



Data brief

SkyPulse V3

Ultra low-latency digital communication system
for unmanned aerial and ground vehicles

Features

- Up to **four Full HD IP cameras** with in-flight stream switching
- **Plug-n-Fly** automatic discovery of compatible cameras
- **MAVLink, CRSF and S.Bus** with control-protocol conversion
- **2×2 MIMO** radio with built-in spectrum analyzer
- **DigiQ Extra Sense** proprietary real-time data correction
- **Smart Frequency Hopping** and **Wireless Bridge**
- **Four Ethernet ports** for video and custom data streams
- **Web UI** and **Android application** for setup and monitoring

1. Product Overview

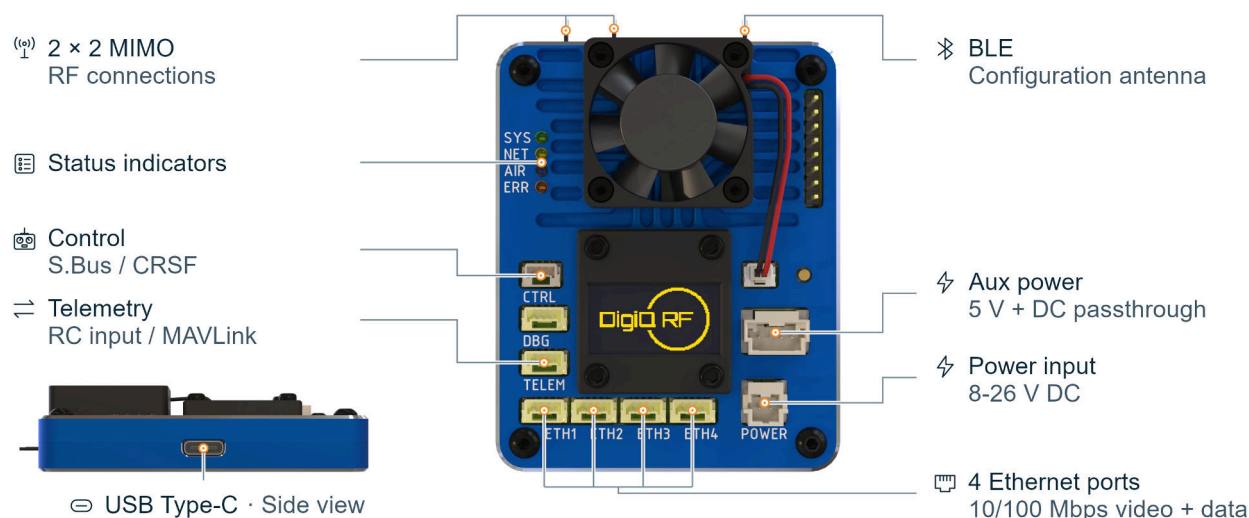


Figure 1. Top and side views. Connector functions depend on Air Unit / Ground Unit configuration

SKYPULSE V3 HIGHLIGHTS

SkyPulse V3 is a **low-latency digital link** for unmanned aerial and ground vehicles. It carries video, telemetry and control between an Air Unit connected to cameras and a flight controller, and a Ground Unit used for monitoring and control.

The **2 × 2 MIMO radio** combines spectrum analysis, selectable bandwidths and Smart Frequency Hopping, depending on the hardware revision.

Four Ethernet ports support **up to four IP cameras** and custom data. DigiQ Plug-n-Fly feature discovers supported cameras automatically, with additional support for manual configuration. Video streams can be switched during flight.

MAVLink, CRSF and S.Bus connect flight controllers and ground equipment. Internal control-protocol conversion allows remote controls using CRSF to communicate with S.Bus flight controllers.

The module accepts **8–26V DC directly**, or **12–59V** with an external **DigiQ Power Extension Board**. An onboard display, Web UI and Android application provide status monitoring and setup. A Smart Configuration Wizard and Configuration API provide simplified factory integration.

KEY FEATURES

- **Video:** switchable, encrypted Full HD streams; ONVIF cameras auto-discovery and static RTSP stream setup
- **Networking:** four 10/100 Mbps Ethernet ports for cameras and custom hardware connection
- **Control / telemetry:** MAVLink, CRSF / Fast CRSF and S.Bus / Fast S.Bus
- **Channel bandwidths:** 1.25, 2.5, 5, 10 and 20 MHz, depending on revision
- **Link resilience:** **Spectrum analyzer**, Smart Frequency Hopping, **DigiQ Extra Sense** data correction and external backup-radio support
- **Expansion:** Wireless Bridge and LTE modem support on Upgraded / Industrial revisions
- **Compact Air Unit:** approximately 79 × 63 mm body footprint; mass 115 g.

APPLICATIONS

- Multicopter and fixed-wing UAV data links
- Unmanned ground-vehicle (UGV) communications
- Ground-station video and telemetry reception
- Airborne or elevated wireless relay links

2. Specifications & Interfaces

Parameter	Specification
Radio architecture	2 × 2 MIMO; built-in spectrum analyzer
Data correction	DigiQ Extra Sense proprietary real-time algorithm
Direct supply input	8–26 V DC
Extended supply input	12–59 V DC with DigiQ Power Extension Board
Power consumption	5–13 W, depend on traffic and RF power settings
Video inputs	Up to four IP cameras; switchable, encrypted Full HD streams
Camera discovery	DigiQ Plug-n-Fly (ONVIF, no authentication); manual RTSP setup
Ethernet	Four 10/100 Mbps ports for video and data
RC control	CRSF @ 115200 / 400000 baud/sec; S.Bus @ 100000 / 200000 baud/sec. CRSF-to-S.Bus conversion supported
Telemetry	MAVLink @ 9600 / 57600 / 115200 baud/sec; Network or UART connection
Configuration	Configuration API Web User Interface Smart Configuration Wizard Android application via BLE
RF connection	U.FL (IPX1) on board; antenna connector depends on cable
Unit mass	115 g

Throughput & Expected range

Data Density	Bandwidth	Throughput*	Estimated range (km)**		
	MHz	Mbps, measured	12 dBi ground	20 dBi ground	25 dBi ground
1	5	0.49	29.1	73.1	130.0
	10	0.98	29.1	73.1	130.0
	20	1.95	23.1	58.0	103.2
2	5	0.96	20.6	51.7	92.0
	10	1.85	25.9	65.1	115.8
	20	3.65	18.4	46.1	82.0
3	5	1.37	18.4	46.1	82.0
	10	2.60	18.4	46.1	82.0
	20	4.50	13.0	32.6	58.0

*Throughput values are references from prior measurements

**Expected distances estimated with FSPL model for a 2 dBi antenna on the drone and the ground antenna gain shown above. Practical distance may vary with weather conditions and installation

Hardware revisions

Feature	Civil	Upgraded	Industrial
Frequency (MHz)	5180–5825	5060–6100	5060–6100
Bandwidth (MHz)	10, 20	5, 10, 20	1.25*, 2.5*, 5, 10, 20
Smart Frequency Hopping	No	Yes	Yes
Wireless Bridge	No	Yes	Yes
LTE modem support	No	Yes**	Yes**
External Backup Radio	Yes	Yes	Yes

* 1.25 and 2.5 MHz modes are enabled individually

** This feature is enabled individually

Hardware dimensions

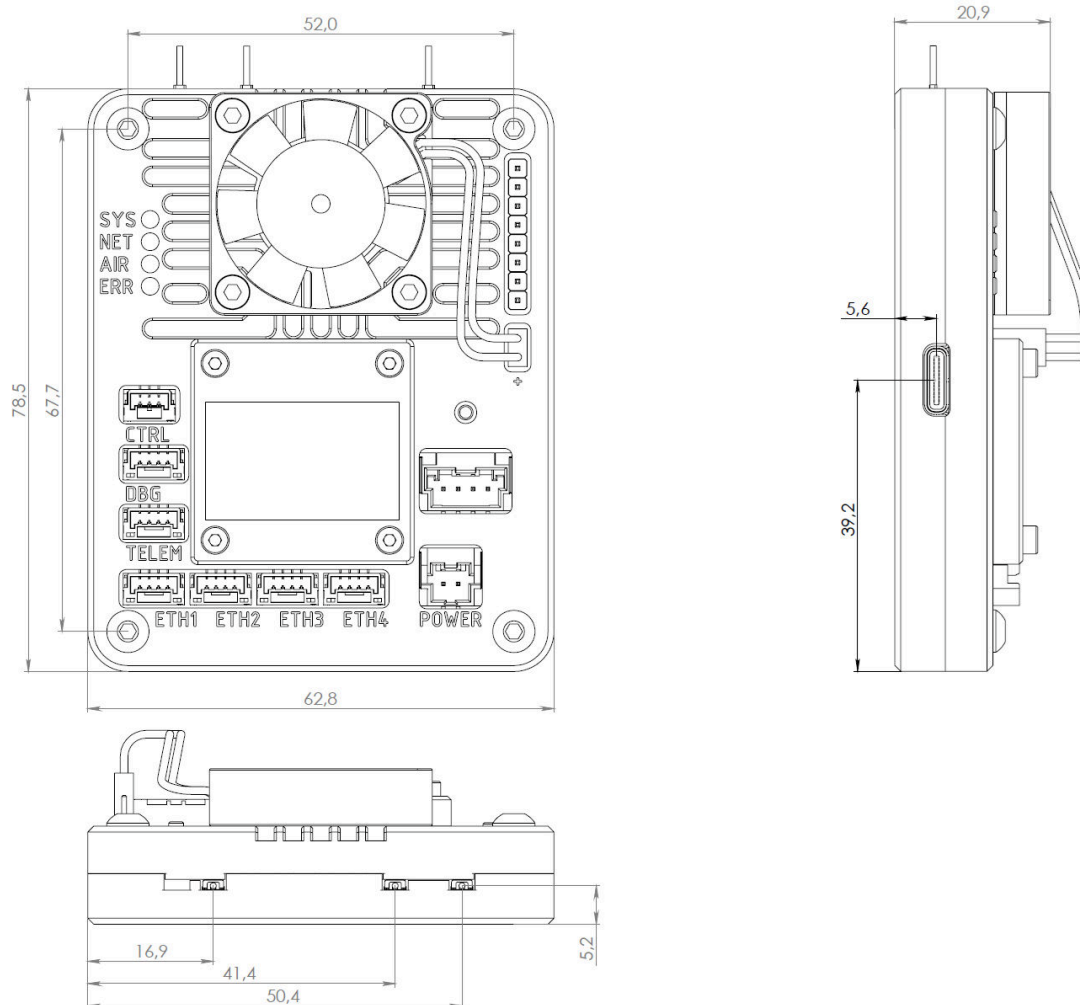


Figure 2. Top view and the module dimensions

3. Software & Diagnostics

The Web UI, Smart Configuration Wizard, Android application and Configuration API provide radio setup, live diagnostics and camera control.

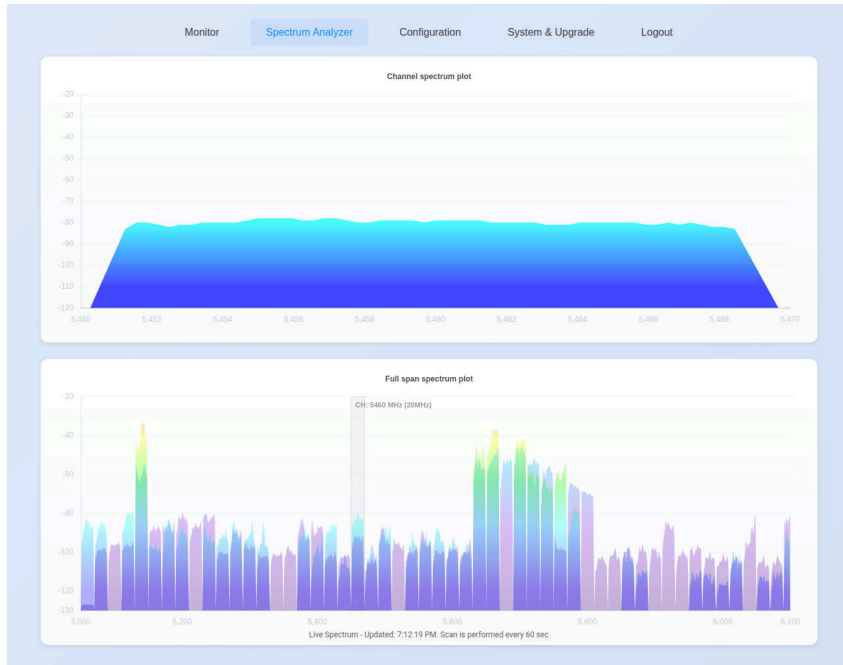


Figure 3. Web UI: active-channel and full-band spectrum graphs

Live link monitoring

- **Traffic:** Wireless / Ethernet Tx/Rx usage and link capacity
- **Radio health:** Per-antenna RSSI and transmit power
- **Diagnostics:** Lost frames and unit temperature



Figure 4. Web UI: wireless traffic and available capacity

Adaptive video

Automatic fallback to a lower-resolution camera stream reduces bandwidth demand during severe packet loss, when that stream is available.

Smart Frequency Hopping

Spectrum analysis and link statistics detect interference and guide automatic frequency changes.

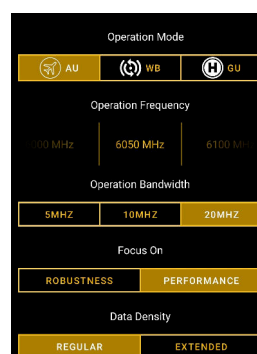
Radio Silence Mode

Pilot-controlled mode pauses video and telemetry downlink while the Air Unit listens; optional periodic telemetry bursts remain available.

Configuration & integration

- **Radio:** Unit role, channel, bandwidth, data density, camera and RC input options
- **Maintenance:** Software updates, logs and factory reset
- **REST API:** Access to Web UI parameters for automated setup in mass manufacturing
- **Smart Configuration Wizard:** Allows simplified network installation for the quick start

Android configuration via BLE



Configure and monitor the radio without opening the UAV enclosure. Create and select bind keys for multiple devices.

Figure 5. Android app: radio configuration via BLE

4. Application Scenarios

01 Direct radio link

One Ground Unit communicates directly with one Air Unit on the drone.

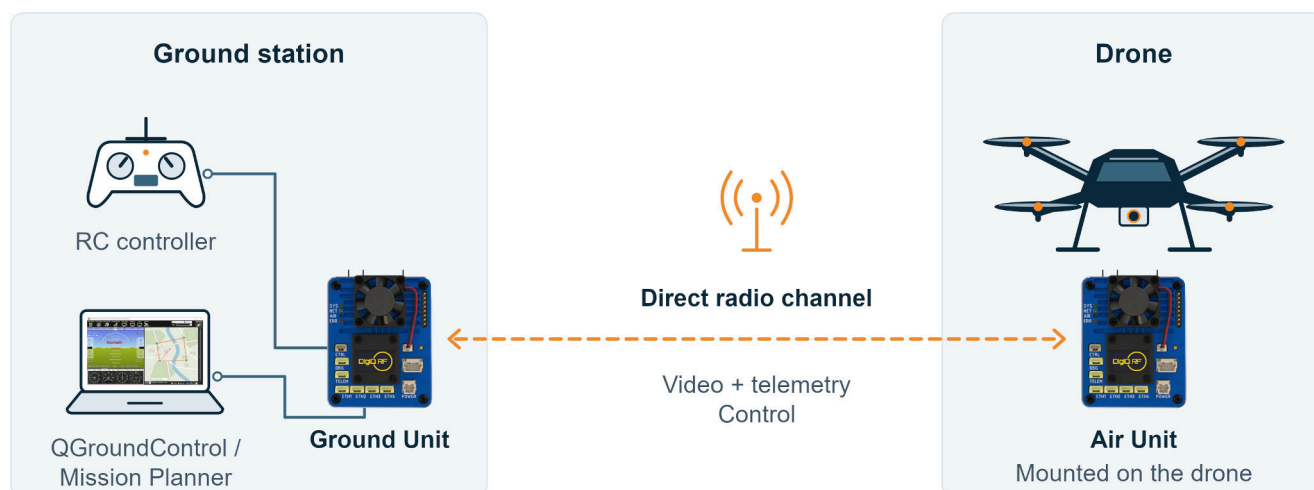


Figure 6. Direct radio link between one Ground Unit and one Air Unit

02 Wireless bridge - airborne relay

A relay drone extends coverage to another UAV or an unmanned ground vehicle.

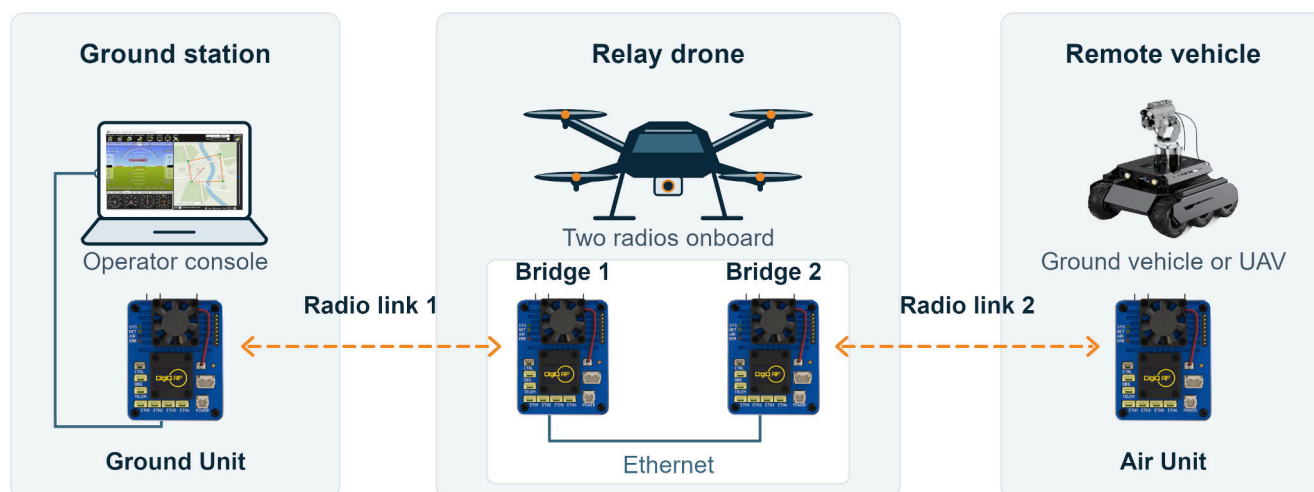


Figure 7. Airborne wireless bridge. Two Ethernet-connected radios relay the link to a remote ground vehicle or UAV

5. Legal Notice & Contact

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