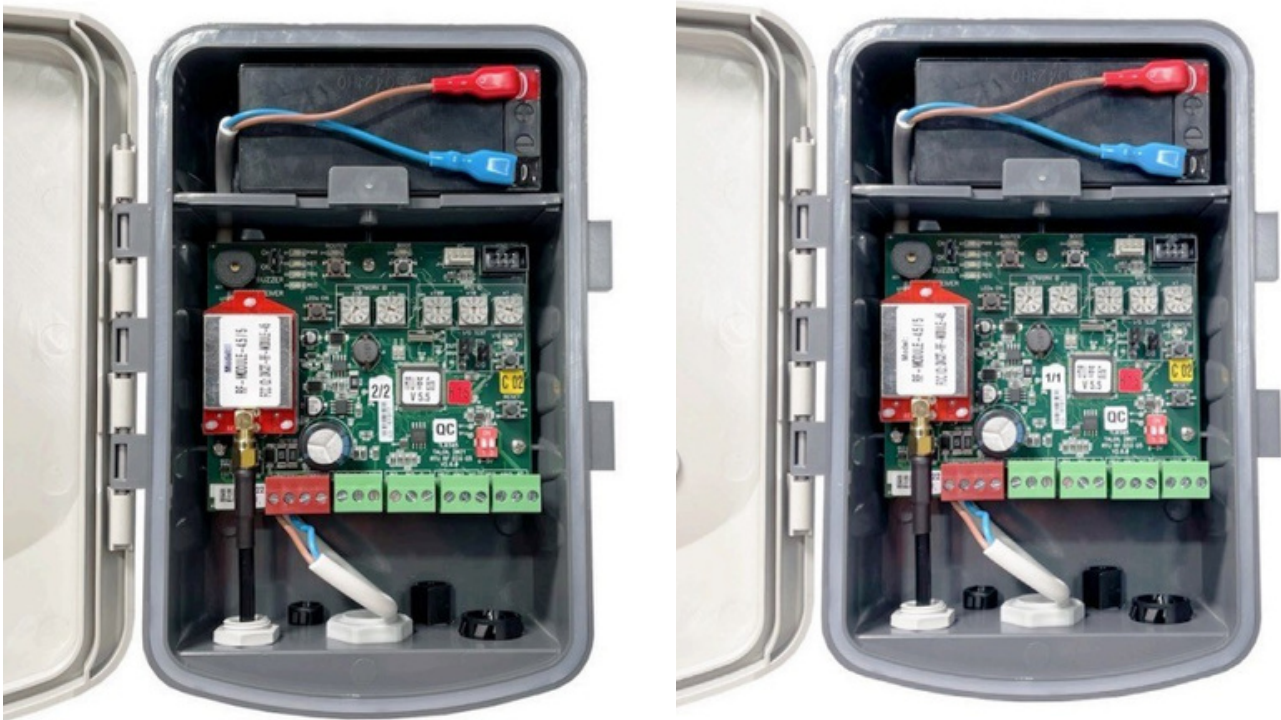![TALGIL logo]

Installation, Operation and Maintenance Instructions

Talgil - RTU RF G5 - ECO 112 & 222

Description: RTU RF G5 ECO 112, 222 - OUT / IN / ANA IN
Product Code: TG-RTURFG5ECO112, TG-RTURFG5ECO222

Table of Contents

IMPORTANT! READ THE INSTRUCTIONS BEFORE STARTING!

Be sure that these instructions are carefully read and understood before any operation is attempted.

Improper use of this device in some applications may result in damage or injury. The user is urged to keep this book filed in a convenient location for future reference.

These instructions may not cover all details or variations in equipment or cover every possible situation to be met in connection with installation, operation or maintenance.

Should problems arise that are not covered sufficiently in this document, the purchaser is advised to contact us for further information.

For more information, troubleshooting, supporting software, firmware and installation details - Please visit our website.

www.deeco.co.nz

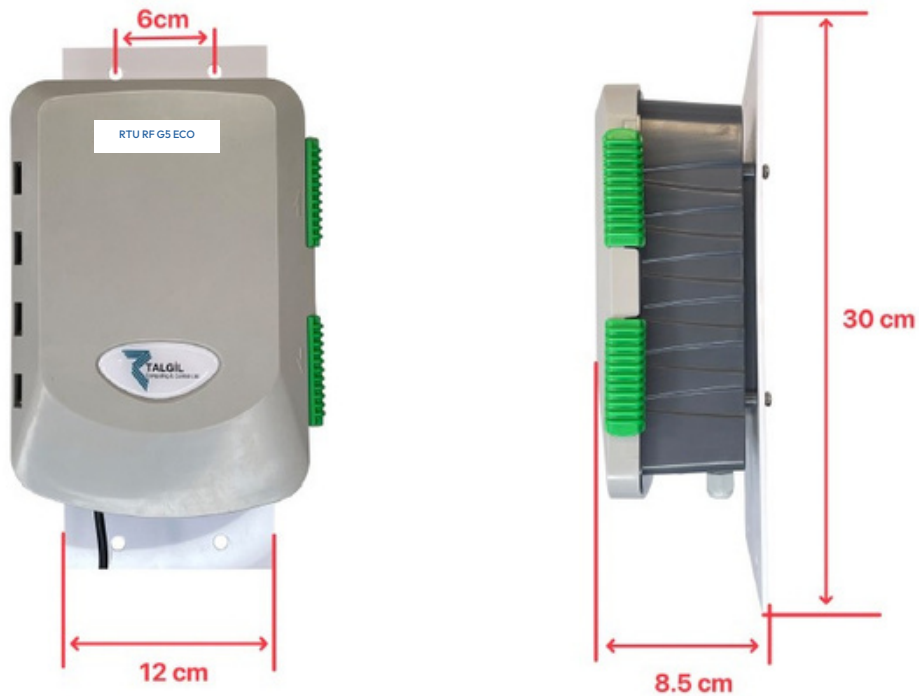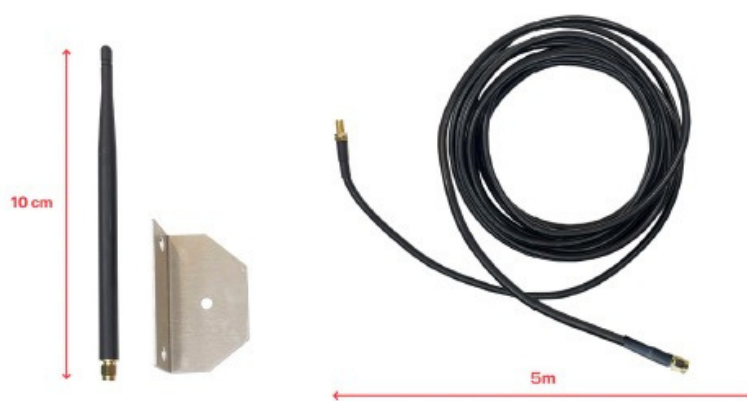Or contact us at ladi@deeco.co.nz or service@deeco.co.nz

1.0 – Product Dimensions & Description and Technical Specification

1.0.1 – Enclosure & Holding Plate – Dimensions

Antenna Cable – Dimensions

Antenna + Bracket   Antenna Cable

1.0.2 – RTU RF G5 ECO – CARD Description
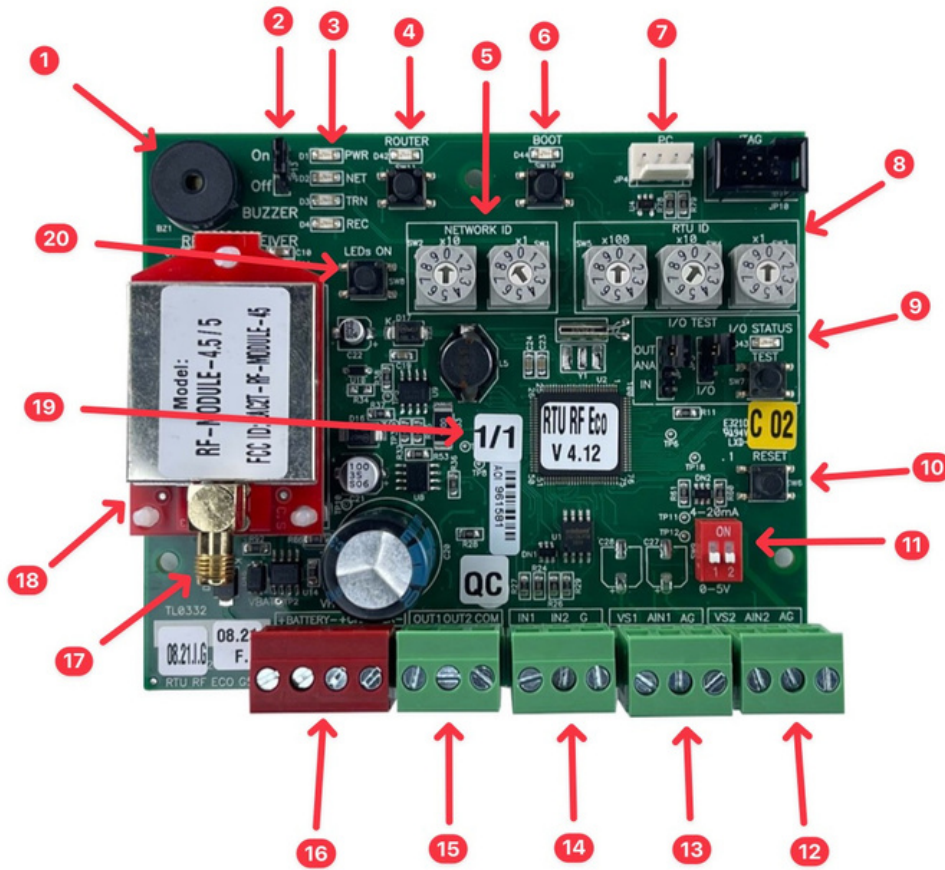
1 – Buzzer

2 – Buzzer – On/Off Jumper

3 – Power, Network, TRN, REC – LEDs

4 – Router Button & Router LED

5 – Network ID – Rotary switches

6 – Boot Button & Boot LED

7 – Programming PC Connector

8 – RTU ID

9 – I/O TEST

10 – RTU Reset Button

11 – 4-20mA / 0-5V – Analog IN Dip Switch

12 – Analog Input 2

13 – Analog Input 1

14 – Digital Input 1 and/or 2

15 – Output 1 and/or 2

16 – Power Connector (Battery & Solar)

17 – Antenna Connector

18 – Radio Module

19* – RTU Version

20 – LEDs ON Button

* Available RTU RF G5 ECO Versions:
 1/1 = 1 OUT, 1 IN, 2 ANA IN
2/2 = 2 OUT, 2 IN, 2 ANA IN

1.0.3 - RTU RF G5 ECO - Technical Specifications

Specification	Description
RF Frequency Range	915 - 928 MHz
Channel Spacing	1.5MHz
Channel Bandwidth	500 KHz
Effective Radiation Power (ERP)	79/250 mW
Modulation	Spread Spectrum LoRa
Number of RF channels	9
Firmware Upgrade Options	RF or Local Connection (PC)
Ambient Temperature	-20°C + 65°C
Ambient Relative Humidity	0-90%
Low Battery	Below 11.2V
Dead Battery	Below 10.8V
Sleep Mode Delay	LEDs turn off after 120 seconds
Power Supply Options	Rechargeable Battery (12VDC) Solar Panel (2.5W, 5W or 20W) DC-AC Power Supply (12VDC - 220VAC)

Specification	Description
Current Consumption - LED On	End-Unit: 3mA Router/Repeater: 12mA
Current Consumption - LED Off	End-Unit: -ECO RTU: 60 µA -MODULAR RTU: 80µA Router/Repeater: 9 mA
Operation Output	12V DC Latch
Operational Input	Dry Contact, 4-20mA, 0-5V, SDI-12
Minimum Pulse Width	Meter: 20 milli seconds Contact: 20 Milli Seconds
Maximum Number of Outputs	ECO RTU: 1 or 2 MODULAR RTU: 8 (Using expansion cards - 2 OUT per card)
Maximum Number of Digital Inputs	ECO RTU: 1 or 2 MODULAR RTU: 4 or 8 (Using expansion cards)
Maximum Number of Analog Inputs	ECO RTU:2 MODULAR RTU: 0, 1 or 4 (Using expansion cards)
Scanning Rate	30 milli seconds
Antenna	3m, 5m, or High Gain Antenna

12V DC

Red – Positive (+) Battery
Black – Negative (–) Battery

Red – Positive (+) Solar Panel
Black – Negative (–) Solar Panel

IMPORTANT! RTU MUST BE DISCONNECTED FROM POWER BEFORE WORKING ON I/O.

Solenoid n.1

Red - OUTPUT 1
Black - Ground

Solenoid n.2

Red - OUTPUT 2
Black - Ground

2 OUTPUTS are only available for the model RTU RF G5 ECO 222.

Recommended Solenoids: Bermad S392-T' 9-20 VDC Latch (Code B3WL.T)

1.3 - RTU RF G5 ECO - Wiring Instructions - Digital Inputs
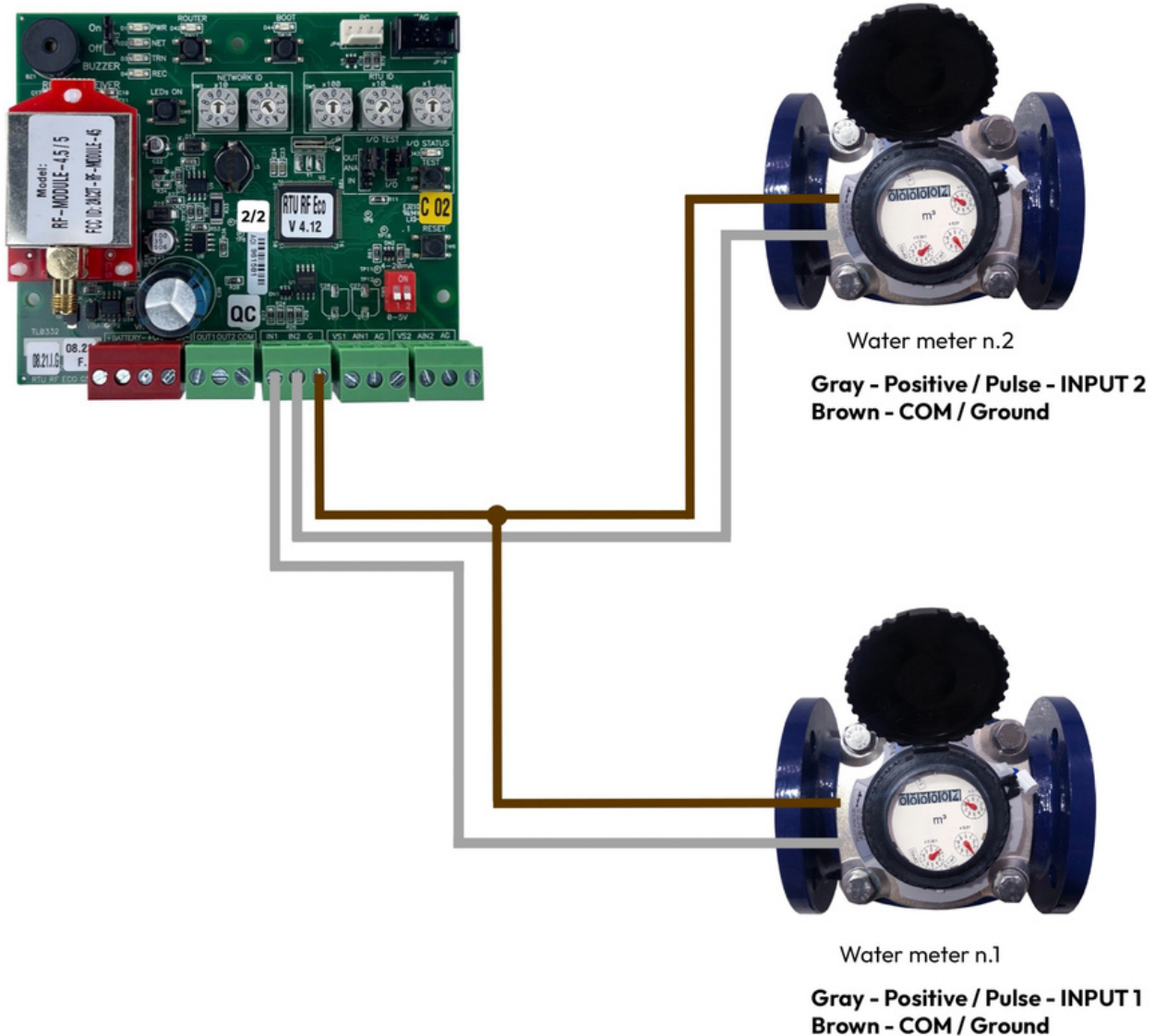
IMPORTANT! RTU MUST BE DISCONNECTED FROM POWER BEFORE WORKING ON I/O.

Water meter n.2

Gray - Positive / Pulse - INPUT 2
Brown - COM / Ground

Water meter n.1

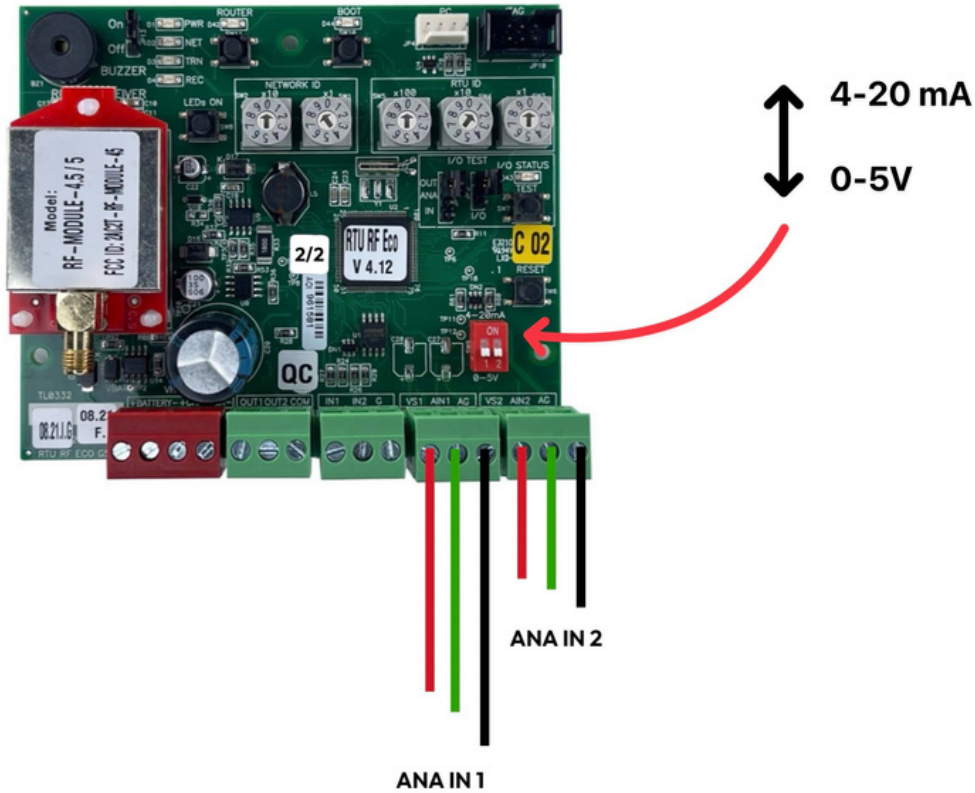**Gray - Positive / Pulse - INPUT 1**
Brown - COM / Ground

Operational Input: Dry Contact
Minimum Pulse Width: 20 milli Seconds

2 DIGITAL INPUTS are only available for the model RTU RF G5 ECO 222.

Water Meter Example: Sensus WPD + RD01 Reed Switch

IMPORTANT! RTU MUST BE DISCONNECTED FROM POWER BEFORE WORKING ON I/O.

4-20 mA
0-5V

ANA IN 2

ANA IN 1

Passive Analog Sensor – 3 Wires

Red - VS - Power Supply
Green - AIN - Data
Black - AG - Ground

Passive Analog Sensor – 2 Wires

Red - VS - Power Supply
Black - AG - Ground

Active Analog Sensor

Green - AIN - Data
Black - AG - Ground

Operational Input: 4-20mA or 0-5V

Solar Panel is required if Analog Sensor is used.

Analog Sensor Example:
Pressure Transducer, Temperature Sensor etc..

water
process
solutions

National Service and Supply Centre
35 Wakefield Street, Alicetown 5010
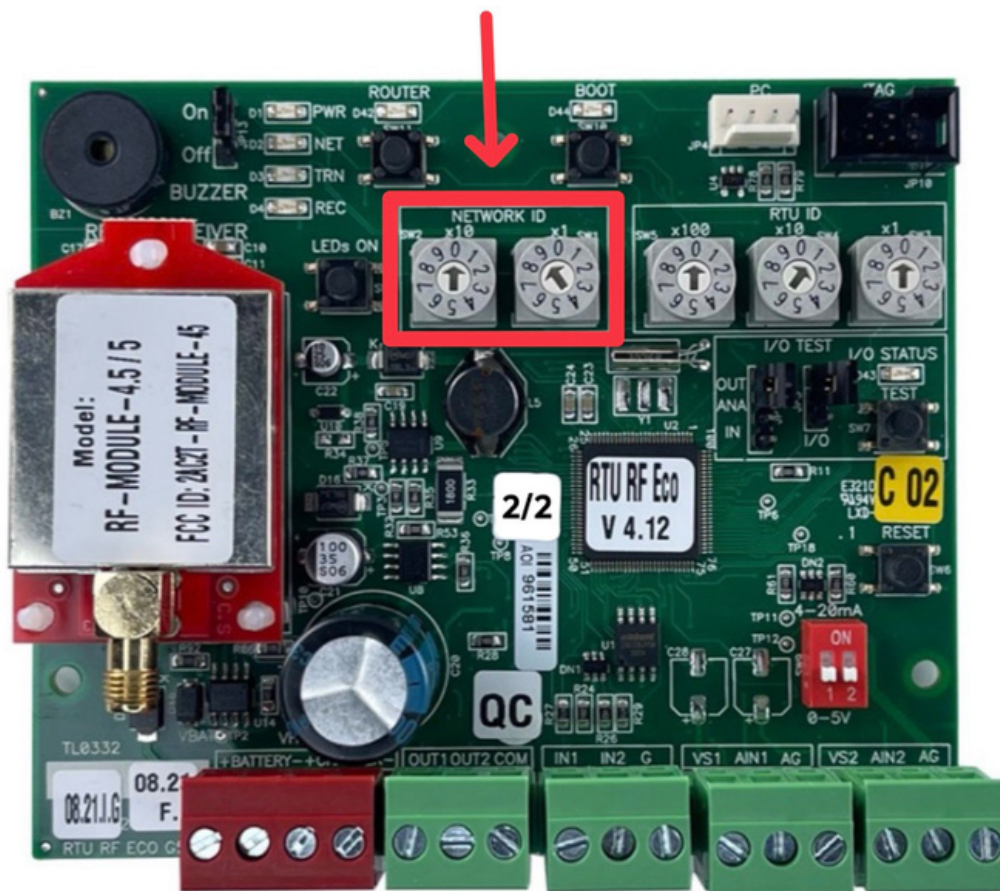**www.deeco.co.nz**

1.5 - RTU RF G5 ECO - Installation Instructions

1.5.1 - Setting the RF G5 NETWORK ID
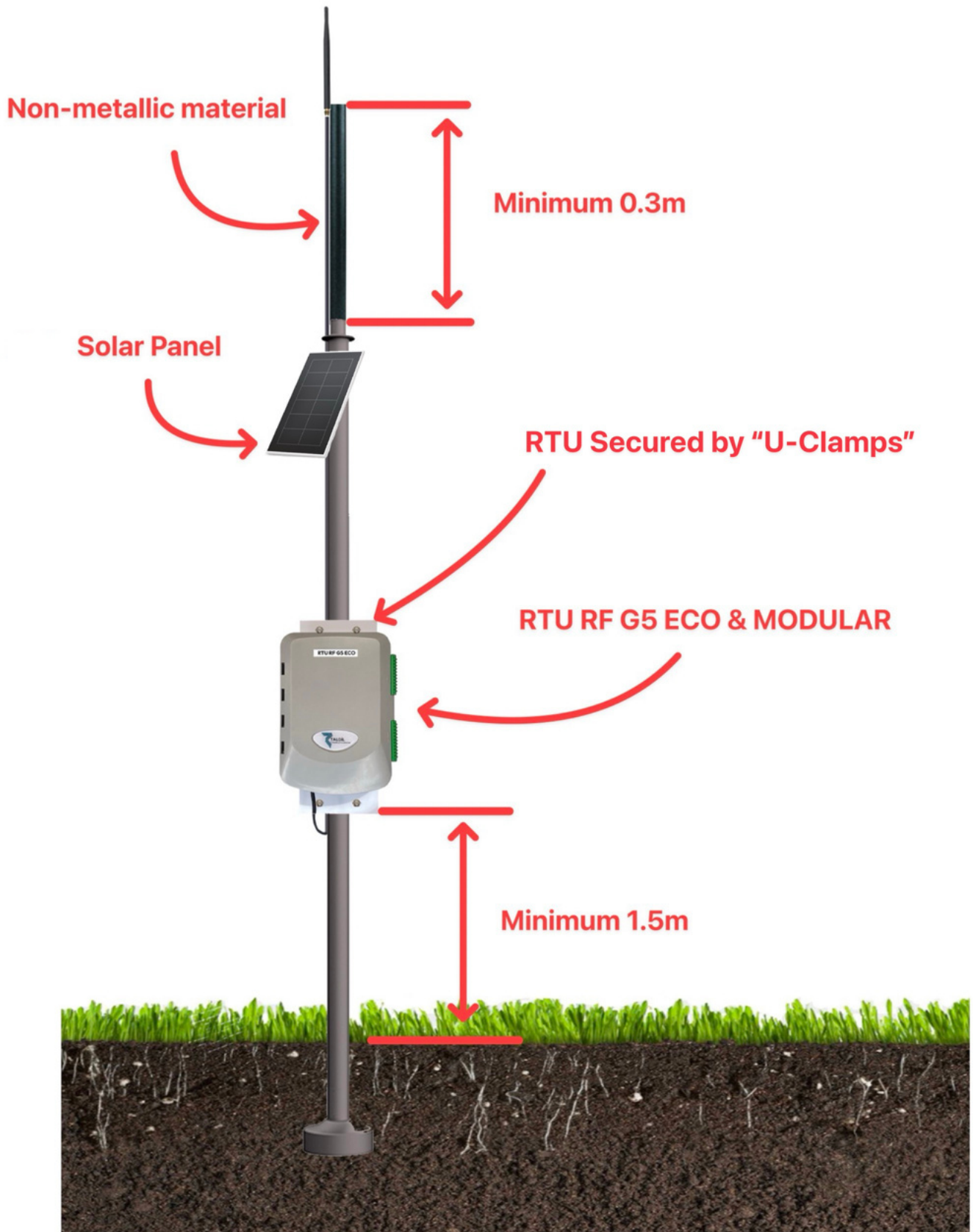
Every RF G5 system must use a unique NETWORK ID.
Make sure that your RTU NETWORK ID matches your RF MASTER.
In order to set the RF G5 NETWORK ID, use the NETWORK ID rotary switches.

![TALGIL logo]

1.5.2 – Antenna and RTU Installation

Non-metallic material

Minimum 0.3m

Solar Panel

RTU Secured by "U-Clamps"

RTU RF G5 ECO

RTU RF G5 ECO & MODULAR

Minimum 1.5m

In order to improve the RF reception, install the RTU RF G5 Antenna in a high place. The top of the RTU RF G5 Antenna must be installed on a pipe made of non-metallic material.

- It is recommended to install the RF G5 RTU Antenna in a place where the RF G5 MASTER Antenna will have a Line of sight with the RTUs that communicate directly with the RF G5 MASTER.

Solar panels:

Solar Panels Are recommended for any RTU installation to reduce battery charging/change requirements but are a requirement when an Analog sensor is used or the RTU is utilised as a Router/Repeater due to higher battery consumption.

Cable Glands:

It is necessary that all connectors are tightened or covered to prevent any insect or water access.
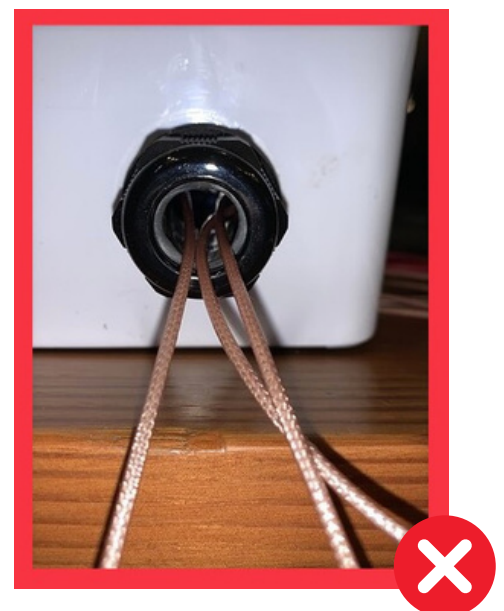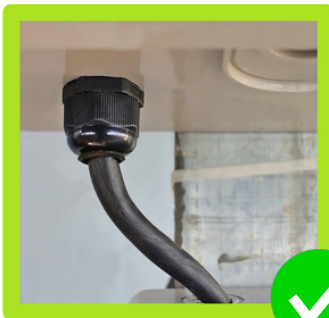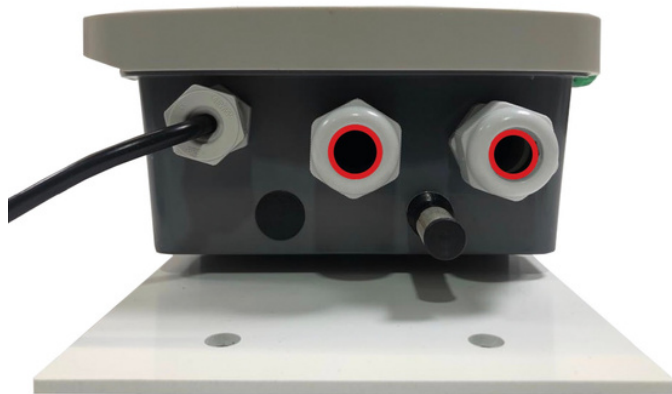
1.5.3 – Using RTU RF G5 as a ROUTER / REPEATER
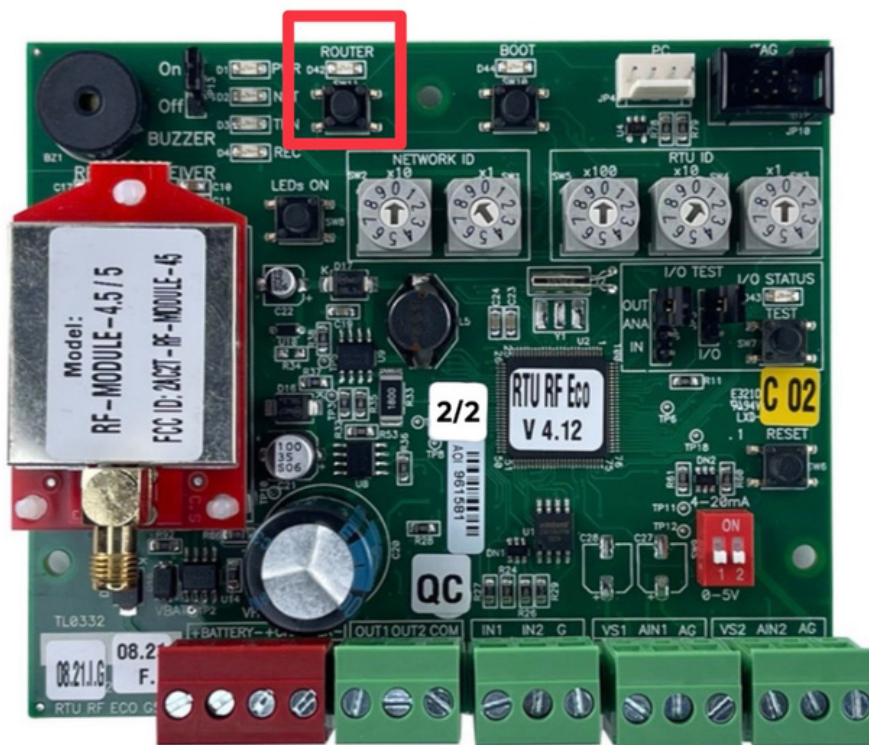
Any RTU can be switched into a Router / Repeater. The function of a repeater is to listen and repeat any signal it receives.

In order to switch RTU into repeater – Press the Router Button once.

The Router LED should start flashing.

Note: Due to higher power consumption the Router / Repeater requires Solar panel.
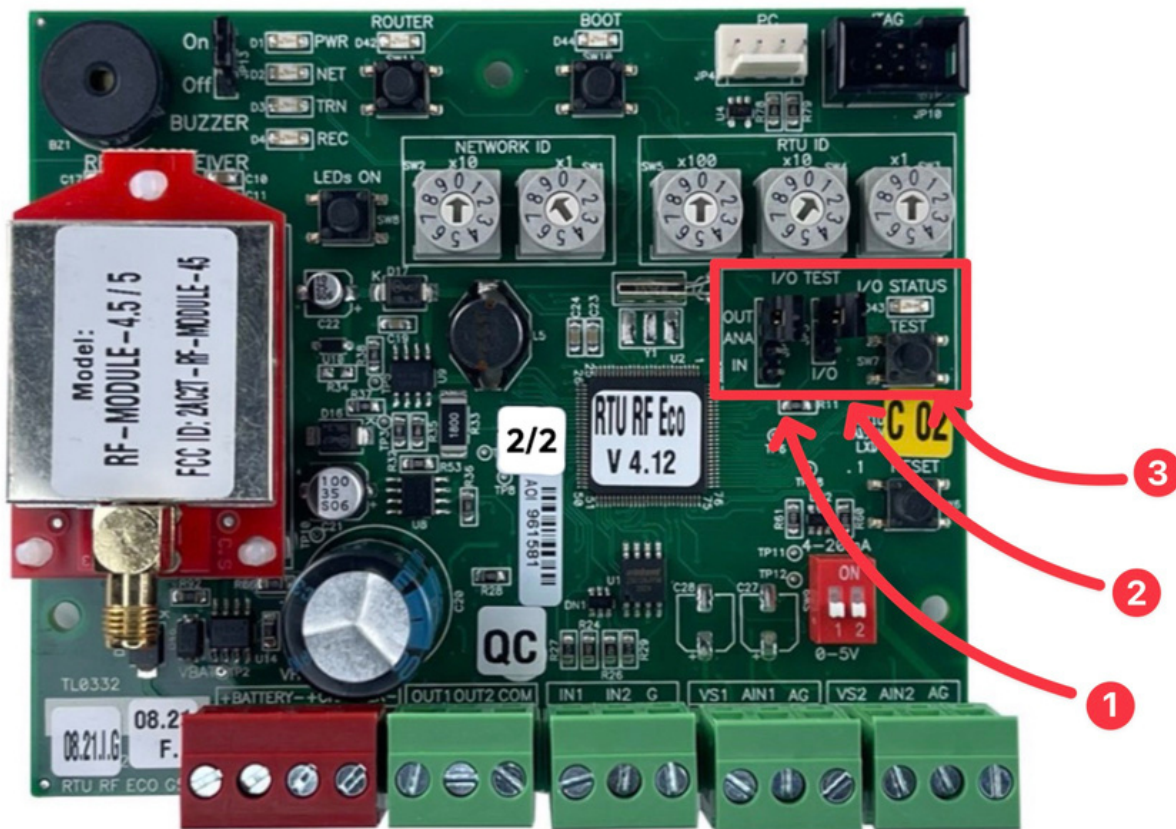
1.6 - I/O - Test

Every RTU has a manual TEST section for testing its I/Os.

In order to test the IO - Set the Jumper "1" to the desired position
- Top position = OUTPUT
- Middle Position = ANALOG INPUT
- Bottom Position = DIGITAL INPUT

To select the OUTPUT Number - Set the Jumper "2" to the desired position.
- Top Position = I/O number 1
- Bottom Position = I/O number 2

1.6.1 - I/O TEST - OUTPUTS

After setting the jumpers to the TOP Position (OUT) - Press the Test button to put the RTU in TEST Mode.

When you press the TEST button again, it will close OUT 1.
When you press the TEST button again, it will open OUT 1, and so on.

1.6.1 - I/O TEST - DIGITAL INPUTS

After setting the jumpers to the BOTTOM Position (IN) - Press the Test button to put the RTU in TEST Mode.
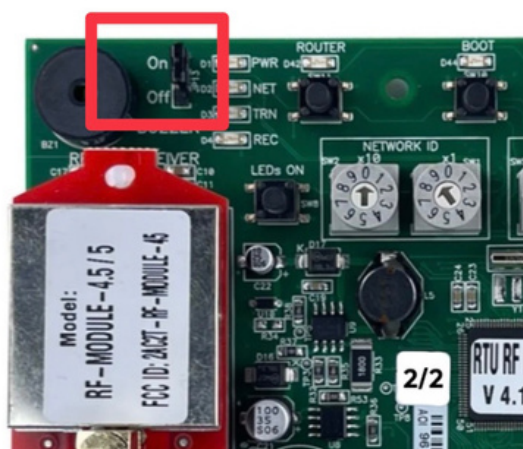
When INPUT 1 is closed, the TEST LED is ON and sounds one beep.
When INPUT 1 is opened, the TEST LED is OFF and sounds two beeps.

Note: Make sure that the Buzzer is turned ON.
TOP Position = ON
BOTTOM Position = OFF

1.7 - Firmware Update

Every RTU comes with the latest firmware available at the time.

We recommend updating the firmware to the latest version at least once a year.

Firmware updates can be done by two methods.
1 - Manual update
2 - OTA - Over The Air

Both methods, software and necessary software can be found on our website

www.deeco.co.nz.

In order to update the RTU firmware, the following equipment is required:

Hardware required:

- PC Programmer or RF Programmer
- Windows Computer

Software required:

- C Boot Software (for firmware update) or OTA
- Talgil WorkBench - Optional (for RTU configuration check)
- New Firmware file

![TALGIL logo]

1.8 - Batteries - Technical Specifications, Maintenance Information & Charging

Product Description

Charging these batteries before installation and regularly throughout their life will maximize battery performance. Correct preventative maintenance and charging procedures must be followed while using a good-quality battery charger. This will be considered for any warranty/credit requests.

You can purchase a good quality charger from Deeco- Contact us for more information

Preventative Maintenance

Inspection:
AGM batteries do not have free-flowing electrolytes or removable vents and lose very little water during charging. Because of their construction, AGM batteries are considered non-spillable and maintenance-free since no watering is required.

Warning:
Water should NEVER be added to deep-cycle AGM batteries.
Do not attempt to remove vent caps for any reason.

Cleaning:
- Clean the top of the battery terminals and connections with a cloth or brush and a sodium bicarbonate solution (150g of baking soda to 1 litre of water (150 g/L)).
- Rinse with water and dry with a clean cloth.
- Keep the area around the batteries clean and dry.

Charging
- proper charging will maximize battery performance.
- Both under and over-charging can reduce the life of the battery.

Do not discharge your battery more than 80% to prevent over-discharging and damaging the battery's internal components.
- Avoid charging at temperatures above 50 degrees Celsius.
- You can purchase a good quality charger from Deeco - contact us for more information.

Equalizing
- AGM Batteries do not require equalizing.

Warning:
Do not equalize deep-cycle AGM batteries.
Permanent damage to the battery will occur.

Storage
- Fully charge batteries before placing them in storage.
- Store in a cool, dry location, protected from the elements.
- Batteries self-discharge during storage. Monitor the voltage every 2-3 months.
- AGM batteries can be stored for up to 6 months at 25 degrees Celsius, and then re-charging is recommended.
- The monthly self-discharge ratio is less than 3% at 25 degree Celsius.

Important:
Please charge batteries before using them.

- In high temperatures (greater than 32 degrees Celsius), monitor the voltage every 1-2 months, as batteries will self-discharge faster.
- Stored batteries should be given a boost charge when they are at or less than 75% state of Charge(SOC).
- After storage, recharge before use.