S1400-P40

User Manual

SwiftLlink 1.4GHz
Version：2024315V2.0
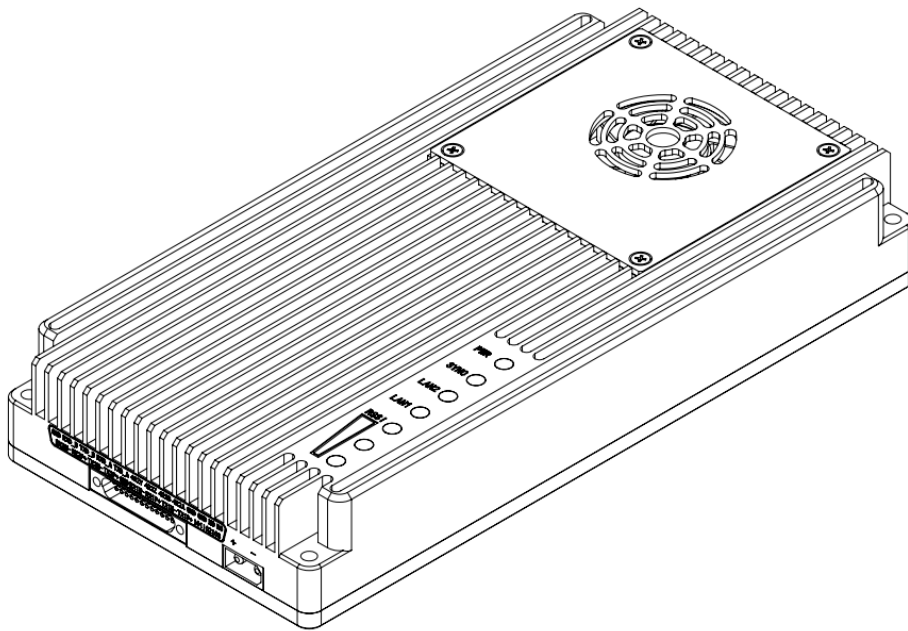
Version history

Date	Version	Modification description
20240131	V1.0	Initial version
20240315	V2.0	Modify power consumption, operating temperature, and data volume

Catalogue

1 Product overview

S1400-P40 is a self-developed TDD wireless transmission equipment. The product has the functions of real-time interference detection, adaptive frequency selection, adaptive stream, automatic retransmission, and automatic power control, which greatly improves the ability of anti-multipath and anti-interference, and has the characteristics of high reliability, good stability, and low delay.

This product is suitable for firefighting, inspection, monitoring and other scenarios, the transmission distance of 150KM when the environment is good.

2 Product characteristics

- Support long-distance transmission: 4M code flow can be transmitted up to 150km.

- Supports large bandwidth transmission: Up to 16Mbps@10MHz.

- Supports automatic repeater transmission: Supports automatic trunk addition.

- Supports multi-interface design: The device has two network ports and four serial ports, supporting RS232/TTL/RS422/SBUS.

- Supports automatic frequency selection: Automatic detection of interference signals, real-time selection of the optimal frequency point.

- Supports automatic retransmission: Automatic retransmission of burst error data improves data reliability.

- Supports adaptive stream: The channel modulation mode is automatically adjusted according to the signal quality in real time.

- Supports automatic power control: Close range automatic adjustment of transmission power, reduce power consumption.

- Supports automatic antenna selection: According to the occlusion situation, the optimal antenna transmission is selected in real time.

- Supports upstream and downstream dynamic allocation: The bandwidth ratio of the master and slave can be automatically allocated according to the actual amount of data.
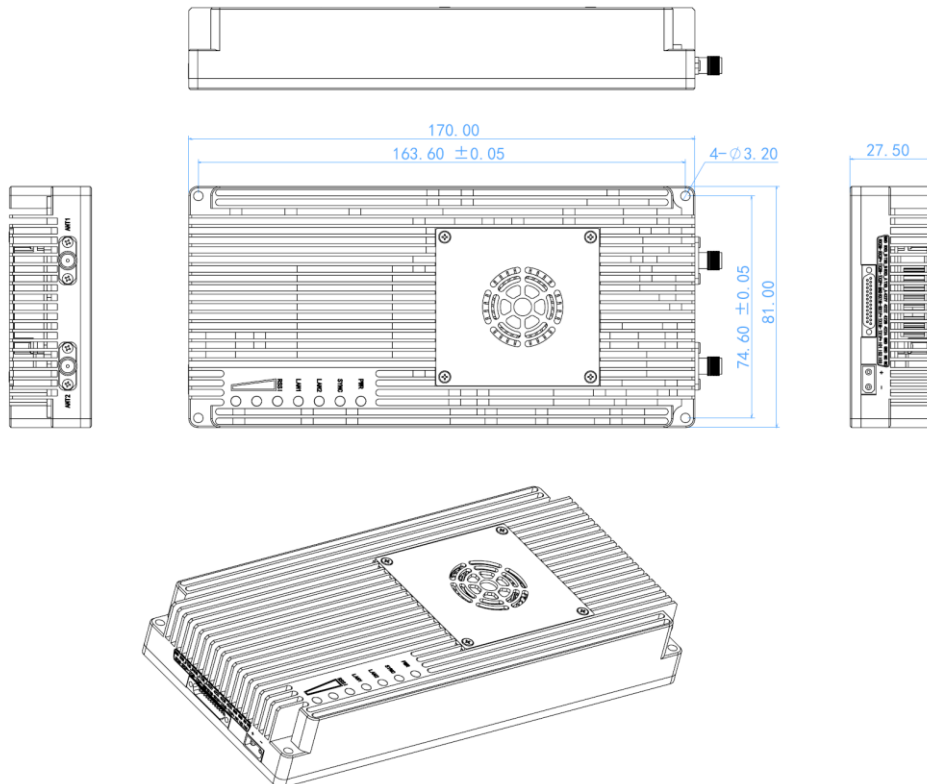
3 Product index

System parameter	Technical index
Equipment model	S1400-P40
Working frequency	1350~1470MHz
Radio frequency	2T2R
Transmission power	40dBm(10W)
Transmission distance	Air-to-ground 150km（visibility）
Channel bandwidth	10MHz
Modulation mode	QPSK/16QAM
Receiving sensitivity	See Table (MCS & Sensitivity)
Speed	17Mbps@16QAM3/4
Communication encryption	AES256
Transmission delay	≤10ms
Radio frequency interface	SMAX2
Equipment interface	Ethernet portX2
	TTL/RS232X2
	RS422X1
	SUBS/TTL x1
Overall power consumption	≤ 66W@4Mbps(Air)
	≤ 15W@1Mbps(Ground)
Dimension(L*W*H)	180mm x 81mm x 28mm
Weight	415g
Working voltage	DC 22~30V, Typical value: 28V@3A
Working temperature	-40℃~+65℃

MCS & Sensitivity（10MHz)			
No.	MCS	Total uplink and downlink throughput (Mbps)	Sensitivity (dBm)
1	QPSK1/3	3.8	-99
2	QPSK1/2	5.6	-98
3	QPSK2/3	6.8	-97
4	QPSK3/4	7.8	-96
5	16QAM1/3	7.6	-96
6	16QAM1/2	11.1	-95
7	16QAM2/3	13.7	-93
8	16QAM3/4	15.7	-91

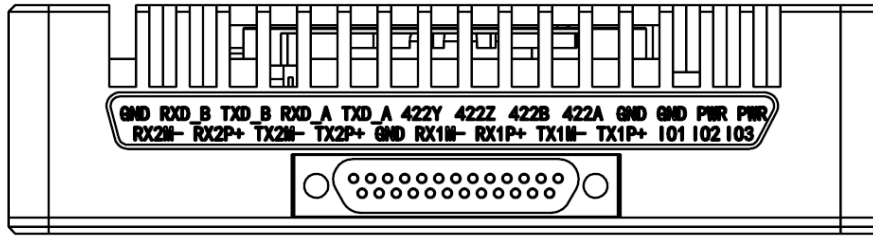# 4 Product dimension and weight

4.1 Dimension diagram

4.2 Dimension and weight

◆ Dimension (L*W*H) : 180mm x 81mm x 28mm（including SMA 10mm）

◆ Weight : 415g

5 Product interface definition

5.1 Interface diagram

The interface of the device adopts J30J-25pin. The interface consists of 1 power supply, 2 RS232/TTL, 1 RS422, 1 SBUS/TTL, and 2 Ethernet ports.

5.2 Interface definition

Power interface: Separate XT30PW-M. Power supply range is DC22-30V. The typical value is 28V@3A

Linear order.	Pin name	Interface definition	Interface description	Signal direction
1	PWR		Power positive	I
2	PWR	Power	Power positive	I
3	GND	DC 9~26V	Power negative	I
4	GND		Power negative	I
5	422A		Receiving data RX+	I
6	422B	Serial port 3	Receiving data RX-	I
7	422Z	RS422	Transmitting data TX-	O
8	422Y		Transmitting data TX+	O
9	TXD_A	Serial port 1	Transmitting data TX	O
10	RXD_A	RS232/TTL	Receiving data RX	I
11	TXD_B	Serial port 2	Transmitting data TX	O
12	RXD_B	RS232/TTL	Receiving data RX	I
13	GND		Serial port 2 ground	O
14	SBUS /TTL TX	Serial port 4	SBUS/TTL sending	O
15	SBUS /TTL RX	SUBS/TTL	SBUS/TTL receiving	I
16	SUBS/TTL GND		SBUS/TTL ground	O
17	TX1P+		Transmitting data TX+	O
18	TX1M-	Network port 1	Transmitting data TX-	O
19	RX1P+		Receiving data RX+	I
20	RX1M-		Receiving data RX-	I
21	GND	Ground	Serial port 1 ground	O
22	TX2P+		Transmitting data TX+	O
23	TX2M-	Network port 2	Transmitting data TX-	O
24	RX2P+		Receiving data RX+	I
25	RX2M-		Receiving data RX-	I

Notes1: Signal direction I indicates radio input and direction O indicates radio output.
Notes2: Please confirm whether it is TTL level or RS232 level when using device serial port 1/2.

6 Product indicator meaning
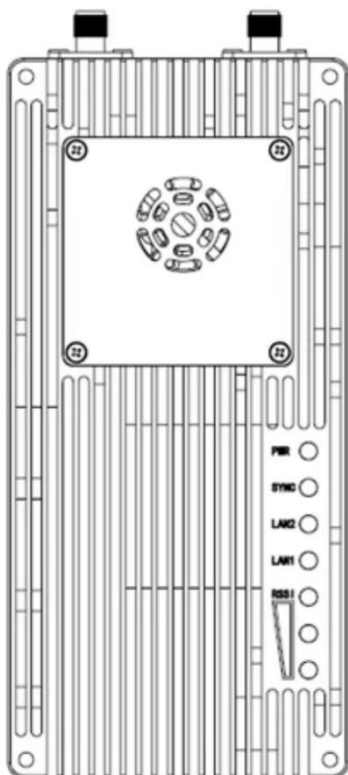
Power light PWR（green）

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

SYNC（green）

Out of sync state, light flashing.

After synchronization, the light is steady on.

Network port light : LAN1, LAN2 (green)

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

Receiving signal energy light(RSSI 3 green lights)

The greater the number of energy lights, the greater the signal reception strength.

The RSSI light represents the strength of the received signal	
Number of RSSI energy lights on	Received energy dBm
3 RSSI lights on	about -55dBm
2 RSSI lights on	about -80dBm
1 RSSI light on	about -95dBm

Module type	Mode	S1400-P40 light status			
		PWR	SYNC	LAN 1 LAN 2	RSSI 123
master	Un-sync	Powered on	Flashing	Data sending and receiving, flashing	Off
master	Sync	Powered on	Steady on	Data sending and receiving, flashing	Proportional to the strength of the received signal
slave	Un-sync	Powered on	Flashing	Data sending and receiving, flashing	Searching
slave	Sync	Powered on	Steady on	Data sending and receiving, flashing	Proportional to the strength of the received signal

When the master and slave devices are not synchronized, the PWR indicator of the master and slave devices is steady on, the SYNC indicator is blinking, and the RSSI indicator of the master device is off. The RSSI of the slave device will always be in the search state. After the master/slave synchronization, the SYNC indicator of the master/slave is steady on. The master-slave RSSI lamp displays the received signal energy intensity. When the network port is sending or receiving data, the master and slave devices correspond to LAN1, LAN2 indicator blinks.