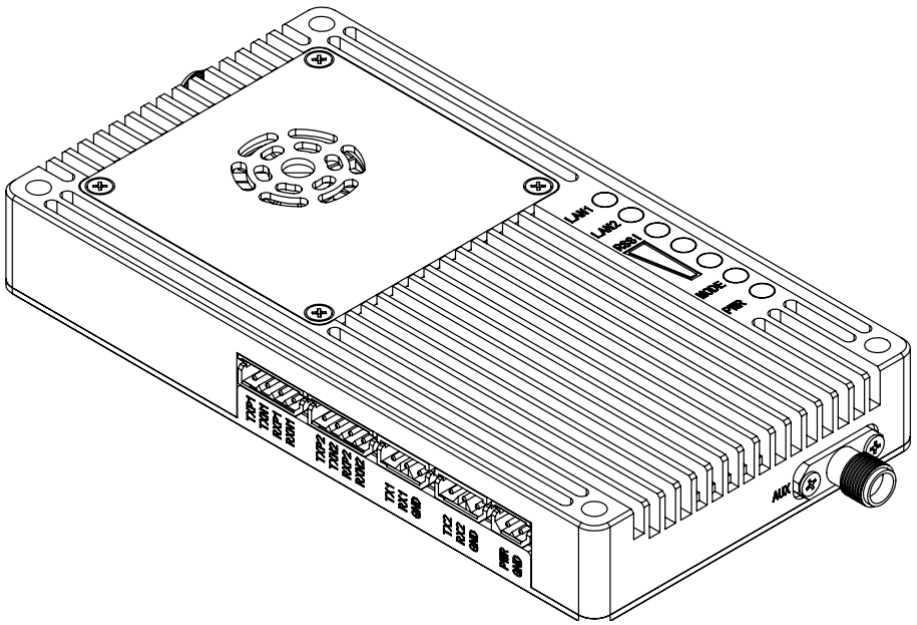
C33 User manual

TC69B series: 1.4GHz
Version: 20250609V1.1



Version history

Date	Version	Modification description
20240701	V1.0	Initial release
20250609	V1.1	Upgrade to the 30KM version

Catalogue

1.Product overview

C33 belongs to the TC69B series of 2W transmission power, low power consumption of graphics and digital integrated equipment. The device supports multiple transmission modes, such as point-to-point, point-to-multipoint, and trunk, and supports star networking. C33 adopts OFDM TDD bidirectional wireless communication technology, has strong anti-interference and penetration ability, and realizes wireless data stable transmission.

This product is suitable for fire prevention, inspection, and monitoring. The C33 has two versions of 30KM and 50KM, so the transmission distance can be up to 30KM or 50KM under good air-to-ground visibility.

2.Product characteristics

- Supports star networking： Supports point-to-multipoint, up to 16 nodes.
- Supports large bandwidth transmission： Up to 30Mbps@20MHz.
- Supports multi-interface design： RS232/TTL/CAN/SBUS/RS485.
- Support automatic frequency selection： Automatic detection of interference signals, real-time selection of the optimal frequency point.
- Supports multi-bandwidth mode： 3MHz;5MHz;10MHz;20MHz.
- Support multiple sets of coexistence：Supports simultaneous fixed frequency use of multiple devices.

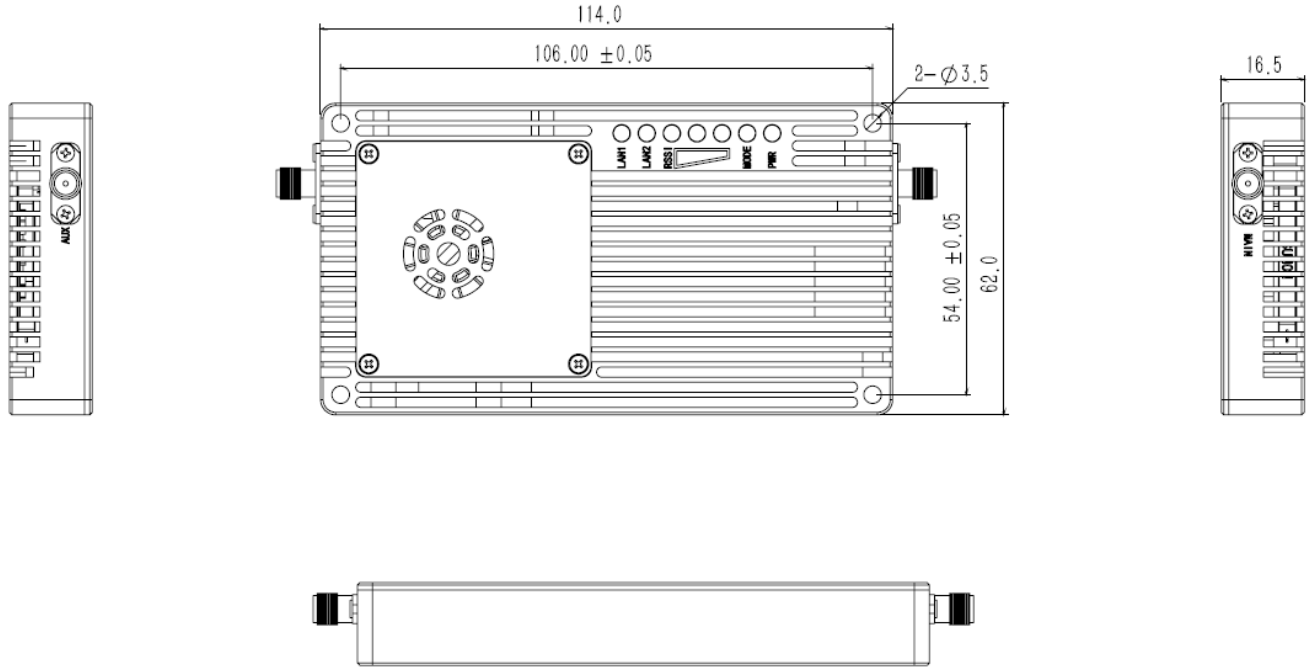
3.Product specifications

System parameter	Technical index
Equipment type	C33
Working frequency	1420~1530MHz
RF channel	1T2R
Transmission power	33dBm (2W)
Transmission distance	Air to ground 30KM/50KM (LOS)
Channel bandwidth	3MHz;5MHz;10MHz;20MHz
Modulation mode	OFDM
Receiving sensitivity	See to table2
Maximum speed	30Mbps@20MHz
Encryption	AES128
Transmission delay	⩽20ms
RF interface	SMA *2
Device interface	100Mb Ethernet *2
	TTL/RS232/RS485 *1
	TTL/RS232/CAN/SBUS/RS485 *1
Consumption	⩽ 15W Air@4Mbps
	⩽ 8W Ground
Dimension	114 x 62 x 16.5mm
Weight	162g
Working voltage	DC 9~15V,Typical value: +12V@2A
Working temperature	-20~+55℃

Table 2 Channel bandwidth & sensitivity			
No	Channel BW MHz	Transmitted data volume	sensitivity (dBm)
1	20MHz	10Mbps	-94
2	20MHz	5Mbps	-97
3	10MHz	10Mbps	-91
4	10MHz	5Mbps	-96
5	5MHz	10Mbps	-84
6	5MHz	5Mbps	-93
7	3MHz	5Mbps	-87
8	3MHz	2Mbps	-98

4.Product dimension and weight

4.1 Dimensional diagram

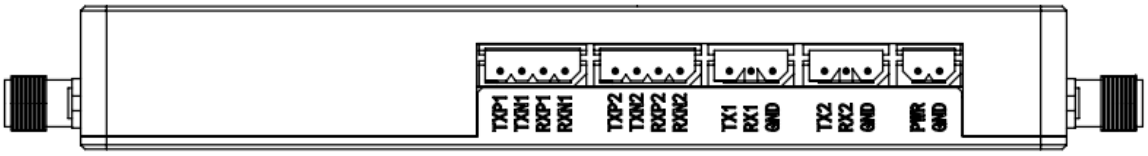


4.2 Dimension& Weight

- Dimension (L*W*H): 114mm x 62mm x 16.5mm （Not included SMA）
- Weight: 162g

5.Product interface definition

5.1 Interface diagram



Power interface: Molex2.5-2PIN, DC12V@2A.

Antenna interface: The MAIN antenna marked main must be connected to the antenna. AUX is a secondary antenna that only receives signals.

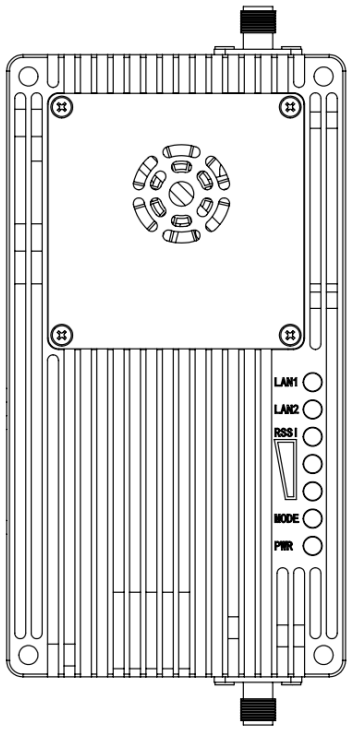
Data interface: Supports two 100 Mbit/s network ports and two serial ports. Serial port 2 CAN be used as an SBUS or CAN port.

5.2 Interface definition

Linear order	Pin name	Interface definition	Interface description	Signal direction
1	PWR	DC 9~15V	Power positive	I
2	GND		Power negative	I
3	TX1	Serial port 1 RS232/TTL/RS485 (Factory default RS232)	TX	O
4	RX1		RX	I
5	GND		Serial port 1 ground	O
6	TX2	Serial port 2 TTL/RS232/SBUS/CAN (Factory default TTL)	TX	O
7	RX2		RX	I
8	GND		Serial port 2 ground	O
9	TXP1+	Ethernet 1	TX+	O
10	TXM1-		TX-	O
11	RXP1+		RX+	I
12	RXM1-		RX-	I
13	TXP2+	Ethernet 2	TX+	O
14	TXM2-		TX-	O
15	RXP2+		RX+	I
16	RXM2-		RX-	I

Note 1: Signal direction I indicates radio input and direction O indicates radio output
Note 2: By default, serial port 1 is RS232 and serial port 2 is TTL. The level is determined by the hardware factory.
Note 3: When serial port 2 is configured as SBUS, the ground SBUS input is connected to PIN7,8. The sky end SBUS output is connected to PIN6,8.

6.Product status light meaning



PWR（green）

When the PWR indicator is on, the device is powered on.

MODE（red & green）

In main mode, the red light is steady on.

In slave mode, the green light is steady on.

LAN1; LAN 2（green）

The network port indicator blinks when data is being sent or received.

RSSI 1-3 （green lights）

The more the number of energy lights, the better the signal quality。

The RSSI lamp represents the quality of the received signal	
RSSI 能量灯亮个数	Received signal SNR
3 RSSI lights on	>14
2 RSSI lights on	10<SNR<14
1 RSSI light on	2<SNR<10

Module type	Mode	C33 light status			
		PWR	MODE	LAN1 LAN2	RSSI 123
master	unsynchronized	Powered on	red light Powered on	Data is being transmitted and blinking	Searching
master	synchronized	Powered on	green light Powered on	Data is being transmitted and blinking	Proportional to the strength of the received signal
slave	unsynchronized	Powered on	red light Powered on	Data is being transmitted and blinking	Searching
slave	synchronized	Powered on	green light Powered on	Data is being transmitted and blinking	Proportional to the strength of the received signal

When the primary and secondary devices are not synchronized, the power PWR indicator of the primary and secondary devices is steady on, the MODE indicator is red on the primary device, and green on the MODE indicator on the secondary device. The RSSI lights of both the primary and secondary devices are in search state. When the master and slave are synchronized, the RSSI lights of the master and slave show the received signal energy intensity. When the network port is sending or receiving data, the primary and secondary devices correspond to LAN1, and the LAN2 indicator blinks.