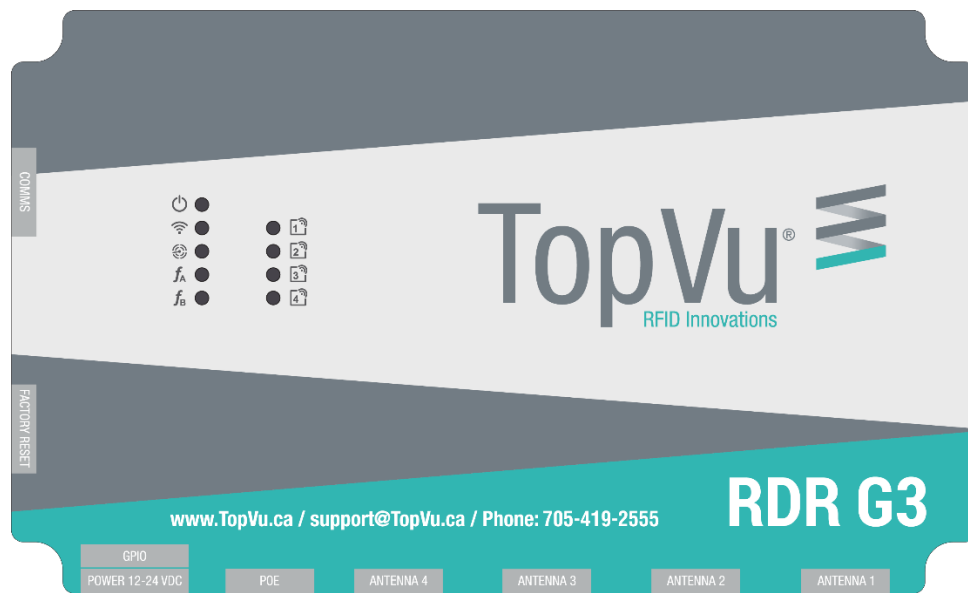




User Manual

February 23, 2023, Rev. 1.0



RDRG3

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Safety Guidelines

Warning notices must be observed to ensure personnel safety as well as that of others, and to protect the product and connected equipment or process. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel

This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Safety Precautions

This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained. The RDRG3 is to be used only in the manner outlined in this manual, otherwise protection provided by the equipment may be impaired.

Disclaimer

The RDRG3 is the exclusive copyright property of TopVu® Ltd.

TopVu® Ltd. reserves the right to make changes to the TopVu® products and manuals without notice to improve reliability, function, or design.

The documentation found within this manual is to provide the users of our products with technical information relating to the installation, maintenance and set up of the RDRG3.

Contact Information

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Tel. 705-419-2555

www.topvu.ca

Sales: sales@topvu.ca

support: support@topvu.ca

ISED non-interference disclaimer

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

This device complies with the Canadian ICES-003 Class B specifications. CAN ICES-003(B) / NMB-003 (B).

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempt de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet appareil numérique de la Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

RF Exposure statement

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25 cm (9.9 inches) between the radiator and any part of your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux radiations ISED CNR-102 établies pour un environnement non contrôlé. Une distance de séparation d'au moins 25 cm doivent être maintenue entre l'antenne de cet appareil et toutes les personnes. Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.

RSS-Gen Transmit antenna statement.

This radio transmitter 22620-RDRG3 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio 22620-RDRG3 a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Under Innovation, Science and Economic Development regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by ISED. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Innovation, Sciences et Développement économique Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Innovation, Sciences et Développement économique Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Approved Antenna Types:

Maximum gain:	7 dBi
Antenna type:	Panel
Radiation pattern:	Right hand circular polarized
Impedance:	50 Ohm
Connector type:	N-Female

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

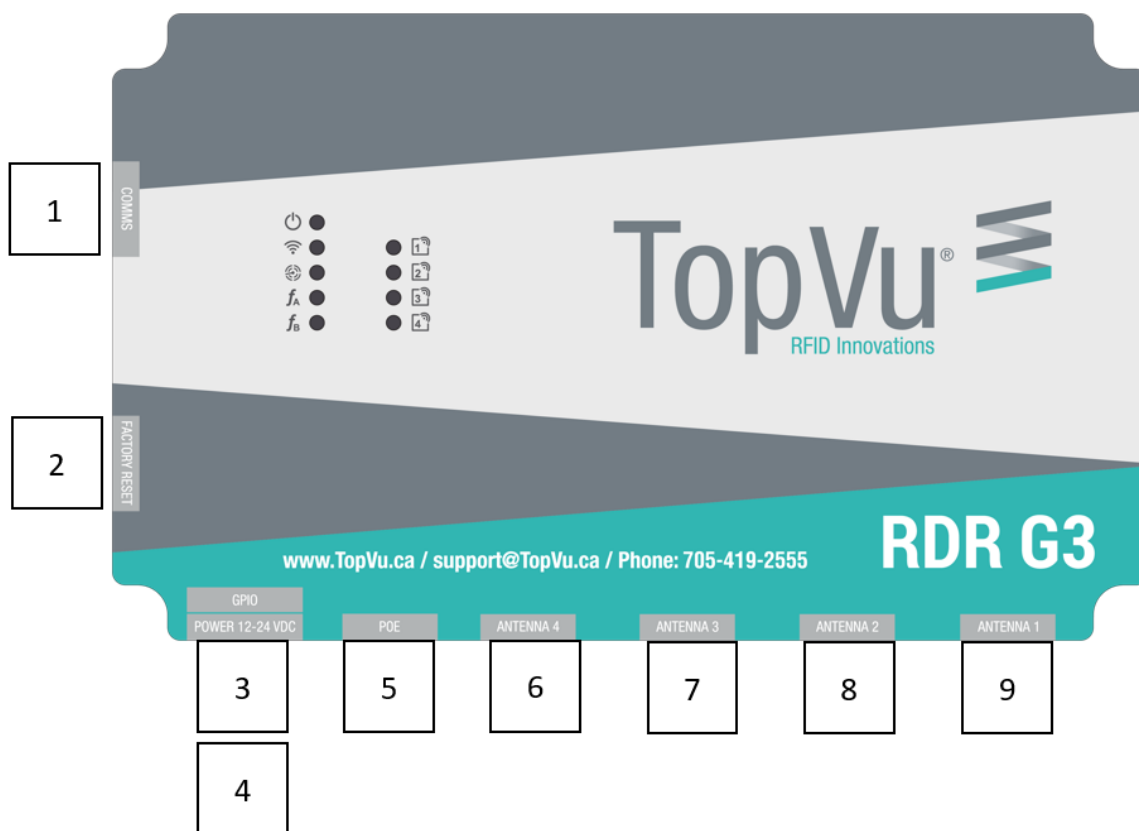
- (1) this device may not cause harmful interference, and
 - (2) this device must accept any interference received, including interference that may cause undesired operation.
- Please note that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF Exposure Statement

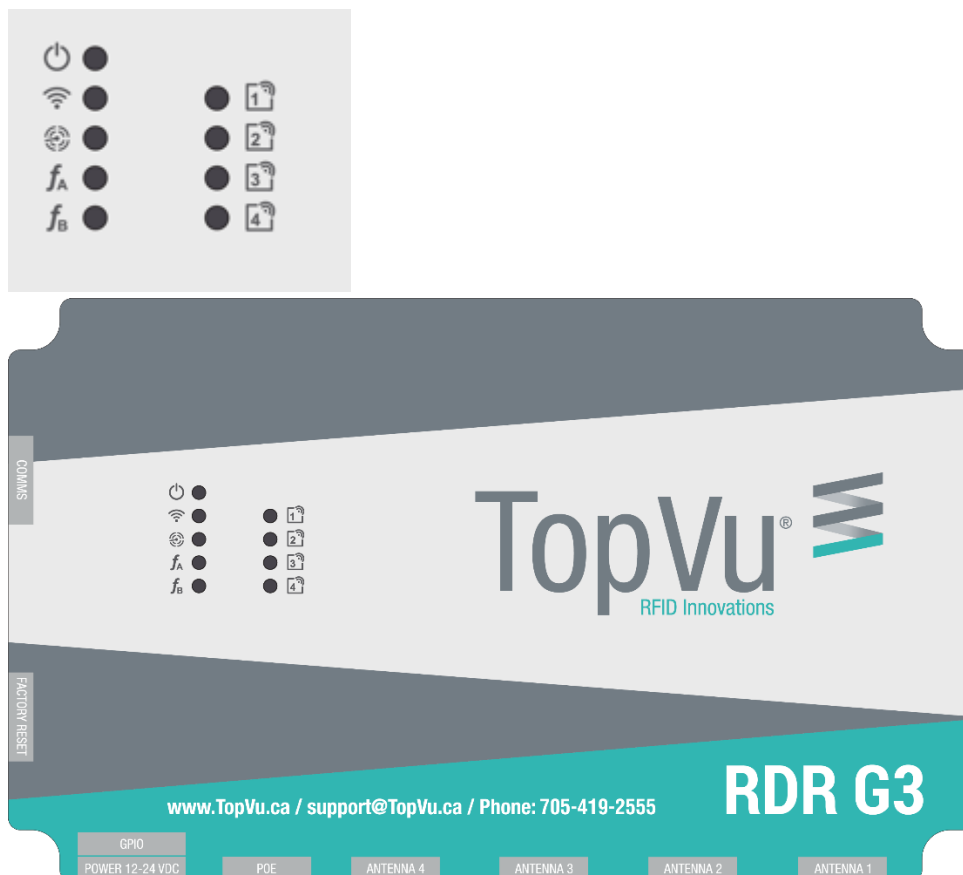
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, this equipment should be installed and operated with minimum distance 25 cm (9.9 inches) between the antenna and your body during normal operation. Users must follow the specific operating instructions for satisfying RF exposure compliance.

Connections



1. Comms: WiFi N-Female coax connector.
(Cable length recommendations of 50ft up to 100ft)
2. Factory Reset Button.
3. GPIO: Circular 12 Pin M12 I/O connector.
4. Power 12-24V DC: Circular 4 Pin M12 connector.
5. Ethernet/PoE: RJ45 100Base-T, 802.3at Type 2, Class 4, PoE+ quick connect communication port.
(Maximum cable length 328ft '100meters')
6. Antenna 4: RFID N-Female antenna output.
7. Antenna 3: RFID N-Female antenna output.
8. Antenna 2: RFID N-Female antenna output.
9. Antenna 1: RFID N-Female antenna output.
(RFID Cable length recommendations of 20ft up to 50ft)

Label Identifiers



Power: Power is connected to Unit



Comms: Unit is communicating to Network



Scanning: RFID is active and scanning for tags



Function A: Provisional LED for custom applications



Function B: Provisional LED for custom applications



Antenna 1: Tag or tags are being detected Antenna 1



Antenna 2: Tag or tags are being detected Antenna 2



Antenna 3: Tag or tags are being detected Antenna 3



Antenna 4: Tag or tags are being detected Antenna 4



Getting Started

Physical installation:

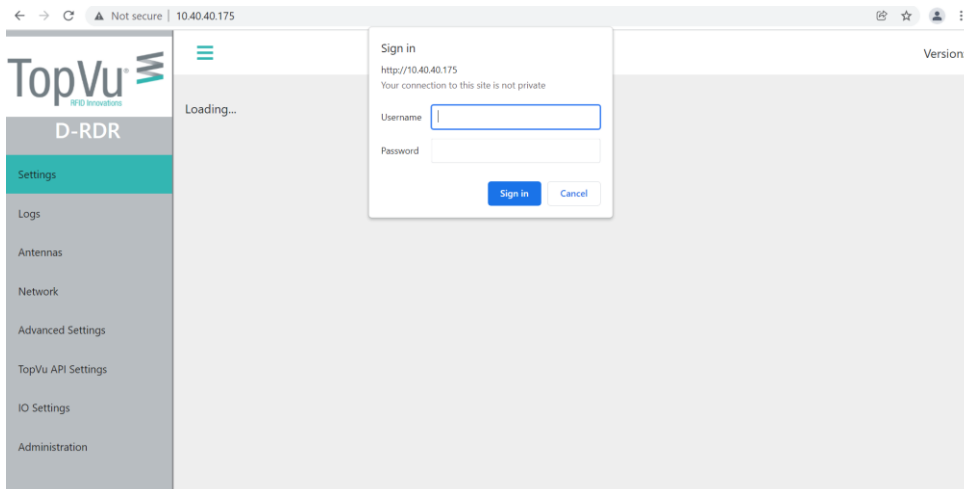
- Install the RDRG3 using mounting holes as specified under RDRG3 Mounting.
- Attach N-Male coaxial cables to desired Wi-Fi and/or Antenna ports on the reader.
- Attach the other end of N-Male coaxial cables to the antennas.
Note: Please follow proper antenna installation process. This can be found in the antennas mounting guide.
- **Note: once the connections are properly tightened it is recommended to use a self-vulcanizing splicing tape or Cold Shrink to protect the connection.**
- Attach the RDRG3 to Ethernet network connection using standard straight through Ethernet cable. **NOTE: for proper seal, use the provided Ethernet adapter.**
- Connect 12-24V DC power using 4 pin M12 connector. Not required if using PoE.

Connection to Network:

Using a web browser:

Default IP Address is 10.40.40.175.

This IP address will bring you to the Reader Configuration page.



Username: admin

Password: topvu

General Settings.

Device Name and Device Description will be set using the TopVu Q7 application.

Model Number and Serial Number can be found on this page.

Tag Timeout: is the amount of time in seconds that you would like the reader to remember a certain tag ID before it detects the same tag ID again.

TopVu® RFID Innovations

D-RDR

Settings

Logs

Antennas

Network

Advanced Settings

TopVu API Settings

IO Settings

Administration

Version: 2.0.2

General Settings

Device Name (Controlled by TopVu Main Application):

Device Description (Controlled by TopVu Main Application):

Model Number:

D-RDR V2

Serial Number:

100817122

Tag Timeout:

10

Save Changes

Press Save Changes to apply any changes.

Logs:

The Logs tab is where you will find general information and possible error codes that will help TopVu support team troubleshoot if any issues arise.

TopVu® RFID Innovations

D-RDR

Settings

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Advanced Settings

TopVu API Settings

IO Settings

Administration

Version: 2.0.2

Refresh

Download Log

2022/01/06 19:02:37.553542 [INFO] Starting TopVu D-RDR Controller v2.0.2

2022/01/06 19:02:37.553793 [INFO] Loading Settings From: /etc/topvu.json

2022/01/06 19:02:37.569457 [INFO] Settings Loaded Successfully.

2022/01/06 19:02:37.580582 [ERROR] Token request exception: Curl request Failure.

URL: Token

Error: Couldn't resolve host name

2022/01/06 19:02:37.580699 [ERROR] Exception occurred when trying to log in: Curl request Failure.

URL: Token

Error: Couldn't resolve host name

2022/01/06 19:02:37.580734 [INFO] API Initialization Unsuccessful. Entering Store Mode.

2022/01/06 19:02:37.581195 [INFO] API Initialization Failure: Adding tasks for execution on restore.

2022/01/06 19:02:37.581403 [INFO] Initializing D-RDR RFID Subsystem...

2022/01/06 19:05:07.946781 [ERROR] Exception caught during last comms check-in. Curl request Failure.

URL: /api/LastCom

Error: URL using bad/illegal format or missing URL

2022/01/06 19:07:38.869737 [ERROR] Exception caught during last comms check-in. Curl request Failure.

URL: /api/LastCom

Antennas:

The RDRG3 has 4 antenna ports available. It is important to only check the boxes of the antennas you have connected. Having a port active without any connected antennas can cause tag detection issues.

To active an antenna port, click the check box.

Power level should be adjusted per application 26dBm being maximum power and 8dBm being minimum power. Each antenna port can be adjusted separately.

Antenna Type:

Tag ON / Tag OFF is the default and most common type. This is used for most applications including Ore Tracking, personnel, and vehicle asset tracking.

Inbound and Outbound is used for Access control including Turnstile applications.

Local Antenna Group, antennas can be grouped to act as one area. Example, 2 antennas can be set for one direction or zone and the 2 other antennas can be set to detect a 2nd zone.

← → ↻ Not secure | 10.40.40.175/antennas Version: 2.0.2

TopVu®
RFID Innovations

D-RDR

- Settings
- Logs
- Antennas**
- Network
- Advanced Settings
- TopVu API Settings
- IO Settings
- Administration

Antenna Port: 1
This Antenna has not yet been registered with the TopVu API.

☒ Enabled

Power Level
27 dBm / 500 mW (Maximum)

Antenna Type
ON/OFF (Default)

Local Antenna Group
1

Antenna Port: 2
This Antenna has not yet been registered with the TopVu API.

☒ Enabled

Press Save Changes to apply any changes.

Network Settings.

Default IP: address is 10.40.40.175

Click the Check box to Enable DHCP.

It is important to set Network Settings to your specific network requirements identified by your IT.

Network Time Sync Server is used to sync the RDRG3 to the network time. This time needs to be synced to make sure that tag data collected is accurate.

Press Save Changes to apply any changes.

Advanced Settings.

These settings are factory set for best function with TopVu system. These settings should **NOT** be modified without contacting TopVu support first.

TopVu API Settings.

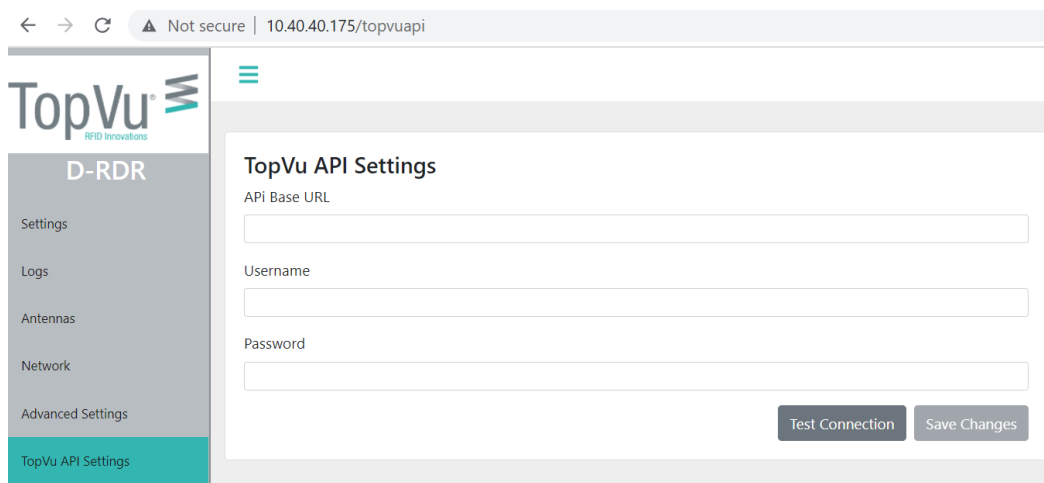
Set your System API URL. This should be identified by your IT.

Username and Password should be set in the TopVu application.

Once details are entered, press Test Connection to verify successful server communication.

Press Save Changes to apply any changes.

Then Reboot the RDRG3 using the reboot function under the Administration tab.



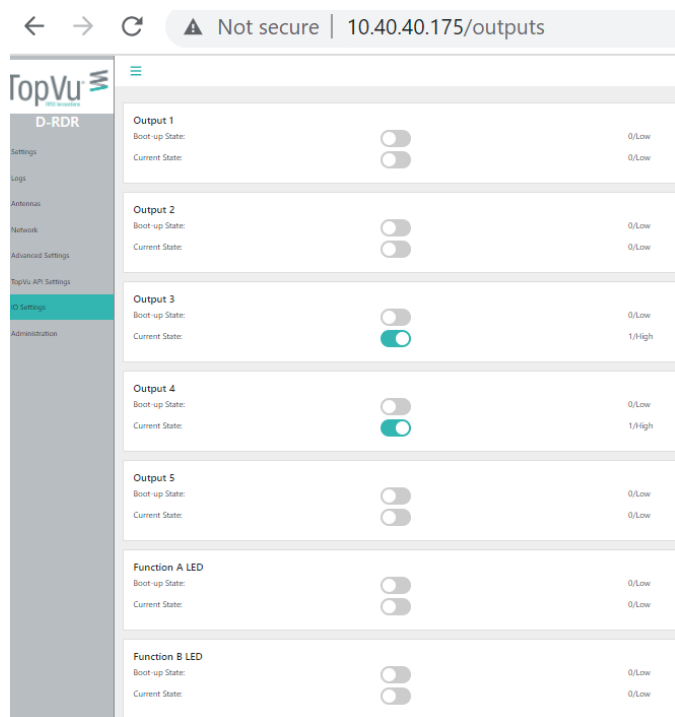
IO Settings.

IO Settings is used to test IO's. The test buttons will activate the outputs when selected, this can be used to verify functionality, Examples: if using lights, activating a gate, buzzers, etc.

IO actions and rules should be set using the TopVu Q7 application.

There is 5 Inputs and 5 Output's.

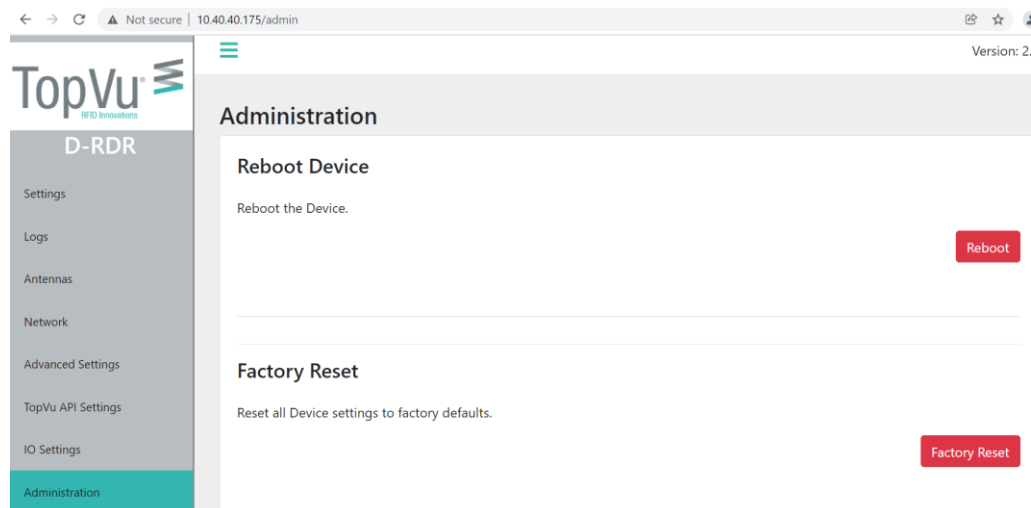
There is 2 Function LED's located on the front of the RDRG3 and described in Label Identifiers.



Administration.

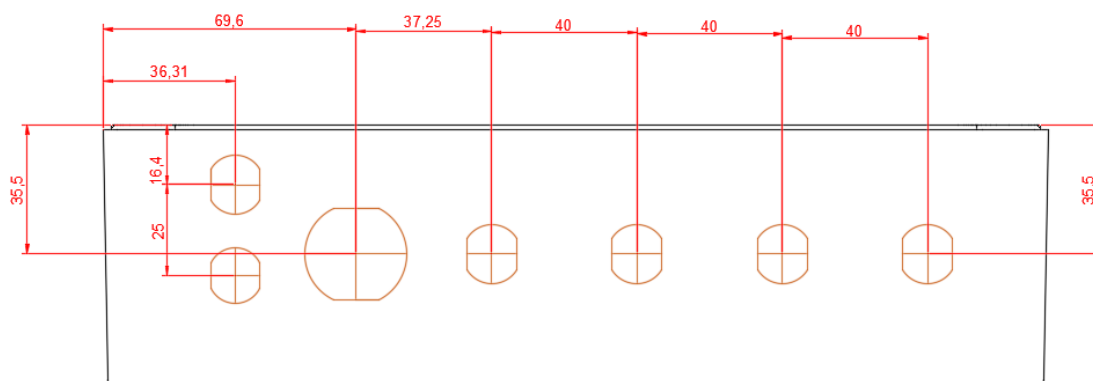
The Administration tab allows for the system reboot. This button allows to Reboot the RDRG3 remotely.

A Factory reset can be applied on this page. This resets all settings to TopVu factory settings. IP: Address will be returned to 10.40.40.175. There is also a physical factory reset button located on the side of the unit under the dust cover. Remove the round dust cover, press and hold the reset button using a pen or screwdriver for 3 seconds to factory reset the unit.

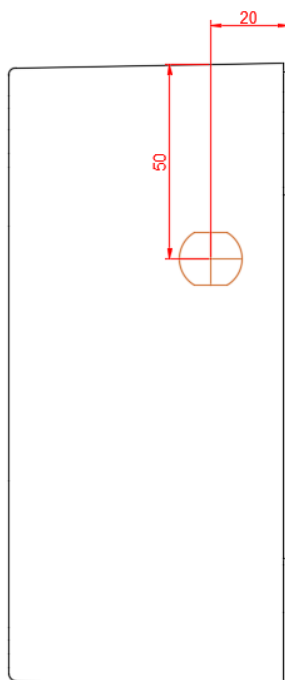


RDRG3 Layout

All dimensions are in millimetres unless otherwise noted.



Layout above illustrates the Bottom view of the G3RDR.



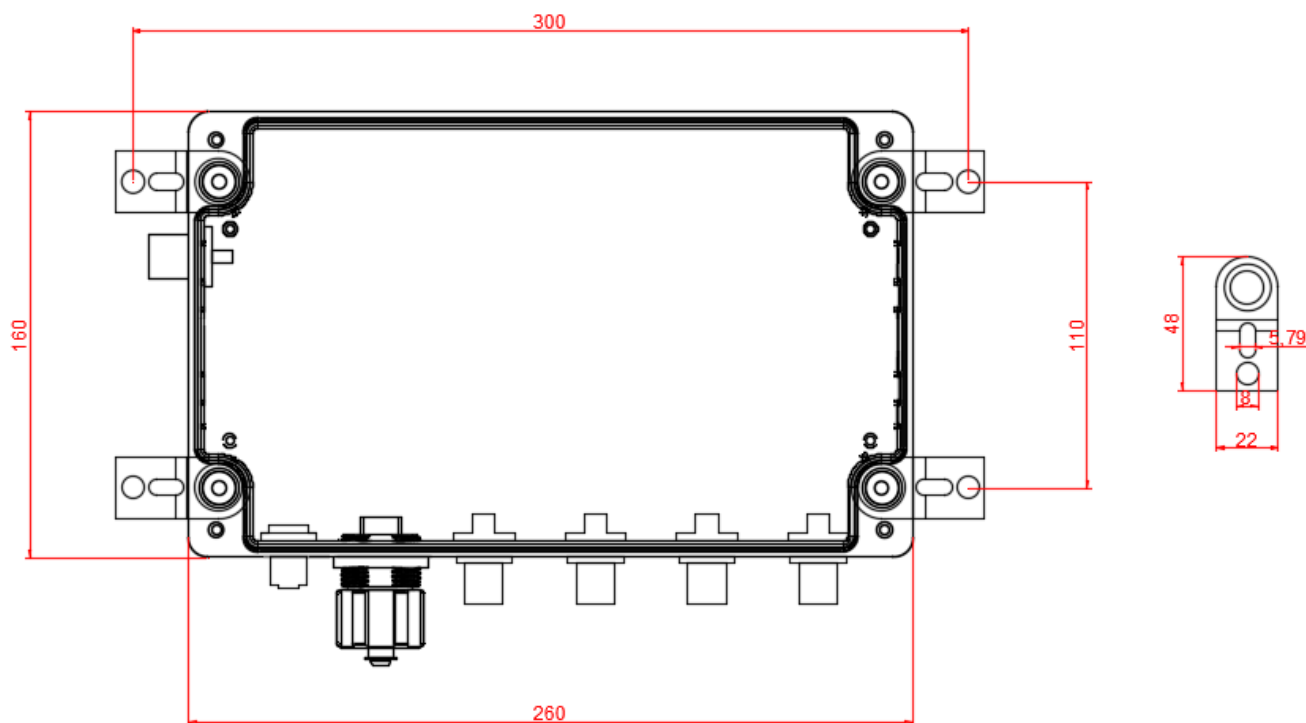
Layout above illustrates the Left side of the RDRG3.

Dimensions

Height	Width	Depth
6.3"	10.24"	3.56"
16.002cm	26.01cm	9.042cm

RDRG3 Mounting

Using the RDRG3 mounting brackets allows the unit to be secured to a wall or flat surface.



1. ALL DIMENSIONS ARE IN MILLIMETRES
UNLESS OTHERWISE NOTED.

Specifications

Power Consumption

PoE	802.3at Type 2, Class 4, PoE+
Input Voltage	12-24 V DC
Operating Current	0.47A @ 24 V DC, (25° C)

Operating Frequencies

Passive Reader	FCC IC 902-928 MHz (6mW - 500mW adjustable)
Wi-Fi	IEEE 802.11b/g/n (2.400-2.4835 GHz – US/CAN)

Data Transmission

Networking	Ethernet RJ45 100Base-T (Max. cable length 100 meters)
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GPIO

Action I/O	Function Logic 5 Inputs/ 5 outputs
Output Voltage	12V-24V VDC (Varies depending on units Input Voltage)
Contact Rating	1A Max

Environmental

Operating Standard	-10° C to 70° C (14° F to 158° F)
Operating Wide	-40° C to 75° C (-40° F to 167° F)
Storage	-40° C to 85° C

Enclosure

Material	Metal, Aluminum
Ratings	IP 65

Apparatus

Only use TopVu® specified antennas and cables for proper functionality. Contact your TopVu® sales representative for more information on antennas and cables for your specific application.

Warranty

1 year

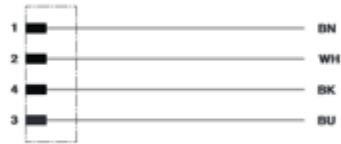
12-24V DC Input Voltage 4 Pin

Schematic diagram



Pin assignment M12 plug, 4-pos., A-coded, view plug side

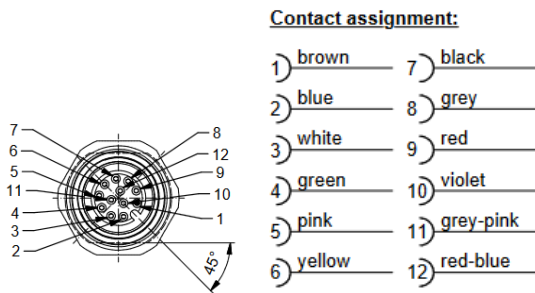
Circuit diagram



Contact assignment of the M12 plug and the M12 socket

- Pin 1: Brown ----- Positive (+)
- Pin 2: White ----- Not Used
- Pin 3: Black ----- Not Used
- Pin 4: Blue ----- Negative (-)

GPIO M12 connector 12 Pin



- Pin 1 Brown ----- 24VDC
- Pin 2 Blue ----- User Input 1
- Pin 3 White ----- User Input 2
- Pin 4 Green ----- GND
- Pin 5 Pink ----- User Input 3
- Pin 6 Yellow ----- User Input 4
- Pin 7 Black ----- User Input 5
- Pin 8 Grey ----- User Output 1
- Pin 9 Red ----- User Output 2
- Pin 10 Violet ----- User Output 3
- Pin 11 Grey-Pink ----- User Output 4
- Pin Red-Blue ----- User Output 5

Antennas

RDRG3 passive antennas can be mounted on different surfaces using the included mounting bracket.

