# S1400-P33

# User Manual

SwiftLlink 1.4GHz
Version：20250704V7.2

# Version history

| Date | Version | Modification description |
|---|---|---|
| 20230905 | V1.0 | Initial version |
| 20230906 | V2.0 | Add the last item of product features: upstream and downstream automatic distribution |
| 20230921 | V3.0 | No modification. Consistent with the use guide version |
| 20231031 | V4.0 | Modify product features 3: Equipment weight, add SBUS function. |
| 20231204 | V5.0 | Product Features Add automatic repeater. |
| 20240315 | V6.0 | Modify power consumption and data quantity |
| 20240405 | V7.0 | Add multiple sets of coexistence switches.<br>Modify the serial-to-network configuration mode.<br>Modify the ID number length and modify the English words of background noise detection.<br>Added the frequency matching function |
| 20240701 | V7.1 | supports 2 SBUS channels. Optimized antenna selection |
| 20250704 | V7.2 | Change the home page image, modify the maximum bit rate, and add a relay indicator light |

# Catalogue

# 1 Product overview

S1400-P33 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 30KM+ when the environment is good.

# 2 Product characteristics

- Support long-distance transmission: 4M code flow can be transmitted up to 30km+.
- Supports large bandwidth transmission: Up to 16.8Mbps@10MHz.
- Supports automatic repeater transmission: Supports automatic repeater 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.

- Supports the coexistence of multiple set: Support up to 6 sets of equipment at the same time fixed frequency use.
- Supports the frequency matching function: Software can be used to configure the frequency and hardware key frequency.

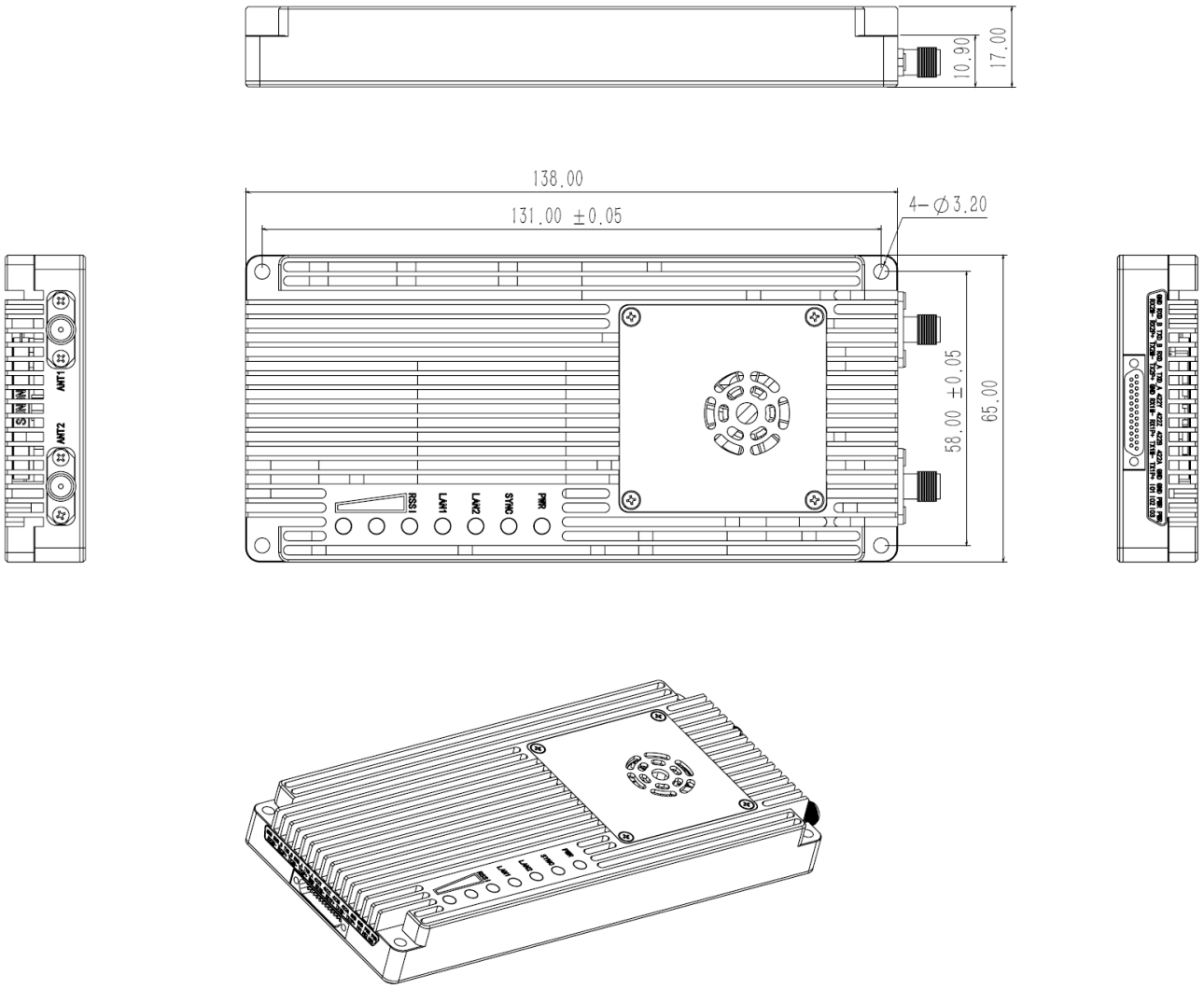
# 3 Product index

| System parameter | Technical index |
|---|---|
| Equipment model | S1400-P33 |
| Working frequency | 1350~1470MHz (customizable) |
| Radio frequency | 2T2R |
| Transmission power | 33dBm (2W) |
| Transmission distance | Air-to-ground 30km+ (LOS ) |
| Channel bandwidth | 10MHz |
| Modulation mode | QPSK/16QAM |
| Receiving sensitivity | See Table (MCS & Sensitivity) |
| Speed | 16.8Mbps@16QAM3/4 |
| Communication encryption | AES256 |
| Transmission delay | ≤10ms |
| Radio frequency interface | SMA*2 |
| Equipment interface | Ethernet *2 |
| | TTL/RS232 *2 |
| | RS422 *1 |
| | SBUS*2/TTL *1 |
| Overall power consumption | ≤25W@4Mbps (Air uint) |
| | ≤10W@1Mbps (Ground uint) |
| Dimension(L*W*H) | 148mm x 65mm x 17mm |
| Weight | 208g |
| Working voltage | DC 9~26V; Typical value: +12V@3A |
| Working temperature | -40℃~+75℃ |

| MCS & Sensitivity（10MHz） | | | |
|---|---|---|---|
| No. | MCS | Total uplink and downlink throughput (Mbps) | Sensitivity (dBm) |
| 1 | QPSK1/3 | 4.1 | -99 |
| 2 | QPSK1/2 | 6.0 | -98 |
| 3 | QPSK2/3 | 7.3 | -97 |
| 4 | QPSK3/4 | 8.4 | -96 |
| 5 | 16QAM1/3 | 8.2 | -96 |
| 6 | 16QAM1/2 | 12.0 | -95 |
| 7 | 16QAM2/3 | 14.6 | -93 |
| 8 | 16QAM3/4 | 16.8 | -91 |

# 4 Product dimension and weight

## 4.1 Dimension diagram

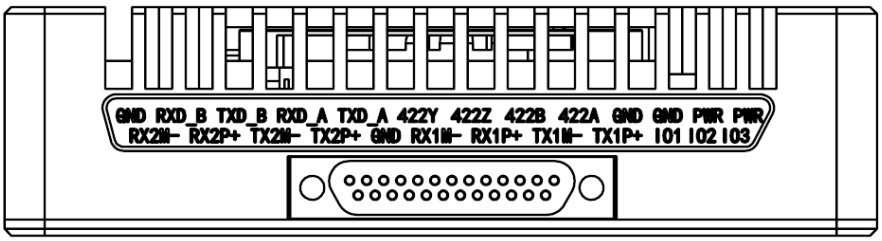



## 4.2 Dimension and weight

- Dimension (L*W*H) : 148mm x 65mm x 17mm （including SMA 10mm）
- Weight : 208g

# 5 Product interface definition

## 5.1 Interface diagram



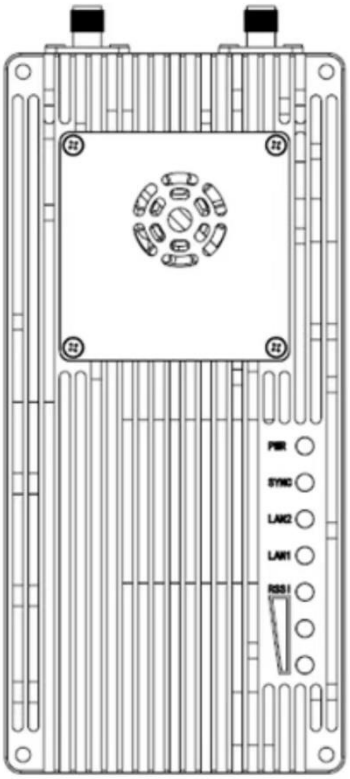

The interface of the device adopts J30J-25pin. The interface consists of 1 power supply, 2 RS232/TTL, 1 RS422, 2 SBUS or 1 TTL, and 2 Ethernet ports.

## 5.2 Interface definition

| 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 SBUS*2/TTL*1 (Note 2,3) | SBUS only Output (Air) | O |
| 15 | SBUS /TTL RX | | SBUS only Input (Ground) | I |
| 16 | TTL GND | | 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 |

Note1: Signal direction I indicates radio input and direction O indicates radio output.
Note2: SBUS 14 and 15pin are input on the ground side, and SBUS14 and 15pin are output on the air side
Note3: If you need to use two SBUS, you need to configure 14-pin > 14-pin for the air server SBUS mapping. 15pin->15pin。

# 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-P33 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 |
| Repeater | Un-sync | Powered on | Flashing | Data sending and receiving, flashing | Searching |
| Repeater | Sync | Powered on | Steady on | Data sending and receiving, flashing | Display the received slave energy |
| 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.