



**Taiwan Space Agency (TASA)**  
Micro-Satellite Development Division

**T1A**

**T1A housekeeping handbook**  
**Document No. 1**

**Approvers List**

	Title	Name
Prepared By	[Subsystem] Lead/Members	I Chen
Approved By	[Subsystem]	
Approved By		

**Revision History**

Rev	Date	Change Description	Pages Affected
1	12/15/2024	Initial Release	All

---

---

12/10/2024	TASA	T1A Ground Station	2
------------	------	--------------------	---

## 1 Introduction

Ground station command list and decoding instructions. Introduce the command packet format, description of each command and timing of use.

## 2 Housekeeping

Satellite health data packets send out a signal (**beacon**) every few seconds, so that ground stations in various regions or amateur players can help confirm the satellite status. When passing over our ground station, unpack it to view the current status of the satellite subsystem.

### 2.1 Housekeeping packet format

The housekeeping packet is composed of 6 fields. All packets follow the general format:

- Health packet download data does not have a specified length
- Call sign : BN0TIT-11
- Header : PARUS:UP
- Trailer : 0x0D 0x0A

Housekeeping Packet					
Header	Subsystem ID	Data quence	Data(Unfixed length)	CRC-8	Trailer
6 bytes	1 byte	1 byte		8 bytes	2 bytes

The housekeeping packet mainly contains EPS/GPS/OBC(ADCS)/TT&C data and is downloaded separately. The EPS is divided into four groups of data 0x01-0x04.

(Please refer to T1A\_housekeeping.exe for detailed telemetry.)

Housekeeping Packet		
Header	Subsystem ID	Data quence
PARUS:UP	0x01 EPS	0x01
		0x02
		0x03
		0x04
	0x02 GPS	0x01
	0x03 ADCS	0x01
		0x02
		0x03
	0x04 TTC	0x01

## 2.2 Voltage and temperature range

The normal voltage and temperature ranges for each subsystem, as well as abnormal and potentially damaged or hazardous values.

Electrical power system						
SOC	20~95					
OBC temp	(-10)~40	>(-20) or <60	>60 OR <(-20)			
OBC_V	3.3	± 0.2	± 0.5			
Battery1_V	7V~8.35V	6.2V~7V	<6.2 or >8.35			
Battery1_I	<-1.5A	±1	>-3A			
Battery1_Temp	10~60	± 5	<(-6) or >65			
Battery2_V	7V~8.35V	6.2V~7V	<6.2 or >8.35			
Electric version temp	(-10)~40	>(-20) or <60	>60 OR <(-20)			
Power_on				Power_off		
UHF	5V	± 0.2	± 0.5	0V	>=0.5	>=3
VHF	5V	± 0.2	± 0.5	0V	>=0.5	>=3
Payload1	5V	± 0.2	± 0.5	0V	>=0.5	>=3
Payload2	5V	± 0.2	± 0.5	0V	>=0.5	>=3
GPS	3V	± 0.3	± 0.5	0V	>=0.5	>=1
ADCS_3.3	3.3	± 0.2	± 0.5	0V	>=0.5	>=1.5
ADCS_5	5V	± 0.2	± 0.5	0V	>=0.5	>=3
ADCS_Temp	(-10)~40	>(-20) or <60	>60 OR <(-20)	0	0	0
FSS_Temp	(-20)~50	>(-30) or <60	>60 OR <(-30)	0	0	0

12/10/2024	TASA	T1A Ground Station	4
------------	------	--------------------	---

### 3 Satellite Mode

Describe the subsystems that need to be activated for each satellite mode in order to detect any anomalies occurring in the satellite accurately.

#### 3.1 Mode

The switches for each subsystem are in various satellite modes.

	Phoenix mode	Deployed mode	Safe mode	Normal/ Payload mode	Payload1 mode	Payload2 mode	Payload3 mode	Ground_ Testing
OBC Status	X	AAAAAAAA	B0	c0	d0	d1	d2	d2