MILLENIUM
PRODUCTS INC

DRONE DETECTION SYSTEM

WarDragon Drop-In

Installation Guide — Mounting, Antennas, Power, and Data Connections

This guide covers the physical installation of a WarDragon Drop-In unit into a cabinet, vehicle, or fixed platform. It is written for installers and integrators.

Software setup, networking, TAK integration, and operation are **not** covered here. Once the unit is installed and powers up, continue with the **WarDragon User Guide**, which is the source of truth for every technical fact in the system.

This guide covers	The User Guide covers
Unpacking and parts identification	First boot and local setup
Front panel port identification	Remote access
Mounting	Network configuration
Antenna identification and installation	Detection service verification
DC power wiring	WarDragon Console
Display, USB, and network connections	TAK and ATAK integration
Initial power-up and installation verification	Operation and troubleshooting

> **Note** Drop-In kits ship in two configurations: **Pro Drop-In** (WD-PRO-DRP, ARM processor) and **Elite Drop-In** (WD-ELT-DRP, x86 Elite processor with the dedicated FPV SDR). Steps marked **Elite only** do not apply to Pro units.

1. Before You Begin

1.1 What You Will Need

- SMA torque wrench set to 3–5 in-lb
- Small flat-blade screwdriver for the DC terminal block
- Phillips driver for the compute dust cover thumb screws (Elite Drop-In)
- A monitor with HDMI input and cable
- A USB keyboard and mouse
- An internet connection available to the unit during initial setup
- The default credentials supplied with the kit

1.2 Safety

- De-energize the DC supply before wiring the terminal block.
- Confirm polarity before applying power. Reverse polarity will damage the unit.
- The unit accepts 12 - 24 V DC. Do not exceed 24 VDC.
- Connect every antenna before applying power. Operating an SDR receiver port without an antenna is not recommended.

1.3 Installation Sequence

1. Unpack and identify all parts — Section 2
2. Identify the front panel ports — Section 3
3. Mount the unit — Section 4
4. Install antennas — Section 5
5. Wire DC power — Section 6
6. Connect display, USB, and network — Section 7
7. Apply power and verify the installation — Sections 8 and 9

> **Important** Complete antenna installation before wiring or applying DC power.

2. Parts Identification

Figure 1 — WarDragon Drop-In unit as received

A Drop-In kit contains:

Qty	Item	Notes
1	WarDragon Drop-In unit	DIN-rail integrator enclosure
1	Accessory pouch	Contains the items below
1	DIN-rail clip, 6-inch DIN-rail strip, and mounting hardware	Fitted to or packed with the enclosure
1	AC power supply	Supplies the DC input. See Section 6.
1	Active GPS puck antenna, SMA male Bingfu TON00374 or equivalent	Magnetic-mount puck with integral cable
3	Dual-band antenna, 2.4 / 5.8 GHz, 8 dBi, SMA male. Bingfu BFUSAN0230 or equivalent	Etched **BT REMOTE ID**, **WIFI REMOTE ID**, and **FPV 5.8**. The FPV 5.8 antenna serves the dedicated FPV SDR — **Elite only**.
1	Wideband antenna, 600–6000 MHz, 10 dBi, SMA male. Eifagur B0DZ6G9NWF or equivalent	Etched **DRAGON SDR**. This is the primary DJI DroneID receive antenna.
1	Antenna, 900 / 915 MHz, 5 dBi, SMA male NOA59158541551244 or equivalent	Etched **FPV 900**. Serves the dedicated FPV SDR — **Elite only**, supplied with WD-ELT-DRP.

> **Note** The DRAGON SDR antenna is a wideband receive antenna for drone detection; it does not provide cellular capability.

> **Important** Each antenna is etched for its matching port. Do not swap antennas between ports, as this may reduce detection performance.

Pole-mount hardware, where supplied, is covered by the instructions packed with the mounting hardware.

3. Front Panel Reference

All connections are made on the front panel. The labels shown below are used throughout this guide.

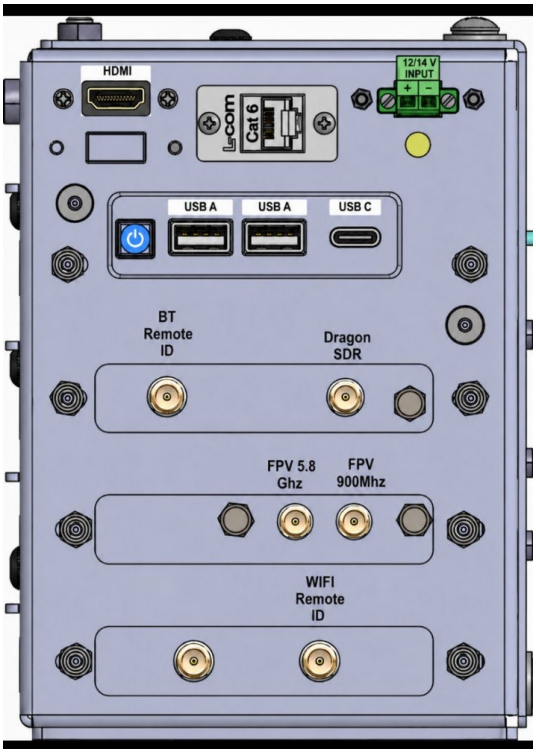

Figure 2 — Drop-In front panel port map

Panel marking	Type	Purpose
HDMI	HDMI	External display for initial setup
Cat 6	RJ45	External Ethernet — DHCP by default
12/14 V INPUT	2-pole terminal block	DC power input, 12 - 24 V DC. See Section 6.
USB A (x2), USB C	USB	Keyboard and mouse. **Elite only** — behind the removable dust cover. On Pro units, use the external USB port below the HDMI connector.
BT Remote ID	SMA female	Bluetooth 5 Long Range Remote ID
Dragon SDR	SMA female	DJI DroneID — primary detection port
WIFI Remote ID	SMA female	WiFi Remote ID (ASTM F3411)
FPV 5.8 Ghz	SMA female	FPV video activity, 5 GHz, via the dedicated FPV SDR. **Elite only.**
FPV 900Mhz	SMA female	Control and telemetry links, 900 MHz, via the dedicated FPV SDR. **Elite only.**

Panel marking	Type	Purpose
GPS (below the terminal block)	SMA female	GPS puck antenna

> **Note** The panel markings **FPV 5.8 Ghz** and **FPV 900** are hardware labels. The 5 GHz port serves FPV video activity; the 900 MHz port serves control and telemetry links. Both are driven by the dedicated FPV SDR, fitted to Elite units only.

> **Note** Unlabelled SMA positions on the panel are unpopulated or reserved. Leave them unconnected.

4. Mounting

The enclosure mounts on a DIN rail using the supplied clip. A 6-inch DIN-rail strip and mounting hardware are included, so the unit fits standard cabinets, pole boxes, and sensor housings without significant modification.

- Mount the unit so the front panel remains accessible for service.
- Leave clearance above the antenna ports for antennas to stand vertically without strain on the connectors.
- Leave clearance around the enclosure vents for airflow. Do not mount against an unventilated surface.
- Route the GPS puck cable so the puck can be placed with a clear view of the sky.
- Keep the DC supply and its wiring accessible so power can be removed without dismounting the unit.

> **Note** If antennas cannot be mounted directly on the panel ports — for example where the unit is installed inside a metal cabinet — use bulkhead-mounted external antennas and low-loss coax such as LMR-240 for runs over about 1 metre. Antenna placement guidance is in the User Guide, Section 3.1.

5. Antenna Installation

> **Important** Torque every SMA connector to 3–5 in-lb using an SMA torque wrench. If no torque wrench is available, hand-tighten firmly by the connector nut only — never by the antenna body, and never with pliers. Loose connectors are one of the most common causes of missing detections; over-torqued connectors crack the SMA dielectric.

5.1 GPS Puck Antenna

The GPS antenna is supplied with every Drop-In kit and should be installed. The enclosure has no sky view of its own, so without the external puck the unit will not achieve a reliable position fix.

Figure 3 — GPS puck antenna with integral cable and SMA male connector

1. Locate the SMA port directly underneath the green DC terminal block.
2. Thread the GPS antenna connector onto the port by hand.
3. Torque to 3–5 in-lb.
4. Route the cable clear of the antenna ports and place the puck where it has a clear view of the sky.

Figure 4 — GPS antenna installed below the DC terminal block, cable routed clear of the panel

5.2 DRAGON SDR Antenna

This is the primary DJI DroneID receive antenna. It is the longest of the supplied antennas and is etched **DRAGON SDR**.

Figure 5 — Wideband antenna etched DRAGON SDR

1. Match the etched label to the panel marking **Dragon SDR**.
2. Thread the connector on by hand and torque to 3–5 in-lb.
3. Position the antenna vertically.

Figure 6 — DRAGON SDR antenna installed

5.3 900 MHz Antenna — Elite Only

Supplied with WD-ELT-DRP only. Skip this step on Pro units.

Figure 7 — 900 MHz antenna etched FPV 900

1. Match the antenna etched **FPV 900** to the panel marking **FPV 900Mhz**.
2. Thread the connector on by hand and torque to 3–5 in-lb.

Figure 8 — 900 MHz antenna installed

5.4 Dual-Band Antennas

Three identical-looking 2.4 / 5.8 GHz antennas are supplied. They are distinguished only by the label etched near the base:

- **BT REMOTE ID**
- **WIFI REMOTE ID**
- **FPV 5.8** — **Elite only**; not used on Pro units

Figure 9 — The three dual-band antennas. Read the etched label at the base of each before installing.

1. Read the etched label on each antenna.
2. Thread each one onto the panel port with the matching marking.
3. Torque each to 3–5 in-lb.
4. Position the antennas vertically and separated as far as the panel allows.

Figure 10 — Dual-band antennas installed

> **Note** Antenna separation improves performance. Where the panel spacing is tight and the installation allows it, move antennas off the panel onto bulkhead mounts with low-loss coax and separate them by at least one wavelength — about 12 cm at 2.4 GHz.

6. DC Power Wiring

Power is supplied through the two-pole green terminal block on the front panel.

Item	Specification
DC input	12 - 24 V DC
Connector	Two-pole screw terminal block, marked + and −
Polarity	Marked on the terminal block. Reverse polarity will damage the unit.

Important The terminal block is silkscreened **12/14 V INPUT**. The unit accepts either 12 - 24 V DC. Do not exceed 24 VDC.

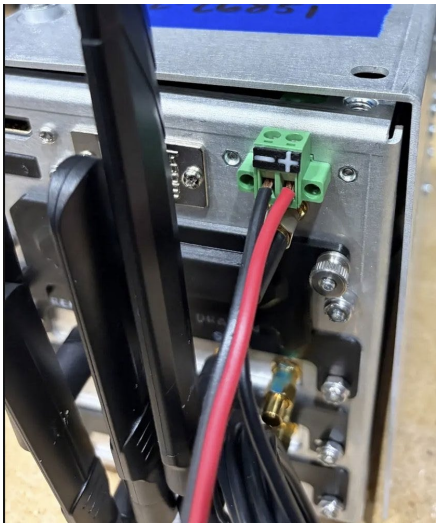

Figure 11 — DC supply wired to the terminal block. Red to +, black to −.

6.1 Wiring Procedure

1. De-energize the DC supply.
2. Strip the supply conductors and land them in the terminal block: positive to the terminal marked **+**, negative to the terminal marked **−**.
3. Tighten both screws and confirm no strands are exposed outside the terminals.
4. Tug-test each conductor.
5. Confirm the supply output voltage with a meter before energizing — it must be 12 - 24 V DC.
6. Route and strain-relieve the supply cable so it does not pull on the terminal block.

Important Do not exceed 24 VDC. Exceeding the input rating will damage the unit and creates a safety hazard.

7. Display, USB, and Network Connections

These connections are needed for initial setup. After setup the unit runs headless and only the network connection is required.

7.1 Display

Connect a monitor to the external **HDMI** port at the top left of the front panel.

7.2 Keyboard and Mouse

Elite Drop-In (WD-ELT-DRP) — x86 Elite compute module. Remove the thumb screws holding the compute dust cover in place and lift the cover off. This exposes the compute module's power button, two USB-A ports, and a USB-C port. Connect the keyboard and mouse to the USB-A ports.

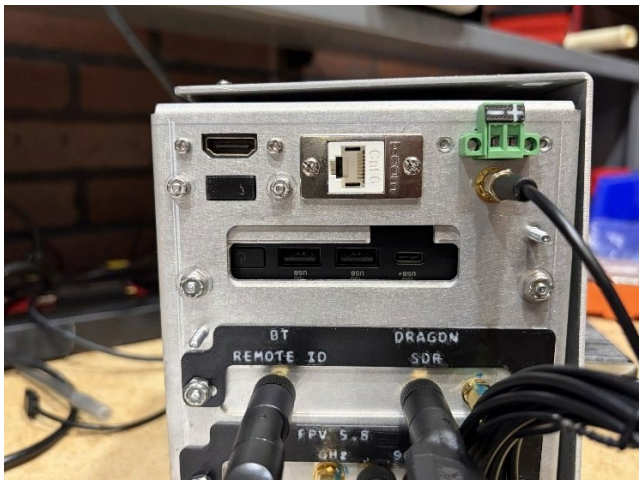

Figure 12 — Dust cover removed on an Elite Drop-In, exposing the compute power button and USB ports

Pro Drop-In (WD-PRO-DRP) — ARM compute module. Use the external USB port located below the external HDMI connector. The dust cover does not need to be removed.

> **Note** Refit the dust cover after initial setup.

7.3 Network

Connect Ethernet to the slim external **Cat 6** connector located between the green power terminal block and the HDMI connector. The port is DHCP-enabled by default.

> **Important** The unit needs an internet connection during initial setup. Remote access ships disabled and must be installed locally before the unit can be reached over SSH or remote desktop. See the User Guide, Section 4.

> **Critical** The internal connection between the compute module and the DJI detection radio is factory configured. Do not modify it. Changing it breaks DJI DroneID detection.

8. Initial Power-Up

1. Confirm every antenna is installed and torqued.
2. Confirm DC polarity and that the supply is 12 - 24 V DC.
3. Confirm the monitor, keyboard, mouse, and Ethernet are connected.
4. Energize the DC supply.
5. Allow 60 to 90 seconds for the system to boot. Allow up to 5 minutes on first boot or after an update.
6. Confirm the desktop appears on the attached monitor.

> **Note** The unit powers on whenever DC power is applied. There is no external latching power button on the Drop-In enclosure.

If the system does not boot, remove power, re-check polarity and supply voltage, and see the User Guide, Section 10.2.

8.1 Handoff to the User Guide

Physical installation is complete. Continue with the **WarDragon User Guide**:

- Section 4 — First boot, log in, change the default password, install remote access
- Section 5 — Network configuration
- Section 6 — Verify detection services
- Section 8 — TAK and ATAK integration

9. Installation Verification

Complete this checklist before leaving the site.

☐	Check
☐	Unit mounted securely with front panel accessible and vents clear
☐	Every supplied antenna installed on its matching labelled port
☐	All SMA connectors torqued to 3–5 in-lb
☐	GPS puck placed with a clear view of the sky, cable strain-relieved
☐	DC polarity confirmed and supply voltage verified at 12 - 24 V DC
☐	DC supply cable strain-relieved
☐	Ethernet connected and the unit visible on the network
☐	Unit boots to the desktop and the default password has been changed
☐	All three detection services report active (User Guide, Section 6)
☐	Remote access installed and tested while the monitor is still attached
☐	GPS lock confirmed if accurate unit position is required
☐	Compute dust cover refitted and thumb screws tightened (Elite)
☐	Serial number and installed location recorded

Support

Technical support for purchased WarDragon kits is requested through the support page. Scan the code, or go to:

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https://cemaxecuter.com/support/
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Include the serial number or order reference, the configuration installed, what you expected, and what actually happened. Purchasing and quote requests do not go through the support queue — use the contact form on the website.

— End of Guide —

Commercial WarDragon systems are manufactured and distributed by Millenium Products.