



BIRDS Satellite battery Pack Development

By

Hari

Initial Version1.0

Materials:

1. NiMH Batteries set
2. Battery Heater
3. Temperature sensor
4. Crimp
5. 4 pin Connector
6. 10 pin Connector
7. Kapton tape
8. Shrinkable tube
9. Soldering station
10. Multimeter
11. Cable
12. Crimper
13. Space grade cable
14. Battery box
15. Wire stripper



SPH-002T-P0.5L

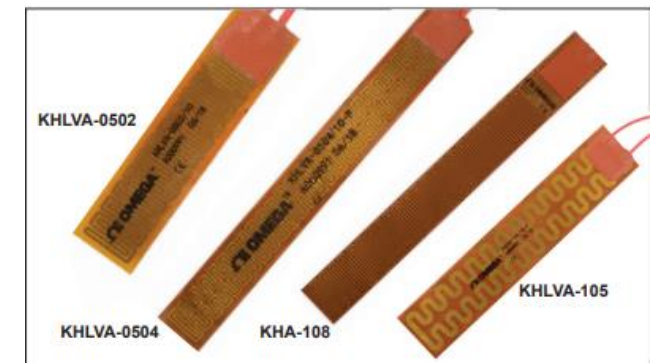


GAG10K3976B1

Thermistor NTC



PHR-4



PSAなしタイプ 製品型番	PSAありタイプ 製品型番	幅 インチ (cm)	長さ インチ (cm)	ワット密度の総ワット数		
				2.5 W/インチ ²	5 W/インチ ²	10 W/インチ ²
KHLVA-0502/(*)	KHLVA-0502/(*)-P	0.5 (1)	2 (5)	—	5	10
KHLVA-0504/(*)	KHLVA-0504/(*)-P	0.5 (1)	4 (10)	5	10	20
KHLVA-101/(*)	KHLVA-101/(*)-P	1 (3)	1 (3)	—	5	10
KHLVA-102/(*)	KHLVA-102/(*)-P	1 (3)	2 (5)	5	10	20
KHLVA-103/(*)	KHLVA-103/(*)-P	1 (3)	3 (8)	7.5	15	30
KHLVA-104/(*)	KHLVA-104/(*)-P	1 (3)	4 (10)	10	20	40
KHLVA-105/(*)	KHLVA-105/(*)-P	1 (3)	5 (13)	12.5	25	50
KHLVA-202/(*)	KHLVA-202/(*)-P	2 (5)	2 (5)	10	20	40
KHLVA-203/(*)	KHLVA-203/(*)-P	2 (5)	3 (8)	15	30	60
KHLVA-204/(*)	KHLVA-204/(*)-P	2 (5)	4 (10)	20	40	80
KHLVA-205/(*)	KHLVA-205/(*)-P	2 (5)	5 (13)	25	50	100
KHLVA-303/(*)	KHLVA-303/(*)-P	3 (8)	3 (8)	22.5	45	90

<https://www.jp.omega.com/heaters/pdf/KHRA-KHLVA-KHA-SERIES.pdf>

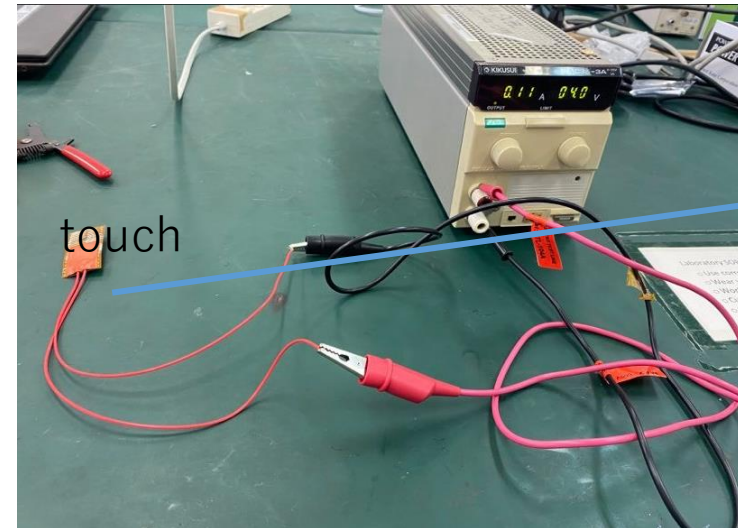
<https://www.digikey.jp/products/ja?keywords=PAP-10V-S>

Test: Before using it, please confirm.



Use kapton tape both terminal of Thermistor

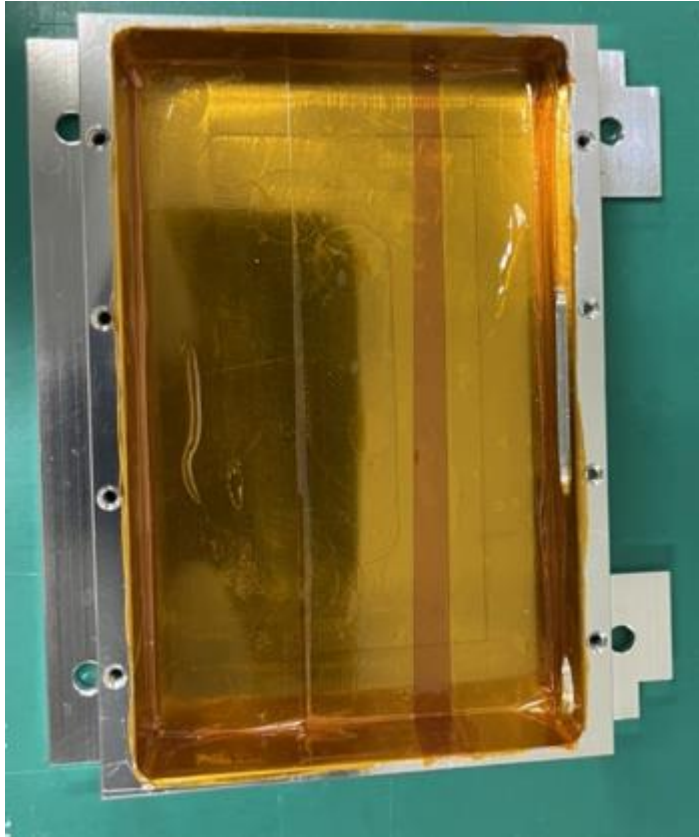
Sensor test



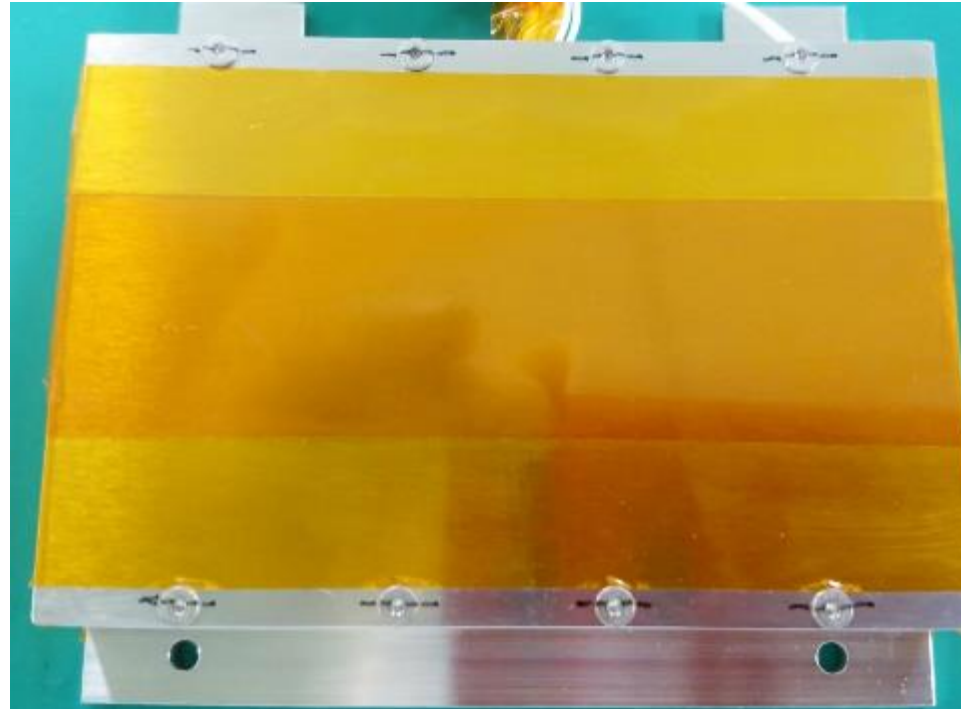
Before to put heater check the of heater

Heater test

Step1: Wrap Kapton tape all around entire battery box.



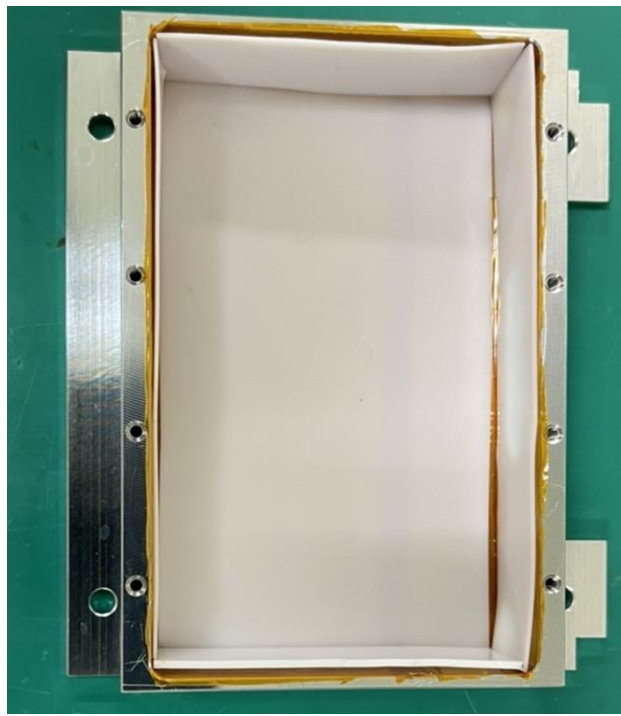
Inside



Outside
BIRDS battery box

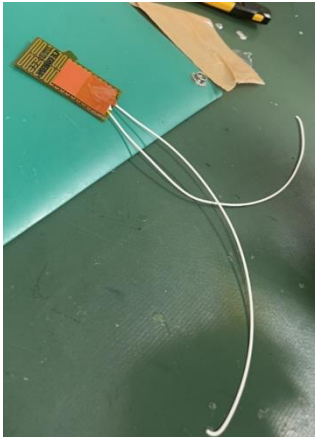


Kapton tape

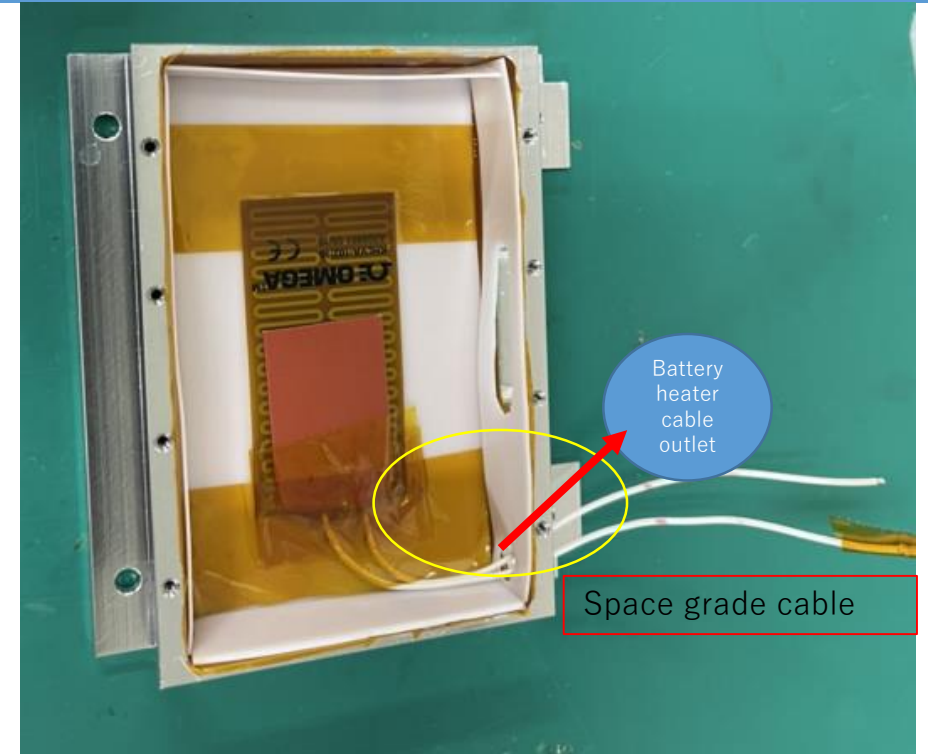


Step:2 Used the Teflon for heat dissipation and insulation purpose

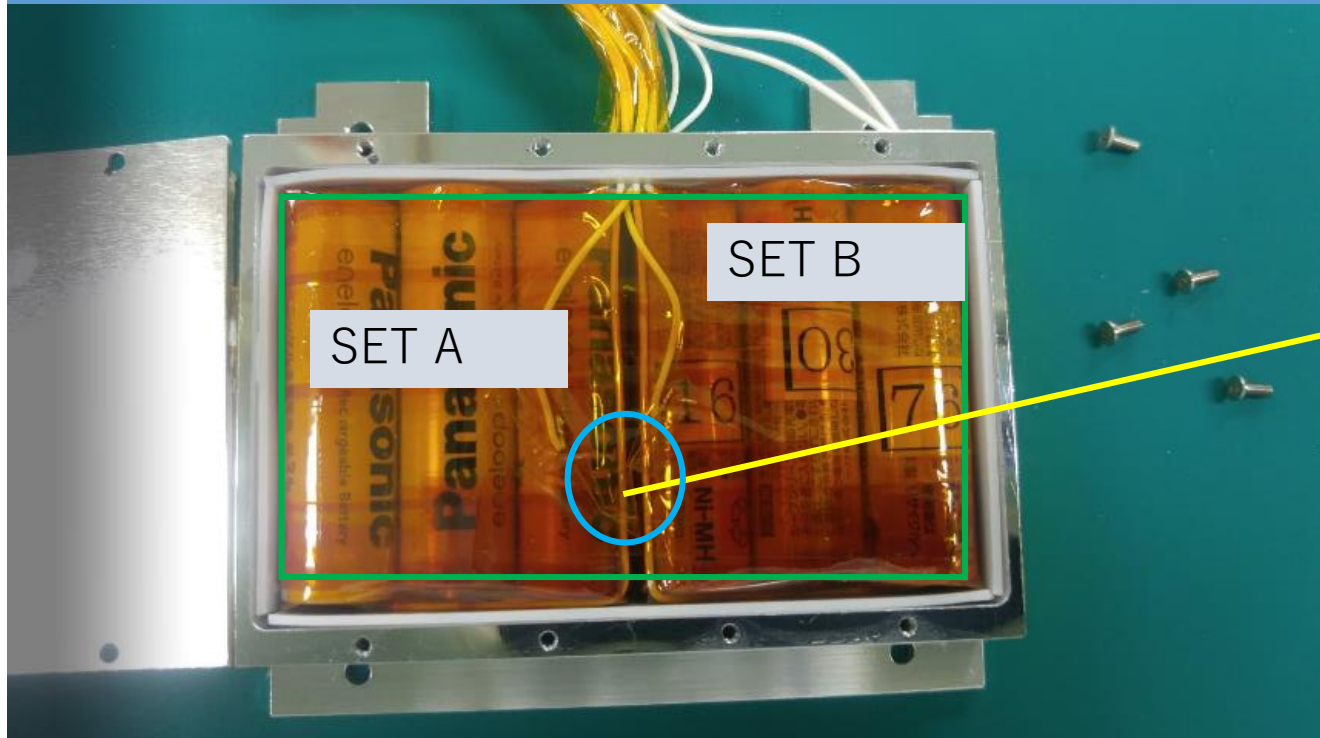
Step 4: Place the heater on the surface of the battery box and stable it with kapton tape.



Step 3: Replace space grade cable



Step 5: Place the batteries Set A and Set B inside the box

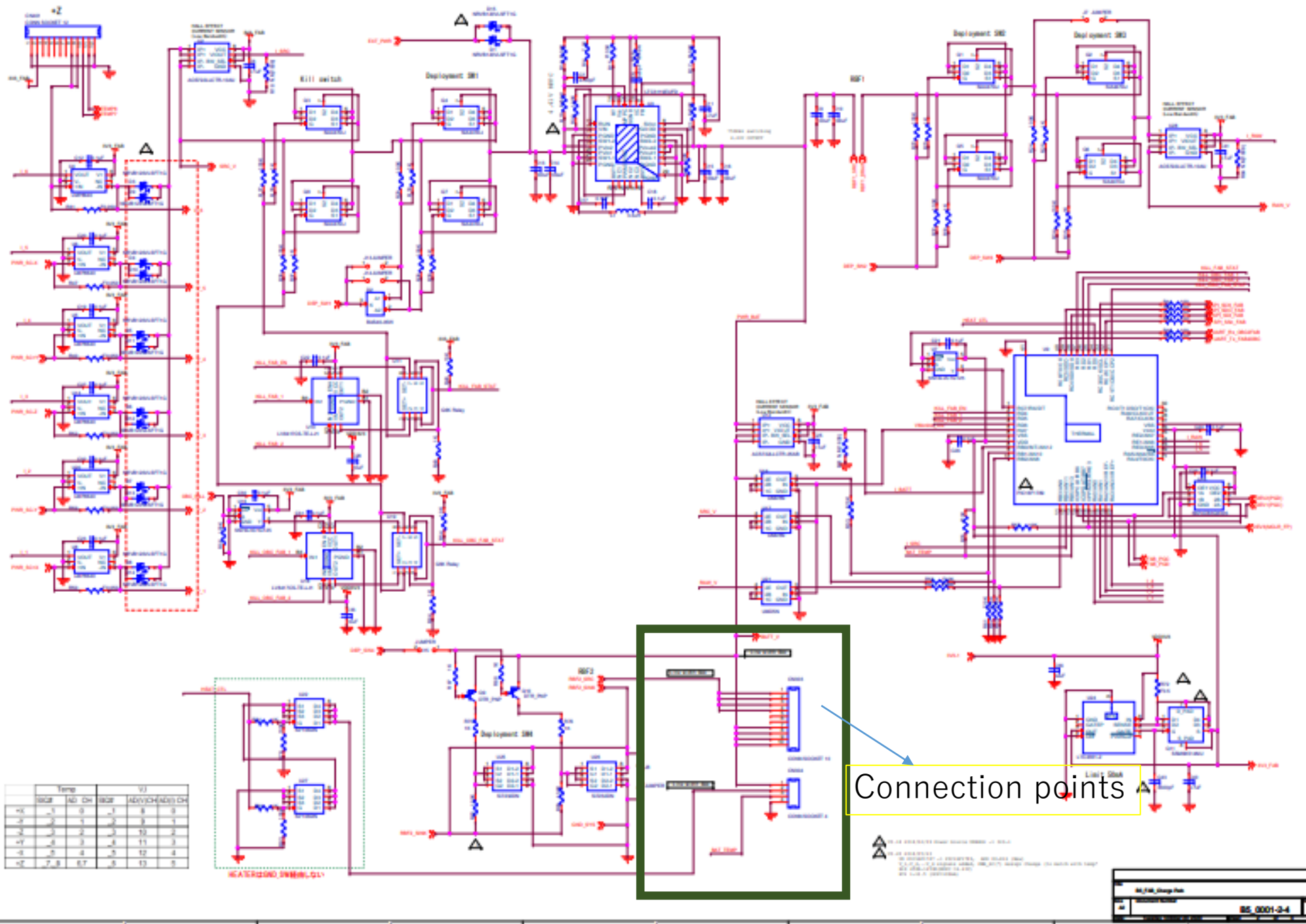


Step 6: Connect and solder the space grade cable to the thermistor, which is placed in the middle of the batteries.

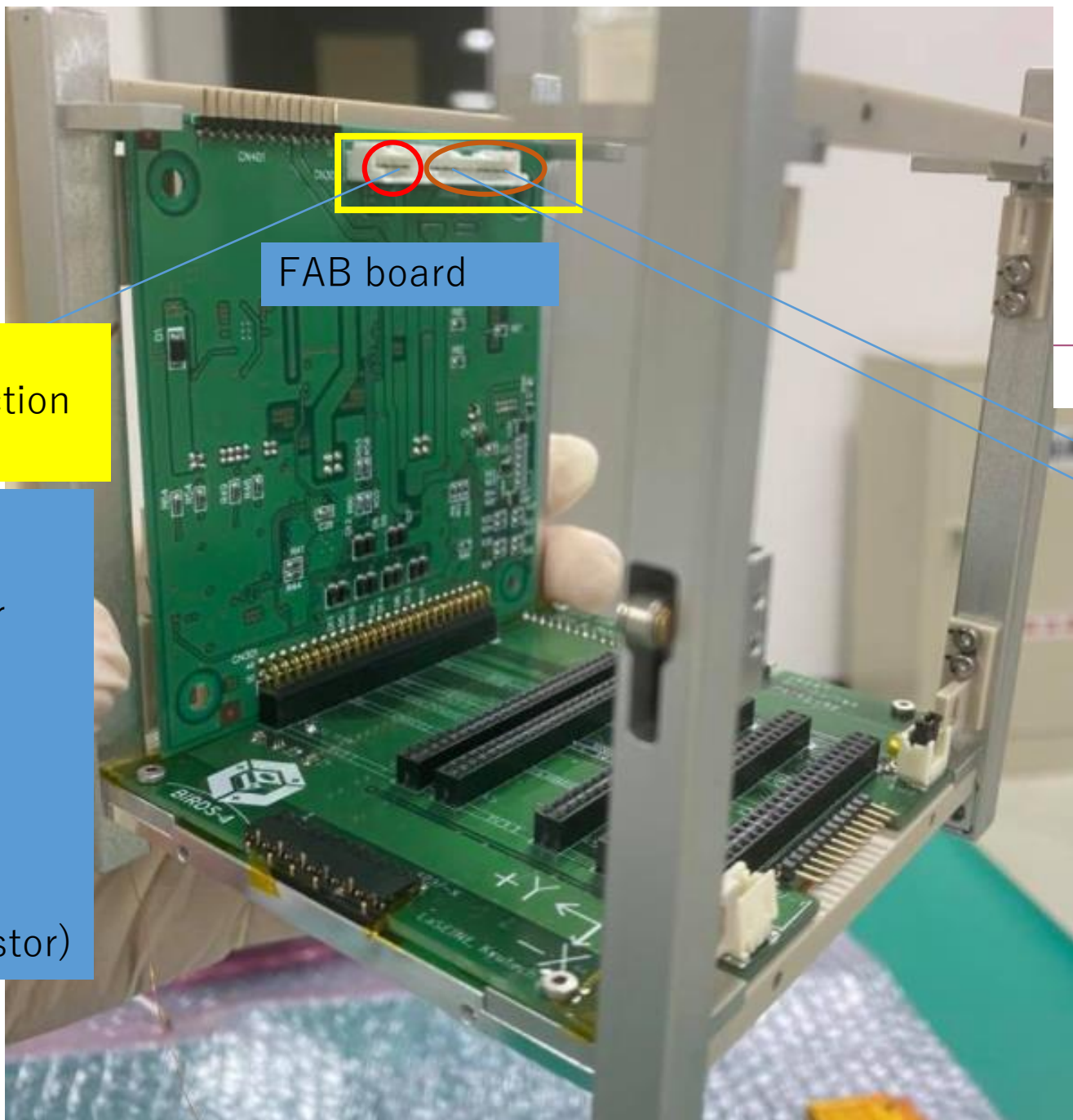
Step 7: Make sure the battery to EPS board (hot side) harness is 15 cm long.

Example: one cable length is 2.5 cm

Step 8: Crimp and connect cables with Connectors



Connection points



Battery heater and
Thermistor connection
points

2 Pin connector:

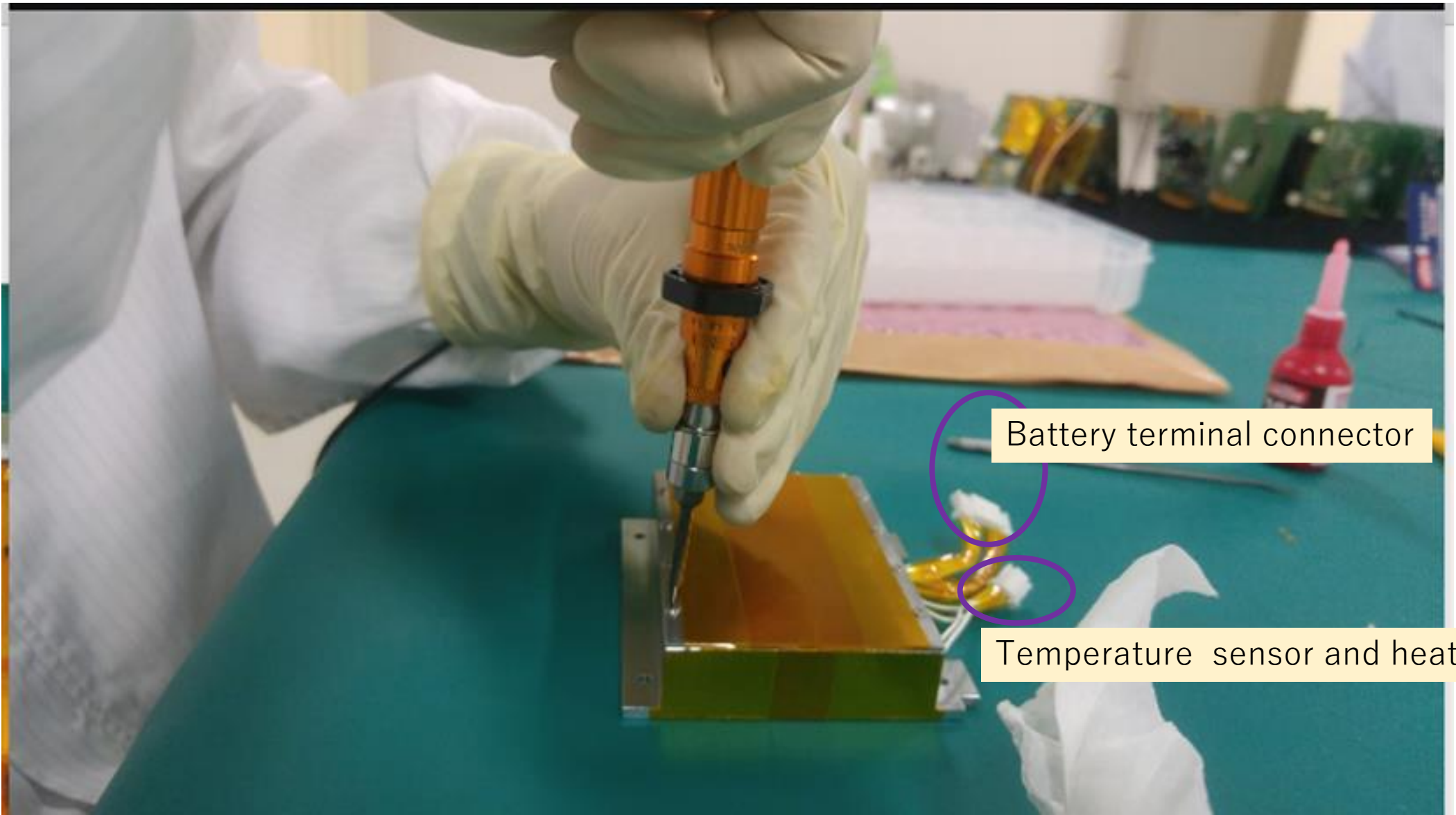
- 1 and 2 pins for heater terminal

And

- 3 and 4 pins for Temperature sensor (Thermistor)

Battery terminal
connection

10 pin connector: 1 to 4 pins for (-) terminal
7 to 10 pins for + terminal
Please follow the schematic diagram



Battery terminal connector

Temperature sensor and heater connector