **Note** | **Pass the battery and heater harness through the hole of the battery case**  **After inserting the battery, cover the insulator from above** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Battery case | | 1 |  |
| Temperature sensor | | 1 |  |
| Battery set (3 cells per set) | | 2 |  |
| Insulator | | 1 |  |
| Checklist | | | |
| Picture |  | | |
|  |  | | |
| Responsible |  | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **3** | **Lock the battery case with the battery cover** | | | | | | | |
| **Note** | **Pay attention to order to tighten screws** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Battery case | | | | | 1 |  |
| Battery cover | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | ［1］CBSTSR  2-5 | | 1.27 | 0.176 | 8 |  |
| Harness | | | | | | |
| Connection source | | Access point | | | Qty. | Check |
| Battery set | | - | | | 2 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

1. **Assembling the -X panel**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **4** | **Attach the nichrome wire to the –X panel** | | | | | | | |
| D:\assembly procedure\-X1.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| -X panel | | | | | 1 |  |
| Nichrome wire | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [2] SNSS-M2-4-SD | | 1.5 | 0.176 | 2 |  |
| Nut | [3] SHNS-M2 | | - | - | 2 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **5** | **Attach the inadvertent Antenna deployment prevention device to the -X panel** | | | | | | | |
| D:\assembly procedure\-X3.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| -X panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [4] CBSTSR  3-10 | | 1.5 | 0.63 | 5 |  |
| Washer | [5] Antenna cover washer  M3 | | - | - | 5 |  |
| Spacer | [6] CU-305PH  D3-L5 | | - | - | 5 |  |
| Nut | [7] SLBNR3 | | - | - | 5 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **6** | **Attach the Antenna connector and the Antenna fixture to the –X panel** | | | | | | | |
| D:\assembly procedure\-X2.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| -X panel | | | | | 1 |  |
| Antenna fixture right | | | | | 1 |  |
| Antenna fixture left | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [8] SSHS-M2-8 | | 1.27 | 0.176 | 4 |  |
| Nut | [9] SHNS-  M2 | | - | - | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **7** | **Attach the dipole antenna to the Antenna fixture** | | | | | | | |
| **Note** |  | | | | | | | | |
| D:\assembly procedure\-X4.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| -X panel | | | | | 1 |  |
| Monopole antenna 18.8mm | | | | | 2 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [10] SSHS-M2-6 | | 1.27 | 0.09 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step#** | **8** | **Winding the antenna and holding it with PE line** | | | | |
| **Note** |  | | | | | |
| D:\assembly procedure\-X5.JPG | | | Parts | | | |
| Name | | Qty. | Check |
| -X panel | | 1 |  |
| PE line | | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Step#** |  | **Tie antenna** | | | | | |
| **Note** | **Solid knot (3 times)** | | | | | | |
|  | | | Parts | | | | |
| Name | | | Qty. | Check |
| Main structure | | | 1 |  |
| Fasteners | | | | |
| Model | | Torque  [N・m] | Qty. | Check |
| Fishing String | | - | 1 |  |
| Checklist | | | | |
| Picture |  | | | |
| Responsible |  | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step#** |  | **Tie antenna** | | | | |
| **Note** | **Tie right side (be seen from assembler) antenna** | | | | | |
| C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\1.jpg | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step#** |  | **Tie antenna** | | | | |
| **Note** | **Tie left side (be seen from assembler) antenna** | | | | | |
| C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\2.jpg  C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\3.jpg | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** |  | **Tie antenna** | | | | |
| **Note** | **Solid knot** | | | | | |
| C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\4.jpg  C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\5.jpg  C:\Users\kyutechpc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\6.jpg | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** |  | **Tie antenna** | | | | |
| **Note** | **Solid knot more 2 times (total 3 times)** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Checklist | | | |
| Picture |  | | |
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| **Step#** | **9** | **Attach the CAMERA module to the Mission2 board** | | | | | | | |
| **Note** |  | | | | | | | | |
| D:\assembly procedure\camera.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Mission2 board | | | | | 1 |  |
| CAMERA module | | | | | 1 |  |
| ［11］Spacer C302.5-5 | | | | | 2 |  |
| ［12］SHNS-M2 | | | | | 2 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | ［13］SSHS-M2-6 | | 1.27 | 0.176 | 2 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **10** | **Check if the screw in COM board is tightened** | | | | | | | |
| **Note** |  | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| COM board | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | M2 | | 1.5 | 0.176 |  |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

**Day2 (Structure Assembly)**

1. **Deployment Switch is working**
2. **Deployment Switch harness is crimped**
3. **Structure is cleaned with Isopropyl alcohol**
4. **Do not place the rails directly on the digital weighing balance, use a soft tissue**
5. **Responsibilities assigned, who does checking, who takes picture?**

**Precautions for tightening screws**

1. **In order to apply force as evenly as possible, please tighten the screw so that it is diagonal to the screw that you just tightened.** **As the order of screw tightening is stated, please follow it.**
2. **Please tighten by hand without applying torque at first.**

**Instead of tightening them all at once, please be sure to tighten them separately several cycles.**

**The depth of tightening within one cycle should be the same.**

**At this time, please stop just before the screw head hits.**

1. **Next, please apply torque in the same order as above.**
2. **If screws are difficult to fit, do not try to force them, please remove all screws once and try again. When redoing, please shorten the tightening depth and repeat several cycles and gradually tighten.**

**Precautions for Loctite (fastener bond)**

1. **Preliminarily clean the surface to be coated with Loctite by alcohol.**
2. **Fix fasteners within 20 minutes after application of the Loctite.**
3. **Maintain the satellite in a clean room for 24 hours to dry the Loctite after assembly.**
4. **Wipe off the residue when using the Loctite.**

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| **Step#** | **11** | **Attach the Co4 to all rails** | | | | | | | |
| **Note** | **Please tighten the screw so that the end faces are aligned** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Co4 | | | | | 8 |  |
| Rail1 (R1Vo2) | | | | | 2 |  |
| Rail2 (R2y) | | | | | 2 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [15] SNSS-  M2-5 | | 1.5 | 0.09 | 16 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **12** | **Solder the harness to the deployment switch** | | | | |
| **Note** | **Please try to solder firmly as small as possible so that the solder part does not bulge** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Deployment switch | | 2 |  |
| Harness | | | |
| Connection source | Access point | Qty. | Check |
| Deployment switch | - | 4 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **13** | **Paste Kempton tape on the deployment switch** | | | | |
| **Note** | **Thinly cover all conductive parts** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Deployment switch | | 2 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **14** | **Pass the harness of the deployment switch through the hole of Co5** | | | | |
| **Note** | **Be careful while handling the harness of the deployment switch**  **Fit the deployment switch into Co5** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Deployment switch | | 2 |  |
| Co5 | | 2 |  |
| Harness | | | |
| Connection source | Access point | Qty. | Check |
| Deployment switch | - | 4 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **15** | **Install the deployment switch into the rail and fasten the switch cover with M1.6 screws** | | | | | | | |
| **Note** | **Please be sure to check with the tester whether the deployment switch is in contact with the rail.**  **If it are in contact, please reapply Kempton tape to the deployment switch.** | | | | | | | | |
| Check the Deployment Switch using a digital tester before and after installation | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Co5 | | | | | 2 |  |
| Deployment switch | | | | | 2 |  |
| Rail2 (R2y) | | | | | 2 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [15] SNSS-  M1.6-5 | | 1.5 | 0.09 | 2 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **16** | **Attach two types of rails to the end of b01 using M2 screw** | | | | | | | |
| **Note** | **Just tighten the screw loosely** | | | | | | | | |
| outward  How to identify b01? It has 4 screw holes.  A possible mistake is attaching b01 inside out. Check that the middle hole faces outward away from the structure as Fig  hlighted | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Rail2 (R2y) | | | | | 1 |  |
| Rail1 (R1Vo2) | | | | | 1 |  |
| Baseplate1 (b01) | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [16] SNSS- M2-4 | | 1.5 | - | 2 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |

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| **Step#** | **17** | **Install b03 only on one side rail** | | | | | | | |
| **Note** | **Just tighten the screw loosely** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Baseplate3 (b03) | | | | | 2 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [17]SNSS-M2-4 | | 1.5 | - | 2 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |

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| **Step#** | **18** | **Mount the backplane between the rails** | | | | |
| **Note** | **Pass the harness through the hole** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Back plane | | 1 |  |
| Harness | | | |
| Connection source | Access point | Qty. | Check |
| Deployment switch | - | 2 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **19** | **Connect all rails with b03** | | | | | | | |
| **Note** | **Just tighten the screw loosely** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Rail2 (R2y) | | | | | 1 |  |
| Rail1 (R1Vo2) | | | | | 1 |  |
| Baseplate1 (b01) | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [17]SNSS- M2-4 | | 1.5 | - | 4 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |

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| **Step#** | **20** | **Assemble the rail into a regular square by applying a torque to the screw using a square with top plate** | | | | | | | |
| **Note** | **Tighten the screw while pressing down from the side and the top.**  **Please try to be square at this time.** | | | | | | | | |
| **Press**   |  |  | | --- | --- | | Rail1 (R1Vo2) | 2 |   **ss** | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Top plate | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [17]SNSS- M2-4 | | 1.5 | 0.176 | 8 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark  (after Step #21) | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **21** | **Insert main structure into JSSOD and check movement (First fit check)** | | | | | | | |
| **Note** | **Please attach the top plate using screw No. 29 (Apply torque)**  **Please remove it after fit check and return it to its original position and draw torque mark in Step #20**  **If structure does not fit smoothly, please retry step# 20** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |
| **Step#** | **22** | **Fix the backplane to the rail** | | | | | | | |
| **Note** | **Please attach the extension bit to the torque driver and tighten the screw** | | | | | | | | |
| D:\assembly procedure\1.JPG  3  4  2  1 | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Back plane | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [18]SLHS- M2-8 | | 1.27 | 0.09 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **23** | **Install FAB** | | | | | | |
| **Note** |  | | | | | | | |
| D:\assembly procedure\2.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| FAB | | | | 1 |  |
| RBF pin | | | | 2 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Rod | [19] FABS  M3-L96 | | - | 2 |  |
| Spacer | [20] C-305-5  L5 | | - | 2 |  |
| Nut | [20] SLBNR3 | |  | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **24** | **Install battery box** | | | | | | |
| **Note** | **First attach the spacer to the rod and fit the board afterwards** | | | | | | | |
| D:\assembly procedure\3.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Battery box | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque | Qty. | Check |
| Spacer | [21] C-319-5  L19 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **25** | **Install OBC board** | | | | | | | |
| **Note** | **First attach the spacer to the rod and fit the board afterwards** | | | | | | | | |
| D:\assembly procedure\4.JPG | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| OBC board | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | | Torque | Qty. | Check |
| Spacer | [22] C-305-5  L5 | | | - | 2 |  |
| Harness | | | | | | |
| Connection source | | Connection source | | | Qty. | Check |
| Battery box | | Back plane | | | 1 |  |
| Checklist | | | | | | |
| Picture | | |  | | | |
| Responsible | | |  | | | |

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| **Step#** | **26** | **Install COM board** | | | | | | |
| **Note** | **First attach the spacer to the rod and fit the board afterwards** | | | | | | | |
| D:\assembly procedure\5.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| COM board | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Spacer | [23] C-306-5  L6 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **27** | **Install LDM board** | | | | | | |
| **Note** | **First attach the spacer to the rod and fit the board afterwards** | | | | | | | |
| D:\assembly procedure\19.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| LDM board | | | | 1 |  |
| Main structure | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Spacer | [24] C-315-5  L15 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **28** | **Install mission board and RAB** | | | | | | |
| **Note** | **First attach the spacer to the rod and fit the board afterwards** | | | | | | | |
| D:\assembly procedure\6.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Mission board | | | | 1 |  |
| RAB | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Spacer | [25] C-308-5  L8 | | - | 2 |  |
| Spacer | [26] C-309-5  L9 | | - | 2 |  |
| Spacer | [27] C-309-5  L9 | | - | 2 |  |
| Nut | [20] SLBNR3 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **29** | **Insert the upper spacer** | | | | | | |
| **Note** |  | | | | | | | |
| D:\assembly procedure\7.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Rod | [19] FABS  M3-L96 | | - | 2 |  |
| Nut | [28] SLBNR3 | | - | 2 |  |
| Spacer | [20] C-305  L5 | | - | 2 |  |
| Spacer | [21] C-319  L19 | | - | 2 |  |
| Spacer | [22] C-305  L5 | | - | 2 |  |
| Spacer | [23] C-305.5  L6 | | - | 2 |  |
| Spacer | [24] C-315  L15 | | - | 2 |  |
| Spacer | [25] C-308  L8 | | - | 2 |  |
| Spacer | [26] C-308  L9 | | - | 2 |  |
| Spacer | [27] C-309  L9 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **30** | **Fix all internal boards** | | | | | | |
| **Note** | **Temporarily lock the rod with a nut** | | | | | | | |
| D:\assembly procedure\8.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Nut | [28] SLBNR3 | | - | 2 |  |
| Checklist | | | | | |
| Picture | |  | | | |
| Responsible | |  | | | |

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| **Step#** | **31** | **Connect a coaxial cable to the COM boards and GPS module** | | | | |
| **Note** | **Fix the RF cable using Kempton tape** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Coaxial cable | | 2 |  |
| Harness | | | |
| Connection source | Access point | Qty. | Check |
| - | COM board | 1 |  |
| - | GPS module | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **32** | **Attach the top plate to the main structure** | | | | | | | |
| **Note** |  | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Top plate | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [29]SLHS -M2-12 | | 1.27 | 0.176 | 4 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |

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| **Step#** | **33** | **Insert main structure into JSSOD and check movement (Second fit check)** | | | | |
| **Note** | **If structure does not fit smoothly, please retry step# 32**  **Please loosen the screw No. 29 after the fit check** | | | | | |
|  | | | Parts | | | |
| Name | | Qty. | Check |
| Main structure | | 1 |  |
| Checklist | | | |
| Picture |  | | |
| Responsible |  | | |

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| **Step#** | **34** | **Attach +Y panel to main structure** | | | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| +Y panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [30] SNSS-M2-6-SD | | 1.5 | 0.176 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **35** | **Attach -Y panel to main structure** | | | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| -Y panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [31] SNSS-M2-6-SD | | 1.5 | 0.176 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **36** | **Attach -Z panel to main structure** | | | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| -Z panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [32] SNSS-M2-6-SD | | 1.5 | 0.176 | 6 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **37** | **Apply torque to the top plate** | | | | | | | |
| **Note** |  | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Top plate | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [29] SLHS- M2-12 | | 1.27 | 0.176 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **38** | **Apply torque to the rod** | | | | | | |
| **Note** | **Attach the bit socket to the torque driver using the conversion adapter and tighten the nut.**  **Be careful so that the end face of the rod does not protrude the end face of the nut.** | | | | | | | |
| Don't protrude | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
| Rod | [19] FABS-M3-L96 | | - | 4 |  |
| Nut | [28] SLBNR3 | | 0.09 | 8 |  |
| Checklist | | | | | |
| Double Check | |  | Picture | |  |
| Torque mark | |  | Loctite | |  |
| Responsible | |  | | | |

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| **Step#** | **39** | **Attach +X panel to main structure** | | | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| +X panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [33] SNSS-M2-6-SD | | 1.5 | 0.176 | 4 |  |
| Harness | | | | | | |
| Deployment  Switch | | | Backplane  connector | | 1 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **40** | **Attach +Z panel to main structure** | | | | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | | | | |
|  | | | Parts | | | | | | | |
| Name | | | | | | Qty. | Check |
| Main structure | | | | | | 1 |  |
| +Z panel | | | | | | 1 |  |
| Fasteners | | | | | | | |
| Model | | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | | [34] SNSS-M2-6-SD | | 1.5 | 0.176 | 6 |  |
| Harness | | | | | | | |
| Connection source | | | | Access point | | Qty. | Check |
| Battery box | | | | FAB | | 2 |  |
| Checklist | | | | | | | |
| Double Check | | |  | | Picture | |  |
| Torque mark | | |  | | Loctite | |  |
| Responsible | | |  | | | | |
| **Step#** | **41** | **Connect the coaxial cable to the antenna connector of the -X panel** | | | | | | | | |
|  | | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| Coaxial cable | | | | | 2 |  |
| Harness | | | | | | |
| Connection source | | Access point | | | Qty. | Check |
| COM board | | Antenna connector | | | 1 |  |
| GPS module | | GPS connector | | | 1 |  |
| RAB | | -X panel | | | 1 |  |
| Deployment switch | | Backplane connector | | | 1 |  |
| Checklist | | | | | | |
| Picture | |  | | | | |
| Responsible | |  | | | | |

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| **Step#** | **42** | **Attach -Xpanel to main structure** | | | | | | | |
| **Note** |  | | | | | | | | |
|  | | | Parts | | | | | | |
| Name | | | | | Qty. | Check |
| Main structure | | | | | 1 |  |
| -X panel | | | | | 1 |  |
| Fasteners | | | | | | |
| Model | | | Bit  size | Torque  [N・m] | Qty. | Check |
| Screw | [35] CBSTSR2-6 | | 1.27 | 0.176 | 4 |  |
| Checklist | | | | | | |
| Double Check | |  | | Picture | |  |
| Torque mark | |  | | Loctite | |  |
| Responsible | |  | | | | |

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| **Step#** | **43** | **Install separation spring** | | | | | |
| **Note** | **Be careful with solar cell handling** | | | | | | |
|  | | | Parts | | | | |
| Name | | | Qty. | Check |
| Main structure | | | 1 |  |
| Separation spring | | | 2 |  |
| Checklist | | | | |
| Double Check |  | Picture | |  |
| Torque mark |  | Loctite | |  |
| Responsible |  | | | |

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| **Step#** | **44** | **Completion** | | | | | | |
| **Note** |  | | | | | | | |
| D:\assembly procedure\18.JPG | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
|  |  | |  |  |  |
| Harness | | | | | |
| Connection source | | Access point | | Qty. | Check |
|  | |  | |  |  |
| Checklist | | | | | |
| Double Check | |  | Picture | |  |
| Torque mark | |  | Loctite | |  |
| Responsible | |  | | | |

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| **Step#** | **45** | **Tie again the antenna** | | | | | | |
| **Note** | **See the sequence of steps in Step 8** | | | | | | | |
|  | | | Parts | | | | | |
| Name | | | | Qty. | Check |
| Main structure | | | | 1 |  |
| Fasteners | | | | | |
| Model | | | Torque  [N・m] | Qty. | Check |
|  |  | |  |  |  |
| Harness | | | | | |
| Connection source | | Access point | | Qty. | Check |
|  | |  | |  |  |
| Checklist | | | | | |
| Double Check | |  | Picture | |  |
| Torque mark | |  | Loctite | |  |
| Responsible | |  | | | |