

## Small Satellite Integrated Electronics

**Abstract:**

This command describes the appearance features, technical specifications, interface definitions and communication protocols of Small Satellite Integrated Electronics.

**Key Words:** Small Satellite, Integrated Electronics, Specification, Interface

### 1. Appearance

The appearance of Small Satellite Integrated Electronics is shown as figure1.

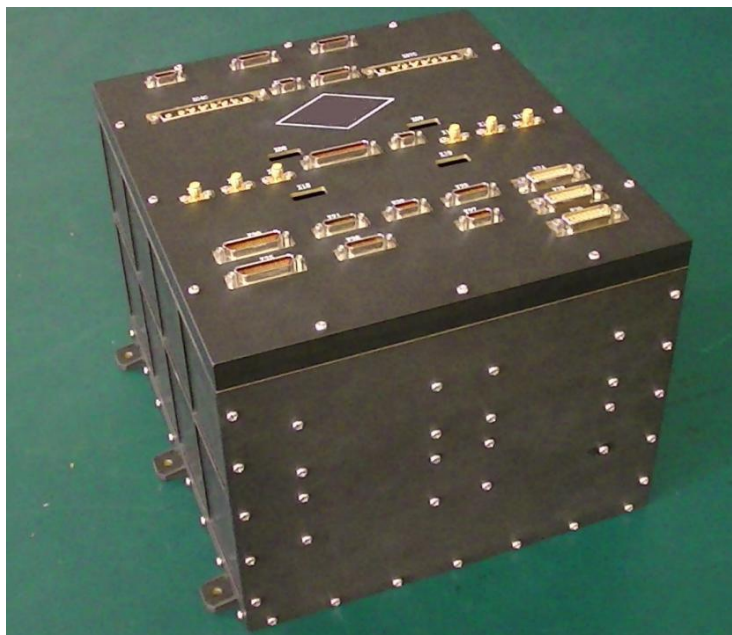


Fig.1 Small Satellite Integrated Electronics

### 2. Specifications

Table1 Specifications

Item	Parameter	Remark
CPU	BM3803FMGH	dual cold backup
Main frequency	64MHz	
Data memory	4MB	
Program memory	4MB	
Data bus interface	CAN data bus, 500Kbps	
Uplink telecommand	2000bps	
Downlink telemetry	4 to 16Kbps	
Telemetry acquisition channel	64 channel, including 48 channel of temperature parameter, 16 channel of analog parameter	number configurable
OC command	32 channel, driving capability 200mA, pulse width 160±10ms	number configurable
Temperature control channel	16 channel, with power of single channel no less than 18W	number configurable

### 3. Mechanical Interfaces

Table2 Specifications

Item	Parameter	Remark
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Outline size	300mm×185mm×190m m	
Weight	< 6Kg	
Mounting aperture	6-Φ5.5mm	

**4. Power Requirements**

+28V DC power supply

Table3 Power Requirements

Item	Parameter	Remark
Power supply	+28 V	
Inrush current	2A/5ms	
Steady power consumption	<7.5W	
Peak power consumption	<10W	

**5. Interface Definitions and Communication Protocols**

**5.1 communication interface**

Integrated Electronics adopts card-box design, including CAN data bus and RS422 data bus.

1) CAN data bus interface

CAN communication rate 500Kbps, receiver input impedance: 5 to 10KΩ, differential input impedance: 20 to 100KΩ. The circuit interface is shown as figure2.

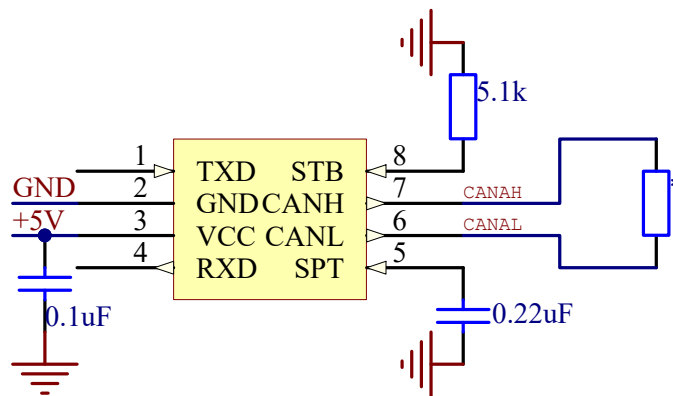


Fig.2 CAN data bus interface

2) RS422 input interface

Asynchronous Serial Interface, pulse per second signal receiving logic signal. The interface chip adopts AM26C32. The circuit interface is shown as figure3.

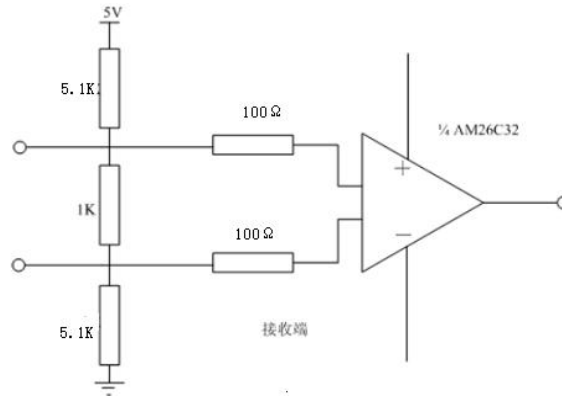


Fig.3 RS422 input interface

3) RS422 output interface

Asynchronous Serial Interface, pulse per second signal output logic signal. The interface chip adopts AM26C31. The circuit interface is shown as figure4.

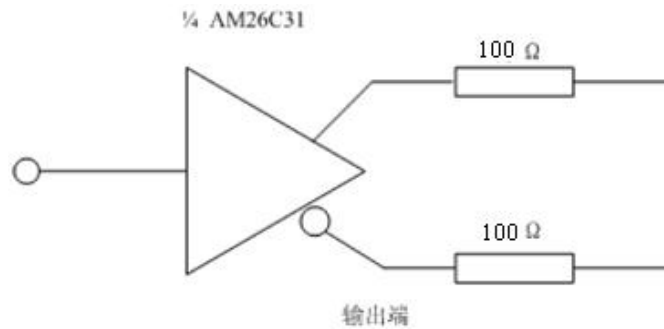


Fig.4 RS422 output interface

**5.2 communication protocols**

RS422 adopts standard asynchronous serial interface communication protocol, with 1 start bit, 8 data bits, 1 stop bit, and the data content is determined by users.

CAN data bus comply with CAN2.0A protocol. The data content is determined by users.

**6. Fault Identification**

If the following phenomena happen in the process of installation testing, it indicates that Integrated Electronics has faults. Please contact supplier to solve the problems:

- There are obvious damage signs on the appearance, including serious scratch, knock mark, component loss, etc.
- There are damages to electrical interface. The impedance is less than 1KΩ when measuring power supply and ground return lines with multimeter.

- The static operating current is greater than 1A after power-on under normal temperature and pressure.
- Data bus can't receive (send) data or receive (send) error data.

## **7. Maintenance**

Dedicated person should be designated for routine maintenance of Integrated Electronics.

- The input power supply of Integrated Electronics is +28VDC. No one shall be allowed to change that.
- The type, specification, and parameter of components in circuits shall not be changed in the process of usage or maintenance. If faults happen, please contact supplier.
- Installations must be firm without breaking off.
- Transportation shall comply with waterway, land route transportation and loading requirements, avoiding collision, water, and corrosion.