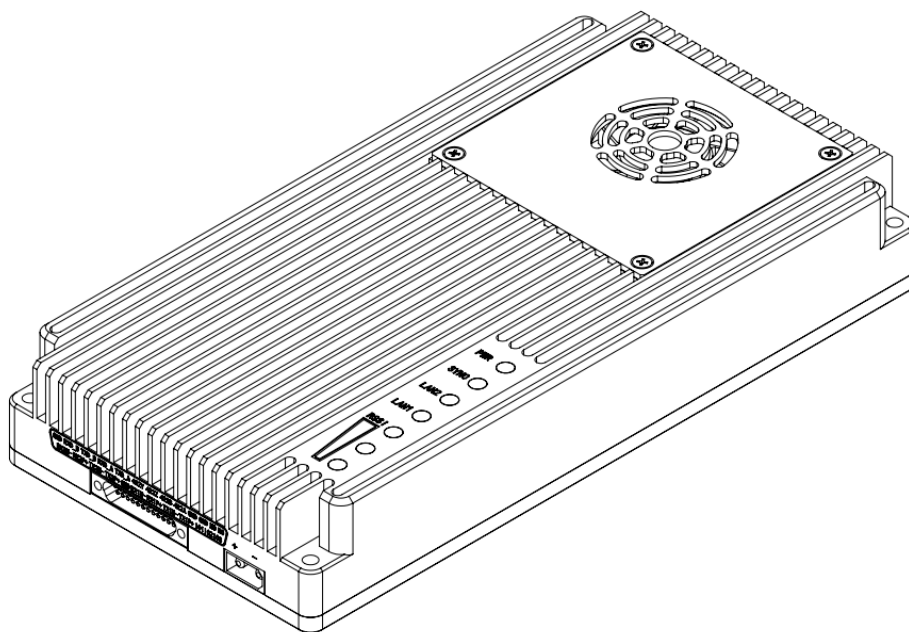

Verolink P40 1.4Ghz 150km Wireless Data/Video Transmission System User Manual

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

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1 Product overview

Verolink P40 is a self-developed TDD wireless transmission system. It integrates real-time interference detection, adaptive frequency selection, adaptive bit-rate adjustment, automatic retransmission, and automatic power control. These features significantly enhance its anti-multipath and anti-interference performance, delivering high reliability, excellent stability, and ultra-low latency.

It is suitable for firefighting, inspection, monitoring, and various other applications. Under optimal conditions, it supports a transmission range of up to 150 km.

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.

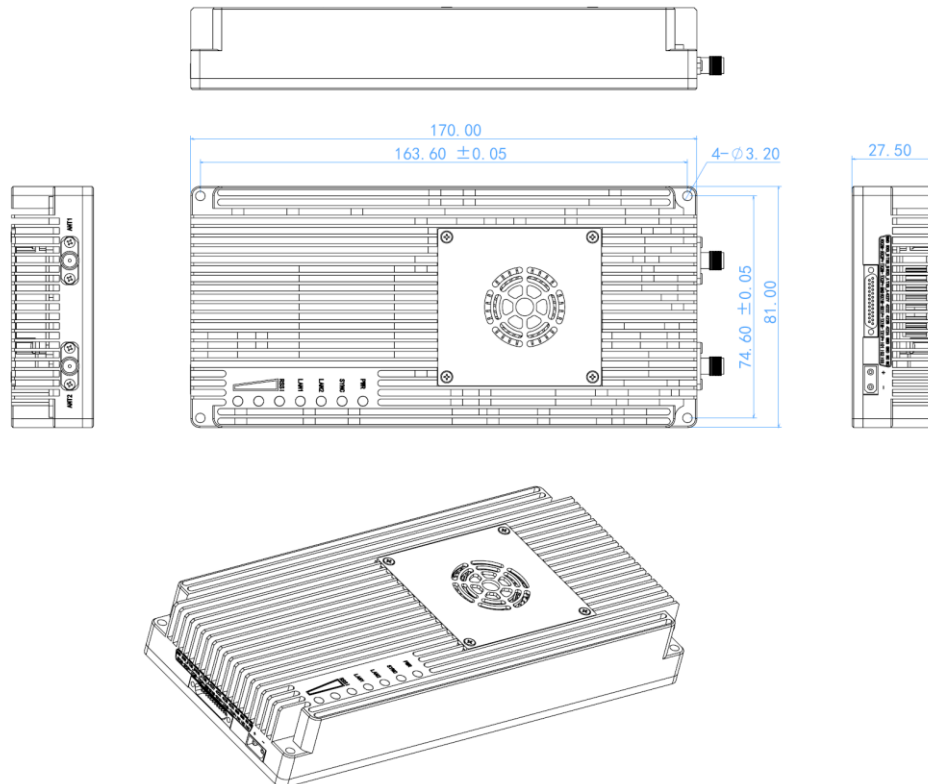
3 Product index

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

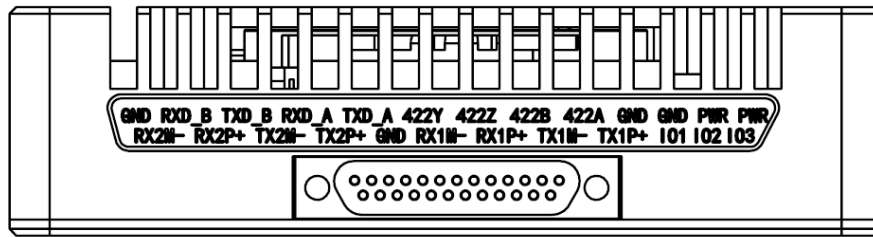


4.2 Dimension and weight

- ◆ 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

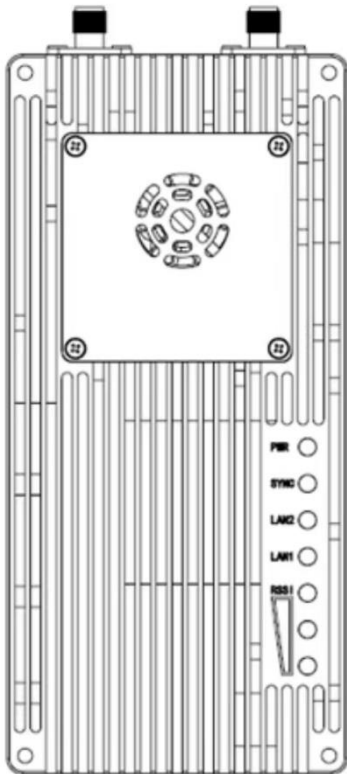
Power interface: Separate XT30PW-M. Power supply range is DC22-30V. The typical value is 28V@3A

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