DDLmesh Series of Wireless Digital Data Link

Ultra Long Range、Low latency、Low Cost

HD Video&Distant Data Transmission Multi-channel Data Link

The new DDL series wireless digital data link is a low-cost long-distance video&data transmission product with small size, light weight, 2×2 MIMO, complete functions and abundant frequency bands. DDL series based on SDR software defined radio platform with 2×2 MIMO, it adopts Beamforming, Maximal Ratio Combining(MRC), Maximal Likelihood(ML) algorithm, low density parity check(LDPC) coding, intelligent frequency selection and autonomous frequency hopping technology to achieve strong radio frequency performance and strong anti-jamming.

DDL series data link radio provides ultra-long distance, low latency, bidirectional multi-channel network video&data&voice integrated wireless transmission. The world's leading code-modulated physical layer waveform technology and flexible anti-jamming and secure encryption design for the unmanned field are applied to reliable remote data links for UAVs, helicopters, robots, unmanned ships, unmanned vehicles and special vehicles.

The application system is mainly composed of the airborne radio with the airborne camera, and the ground radio with the ground computer, as well as the necessary accessories(including power supply, antenna feed system, connection lines and connectors, etc.).

The system can simultaneously transmit three IP/HDMI/SDI/CVBS HD video and multiple two-way transparent data(such as flight control/pod, BD/GPS, voice, etc.). AES encryption ensures transmission security.

Radio the transmission power of the station can reach up to 40W, providing a stable and reliable communication link.

- 400M/600M/800M/900M/1.4G/2.3G/2.4G/5.8GHz, transmitting power can be change, support NLOS high speed mobile transmission.
- 70Mbps data stream, adaptive dynamic bit allocation technique. Support one-way 4K, multi way 1080P or 720P HD video.
- 3 serial port and 2 video interfaces running at the same time, flight controller, voice, BD/GPS and other data can transmit with video.
- Support P2P, P2MP, MP2MP technique, centerless of no-master/slave. Support VLAN.
- Local diagnostic interface, telnet, network management. Local and remote wireless firmware update through FTP.
- Low power consumption. Tiny volume, lightweight structure, body building for UAV.

70Mbps high-speed, long-distance transmission

Multiple network + Multiple serial

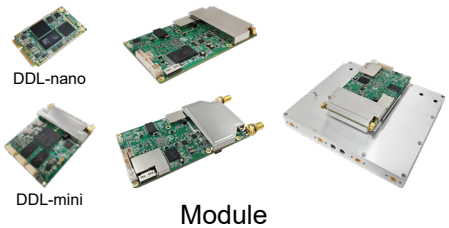
Intelligent frequency selection/autonomous frequency hopping anti-jamming

Compact/harsh environment applications

Point-to-point, Point-to-multipoint, Multipoint-to-multipoint, MESH

Airborne

0.25Watts×2/0.5(1)Watts×2, 1(2)Watts×2/4(5)Watts×2, 10(20)Watts×2



Module

0.25Watts×2/0.5(1)Watts×2, 1(2)Watts×2/4(5)Watts×2, 10(20)Watts×2

Handheld、Vehicle/Shipboard/Backpack

2Watts×2/4(5)Watts×2, 10(20)Watts×2, 40(50)Watts×2

DDLmesh Series HD Video&Distant Data Transmission Multi-channel Data Link Specifications

General

SDR Platform, Waveform	9363 or 9361+7Z020, Mobile Network MANET
MIMO Technology	Space-time coding、Receive Diversity、TX /RX beamforming、Spatial multiplexing
Receive Sensitivity	-103dBm@5MHz BW, -117dBm@250KHz
Channel Bandwidth	1.25/2.5/5/10/20MHz Broadband, 250k/500k/1MHz Narrowband Setting
Data Rate	1-70Mbps(20MHz BW) Broadband, 50-1000kbps narrowband Adaptive, QoS
Modulation Mode	TD-COFDM, BPSK/QPSK/16QAM/64QAM Adaptive(Fixed setting optional)
RF Output Power (Support TPC, transmission power control)	0.25Watts×2 (nano Module/Airborne Radio) 0.5Watts×2/1Watts×2 (mini Module/Airborne Radio) 1Watts×2/2Watts×2 (Module/Airborne/Handheld Radio) 4Watts×2/5Watts×2 (Module/Airborne/Handheld/Vehicle&Shipboard Radio) 10Watts×2/20Watts×2 (Airborne/Backpack/Vehicle&Shipboard Radio) 30Watts×2/40(50)Watts×2 (Airborne/Backpack/Vehicle&Shipboard Radio) 150Watts×2/250Watts×2 (Customization)
Mode	Decentralized P2P, P2MP and MP2MP communications with cross-connection, supporting small-scale (within 8 nodes) MESH networking with dynamic routing and multi-hop relay
Single Hop Delay	Average 6ms (Unidirectional, 20MHz BW)
Encryption	DES, AES128/256 (SM4/SNOW3G/ZUC optional, Chip/TF card encryption customized or external encryption machine)
Anti-Jamming Mode	Manual spectrum scanning channel selection, Full band enhanced intelligent frequency selecting(spectrum awareness)/Full band adaptive frequency hopping/ Roaming mode optional
Local/ Remote Management	Operating frequency, channel bandwidth, network ID, transmit power and other parameter settings, spectrum scanning, real-time display and statistical records of network topology, link field strength signal-to-noise ratio, upload and download traffic, node distance, BD/GPS(GNSS) positioning electronic map, temperature/ voltage/jamming Monitoring, software upgrade (remote silence and wake-up optional)
Others	The boot time is less than 28 seconds, and the network access/update/switching time is less than 1 second; The network size is less than 8 nodes, and the total bandwidth loss over three hops is less than 70%; Automatic carrier tracking, adapting to Doppler frequency shift of ±6kHz frequency deviation, supporting mobile communications at speeds above 7200 kilometers per hour (Mach 6, 2000 meters per second)

Bands

(300M-6GHz customizable. Same frequency or different frequency of 2T2R at single band, or 1T2R at dual-band selectable/smart change)

BAND	Frequency range	BAND	Frequency range
VHF/UHF (MHz)	360-450/450-550/570-700/ 800-950, 225-400/225-678/ 320-470*	S Band (GHz)	2.0-2.2/2.2-2.4/2.3-2.5/ 2.5-2.7/2.7-2.9/3.2-3.4/ 3.4-3.6/3.6-3.8, 1.9-2.7/ 2.0-2.7/2.1-2.7/2.7-3.6*
L Band (GHz)	1.0-1.2/1.1-1.3/1.3-1.5/1.5-1.7/ 1.6-1.8, 1.0-1.5/1.1-1.6/1.2-1.7/ 1.3-1.8/1.6-2.3/1.7-2.4/1.8-2.5*	C Band (GHz)	4.4-5.0/5.25-5.85, 4.2-5.2/5.5-6.0/6.4-7.2*

(Note: RF power, Dimensions, Weight is different)

MIIT (MHz) 336-344/512-592/566-626/606-678/1420-1520/1430-1444

Environmental

Operation Temperature	-40℃ ~+80℃	Protection Level	IP66 (IP67/IP68 Customized)

Mechanical

Size/Weight	5.1x3.0x0.7cm/14g, 0.25Watts×2 Airborne Radio, DDL-nano 6.2x4.8x1.1cm/46g, 0.5\Watts×2 Airborne Radio, DDL-mini 6.0x5.8x1.3cm/60g, 0.5\Watts×2 Airborne Radio, DDL-mini 9.6x5.8x1.9cm/120g, 1Watts×2 Airborne Radio, DDL-mini 11.7x6.2x2.0cm/160g, 1Watts×2/2Watts×2 Airborne Radio-Iron Gray 13.8x6.2x2.7cm/225g, 4Watts×2/5Watts×2 Airborne Radio-Iron Gray 12.8x13.4x3.8cm/598g, 10Watts×2/20Watts×2 Airborne Radio-Iron Gray 14.2x13.7x5.2cm/1.06kg, 10Watts×2/20Watts×2 Airborne Radio-Black 14.2x13.7x6.0cm/1.11kg, 30Watts×2/40Watts×2 Airborne Radio-Dark Gray 19.0x6.8x3.8cm/769g, with 11.1V/77.7Wh battery Handheld 27.5x18.9x6.2cm/4.15kg, with 22.2V/213Wh battery Backpack 19.1x18.6x6.3cm/2.16kg, 10Watts×2/20Watts×2 Vehicle&Shipboard 25.8x21.3x6.5cm/3.95kg, 40(50)Watts×2 Vehicle&Shipboard
Installation/Color	4 Mounting Holes/Black, Iron Gray (Army Green Optional)

Power

Supply Voltage	3.5-5V DC, 0.25Watts×2 Module/Airborne, DDL-nano 9-39V DC, 0.5Watts×2/1Watts×2 Module/Airborne, DDL-mini 12-36V DC, 2Watts×2/4Watts×2/5Watts×2 Module/Airborne/Handheld/Vehicle&Shipboard 18-32V DC, 10Watts×2/20Watts×2 Airborne/Backpack/Vehicle&Shipboard 28-32V DC, 30Watts×2/40(50)Watts×2 Airborne/Backpack/Vehicle&Shipboard
Power consumption	Operation 1-2A/Standby 0.5-1A@3.5-5V, 0.25Watts×2 Module/Airborne, DDL-nano Operation 0.3-0.5A/Standby 0.2-0.3A@12V, 0.5W×2/1W×2 Module/Airborne, DDL-mini Operation 0.5-1A/Standby 0.4-0.6A@12V, 1Watts×2 Module/Airborne Operation 1-2A/Standby 0.5-0.7A@12V, 2/4(5)Watts×2 Module/Airborne/Handheld/ Vehicle&Shipboard Operation 3-6A/Standby 0.7-0.9A@18V, 10Watts×2 Airborne/Backpack/Vehicle& Shipboard Operation 6-7A/Standby 0.7-0.9A@20V, 20Watts×2 Airborne/Backpack/Vehicle& Shipboard Operation 22A/Standby 0.4-1.6A@28-32V,30Watts×2/40(50)Watts×2 Airborne/ Backpack/Vehicle&Shipboard
Power Selection	Power Supply by Twist-Lock Battery or Main Cable
Batteries	8-10/6-8 hours for 114/77.7Wh (Handheld Radio) 10-12/6-8 hours for 427/213Wh (Backpack Radio) polymer lithium battery

Interface

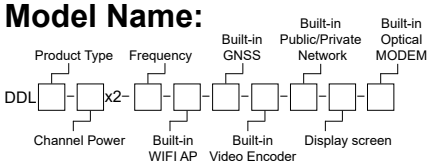
Basic interface	2xIPEX/2xMMCX/2xSMP/2xSMA/2xTNC/2xN RF, 11-2xRJ45 Ethernet 100/1000BaseT, RS232, DC input. TTL (UART), SBUS, and Bluetooth 1.2-230.4Kbps, Wi-Fi access point, and BD/GPS (GNSS) are available. Supports transparent transmission over Ethernet and serial ports, and all communication protocols, including MAVLink. Selectable service priority
Push to talk/ Auxiliary interface	MIC, SPK, PTT, GND/1xRS232, TTL, SBUS
Network Extension Optional	Public Network Routing/4G LTE, WB-NB integration, Fiber, Satellite
Video Extension Optional	Low Delay HDMI/SDI/CVBS, 4K/2K/1080P/720P/D1
LINK Indicator	Steady red - The network is not connected Blinking red - Starting/not connected to the network Steady green - The network is connected Blinking green - Push-To-Talk has been pushed
RSSI Indicator	Steady green - The link quality is excellent Steady blue - The link quality is good Steady yellow - The link quality is medium Steady purple - The link quality is slightly worse Steady red - The link quality is poor Off - The link is interrupted
Management Interface/ Control Interface	Web-based network management/GUI, API for secondary development interface/ SNMP

OEM

Size/Weight	5.1x3.0x0.6cm/11g, 0.25Watts×2 Module, DDL-nano 5.8x4.8x1.0cm/27g, 0.5Watts×2 Module, DDL-mini 8.7x5.4x1.0cm/40g, 1Watts×2 Module 8.7x5.4x1.0cm/43g, 2Watts×2/4Watts×2 Module 11.5x5.4x1.3cm/56g, 5Watts×2 Module 12.7x11.0x3.4cm/524g, 10(20)Watts×2 Module
RF	SMA, MMCX(DDL-mini), IPEX(DDL-nano)

Product Model Approval Certificate of Radio Administration of The Ministry of Industry and Information Technology of China: 2018FP5238、2018FP6081、2021FP0114、2021DP10060、2022FP15779

Model Name:



Product Type	Channel Power (W)	Frequency (MHz)	Built-in WIFI AP	Built-in GNSS	Built-in Video Encoder	Built-in Public/ Private Network	Display Screen	Built-in Optical MODEM
HandHeld	0.25, 0.5,1	600, U	0(N)	0(N)	0(N)	0(N)	0(N)	0(N)
BackPack	2, 4, 5	1400, L	1(Y)	1(Y)	HDMI	4G/5G	2(2")	1(Y)
VehiCle	10, 20	2300, S			SDI/AV	4G LTE CPE	3(3.2")	
AirBorne	40, 50	4500, C					4(4")	

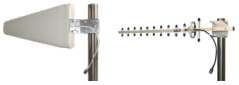
DDLHH-2x2-1400-1-1-HDMI-4G/5G-0-0 Express: 2Watts×2, 1400MHz, With WIFI AP, With Positioning Module, Built-in HDMI Coding, Built-in 4G/5G Public Network Module, Without display screen and without optical MODEM Handheld Radio.

DDLBP-10x2-600-1-1-SDI-4G LTE-0-0 Express: 10Watts×2, 600MHz, With WIFI AP, With Positioning Module, Built-in SDI Coding, Built-in 4G LTE Private Network Module, Without display screen and without optical MODEM Backpack Radio.

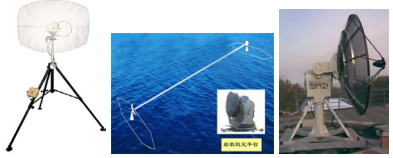
Stick antenna, Vehicle mounted antenna, All-Round high gain antenna, Directional high gain antenna, Long distance communication directional antenna automatic tracking platform

TQX-2400AH7
(2.3-2.7GHz, 7dBi, 0.25m,45g)

TQC-2400AH5/TQJ-2400AH12
(2.3-2.7GHz, 5/12dBi, 0.23/1.2m, 0.2/1.2kg)



TDJ-2327SP9/TDJ-2400Y12
(2.3-2.7GHz, 16/24dBi, 0.6/0.9m, 0.45/3.2kg)



Long range communication directional antenna automatic tracking platform

Shenzhen Sinosun Technology Co., Ltd. Address: Room 3A17, South Cangsong Building, Tairan Science Park, Futian District, Shenzhen City, Guangdong Province, P. R. China.
Phone: +86 755 83849417 WWW.SINOSUN.CN Postcode: 518040 Johnson(Technical): +86 13902912908(Moblie&WeChat) +852 44017395(Moblie&WhatsApp)
83435240 E-mail: 13823678436@139.com Tony(Sales): +86 13823678436(Moblie&WeChat) +852 53721462(Moblie&WhatsApp)

Wireless Data System Equipment Trading Co., Ltd. Address: Building A1, Dubai Digital Park, Dubai Silicon Oasis, Dubai, United Arab Emirates
Dubai(UAE) Office: +971 523904218 +971 554269081 +971 525808265 E-mail: chris@wireless-data-system.com

HONGKONG SINOSUN TECHNOLOGY LIMITED Room 03, 1/F, Tower 2, Nanyang Centre, 75 Mody Road, Tsim Sha Tsui East, HongKong

SINGAPORE SINOSUN TECHNOLOGY PTE. LTD. 111 North Bridge Road, #25-01 Peninsula Plaza, Singapore 179098