Air@Link User manual

SwiftLink series: 1.4GHz
Version：20240405V1.0

Version history

Date	Version	Modification description
20240405	V1.0	Initial version

Catalogue

1.Product overview

Air@link is a TDD bidirectional digital remote wireless small ground station. With wi-fi, network port, serial port, SBUS and RS422 and other interfaces. Support real-time environment noise detection adaptive stream, automatic frequency selection, automatic retransmission mechanism, automatic antenna selection, automatic power control, manual frequency mode, multiple sets of coexistence and a series of features.

Air@link micro base station adopts an integrated, all-in-one design. Waterproof, dustproof and anti-corrosion design, support independent battery power supply, simple assembly, easy to disassemble.

Air@link has a transmission power of 5~20W, and the maximum transmission distance of air-to-ground can be supported by 100~200KM under viewable conditions.

2.Product characteristics

Support long-distance transmission:	100~200km（LOS）
Supports large bandwidth transmission:	17Mbps@10MHz
Supports automatic repeater transmission:	Supports automatic repeater addition
Supports multi-interface design:	Ethernet*1, WIFI*1, 4G*1, TTL/RS232*2 , RS422*1, SBUS*1
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:	Automatically adjust the channel modulation mode 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 upstream and downstream bandwidth ratio can be automatically allocated based on the data volume in real time.

Support multiple sets of coexistence: Supports simultaneous operation of multiple devices.

Supports the frequency matching function: It can be used for frequency pairing by software and hardware.

Supports IP65 level protection: Waterproof, dustproof and anti-corrosion design

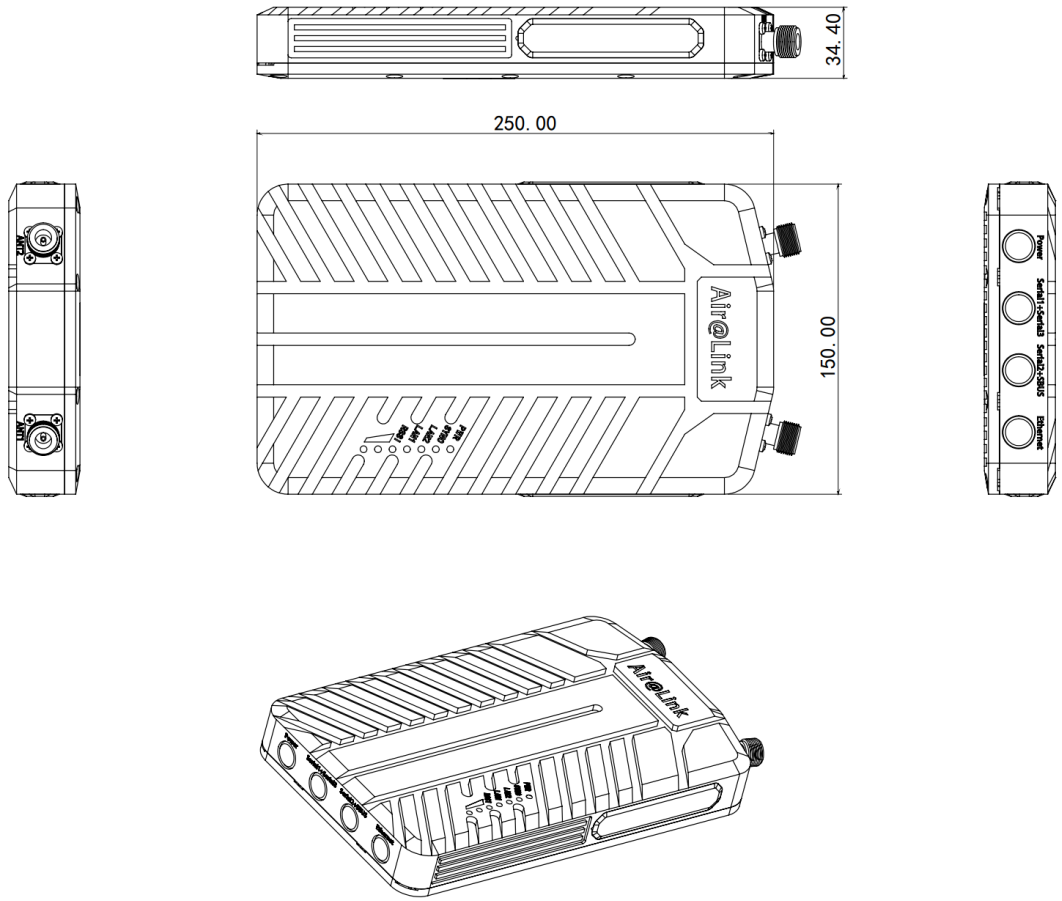
3. Product specifications

System parameter	Technical index
Equipment type	Air@Link
Working frequency	1350~1470MHz
Radio frequency	2T2R
Transmit power	37/39/40/43dBm (5W/8W/10W/20W)
Transmission distance	Air to Ground(LOS): 100KM@5W/8W; 150KM@10W; 200KM@20W;
Channel bandwidth	10MHz
Modulation mode	QPSK/16QAM
Receiving sensitivity	See Table 2
Maximum rate	16Mbps@16QAM3/4
Communication encryption	AES256
Transmission delay	≤ 10ms
Radio frequency interface	N 头*2
Interface type	Lemo line
Device interface	WIFI *1
	100Mb Ethernet *1
	TTL/RS232 *2、RS422 *1、SBUS *1
Power consumption	≤ 15W
Class of protection	Air unit: IP20，Ground unit: IP65
Dimension(L*W*H)	250mm*150mm*34.4mm
Weight	1.5kg
Working voltage	DC22~30V Typical value :+24V/+28V
Working temperature	-40~+65℃

Table 2 MCS & sensitivity (10MHz)			
No	MCS	Total uplink and downlink throughput (Mbps)	Sensitivity (dBm)
1	QPSK1/3	4.0	-99
2	QPSK1/2	5.8	-98
3	QPSK2/3	7.1	-97
4	QPSK3/4	8.2	-96
5	16QAM1/3	8.0	-96
6	16QAM1/2	11.6	-95
7	16QAM2/3	14.3	-93
8	16QAM3/4	16.4	-91

4. Product Dimension and weight

4.1 Dimension diagram



4.2 Dimension and weight

- Dimension(L*W*H): 250mm*150mm*34.4mm （N heads are not included）
- Weight: 1.5kg

5. Product interface definition

5.1 Interface diagram

The device has four data ports, power ports from left to right, serial ports 1 and 3, serial port 2/SBUS, and one 100 Mbit/s network port. Air@link supports wi-fi connection. You can configure parameters or view parameters instead of using network ports.

5.2 Interface definition

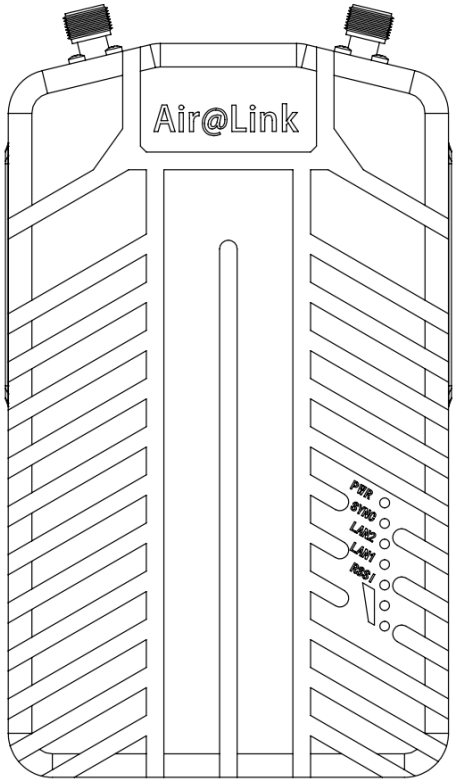
Power interface: The power supply range is DC22-30V. Typical values are 24V or +28V

Interface definition	Name	Lemo line color	Interface description	Signal direction
POWER (4PIN)	Power+	Red&white,red	Power positive	I
	Power+	Blue&black,blue	Power positive	I
	Power-	Black&white,black	Power negative	I
	Power-	Green&black,green	Power negative	I
Serial1 & Serial3 (7PIN)	422A	Red	422 RX+	I
	422B	Red&white	422 RX-	I
	422Z	Black	422 TX-	O
	422Y	Black&white	422 TX+	O
	TXD_A	Green	Serial Port 1 TX	O
	RXD_A	Green&black	Serial Port 1 RX	I
	GND	Blue	Serial Port 1 Ground	I
Serial2 & SBUS (6PIN)	TXD_B	Red	Serial Port 2 TX	O
	RXD_B	Red&white	Serial Port 2 RX	I
	GND	Black	Serial Port 2 Ground	O
	SBUS_R	Black&white	SBUS receive	O
	+5V	Green	+5V@1A output	I
	GND	Green&black	SBUS Ground	O
Ethernet (8PIN)	RJ45	Non	100M*1	IO

Note 1: Signal direction I indicates radio input and direction O indicates radio output

Note 2: When using the serial port 1/2 of the device, please check whether it is TTL level or RS232 level

6. Product status light meaning



PWR（green）

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

SYNC（green）

Out of sync state, light flashing. After synchronization, the light is steady on

LAN2（WIFI）

When the device is turned on, the WIFI light blinks

LAN1（RJ45）

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

Receiving signal energy light（3 RSSI green lights)

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

The RSSI lamp represents the strength of the received signal	
Number of RSSI light	Energy received dBm
3 RSSI lights on	-50dBm
2 RSSI lights on	-80dBm
1 RSSI light on	-95dBm

When Air@link is not synchronized, the PWR indicator of the power supply is steady on, the SYNC indicator is blinking, and the RSSI indicator of the Air@link indicator is off. The Air@link SYNC light is on when the sky is connected. The RSSI lamp shows the energy intensity of the received signal. When the network port is wired and data is being sent or received, the LAN1 indicator of Air@link blinks accordingly. Otherwise, no connection is available, or the connection is abnormal.