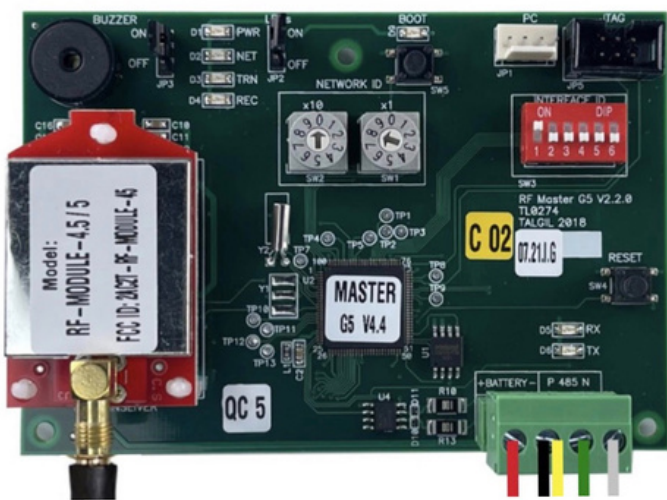


# Installation, Operation and Maintenance Instructions

## Talgil - RF G5 - Master



Description: RF Master Interface for Dream 2 Controller  
Product Code: TG-DREAM2RFG5MASTER



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## 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.



National Service and Supply Centre  
35 Wakefield Street, Alicetown 5010  
[www.deeco.co.nz](http://www.deeco.co.nz)



## 1.0 RTU RF G5 MASTER - Principle of Operation

The MASTER is the heart of the MCP (Multilayer Communication Protocol) communication system; actually, it fulfils two functions:

1. It is the MAIN RECEIVER/TRANSMITTER through which all the information to and from all the RTUs is flowing.
2. It also serves as an INTERFACE between the controller (DREAM2, SAPIR2) and the RTUs.

### Principle of Operation

All RTUs are expected to communicate with the center. The central receiver/transmitter is known as the MASTER.

All RTUs and the MASTER that belong to the same system must have a common NETWORK ID that will differentiate the particular system from other neighbouring systems.

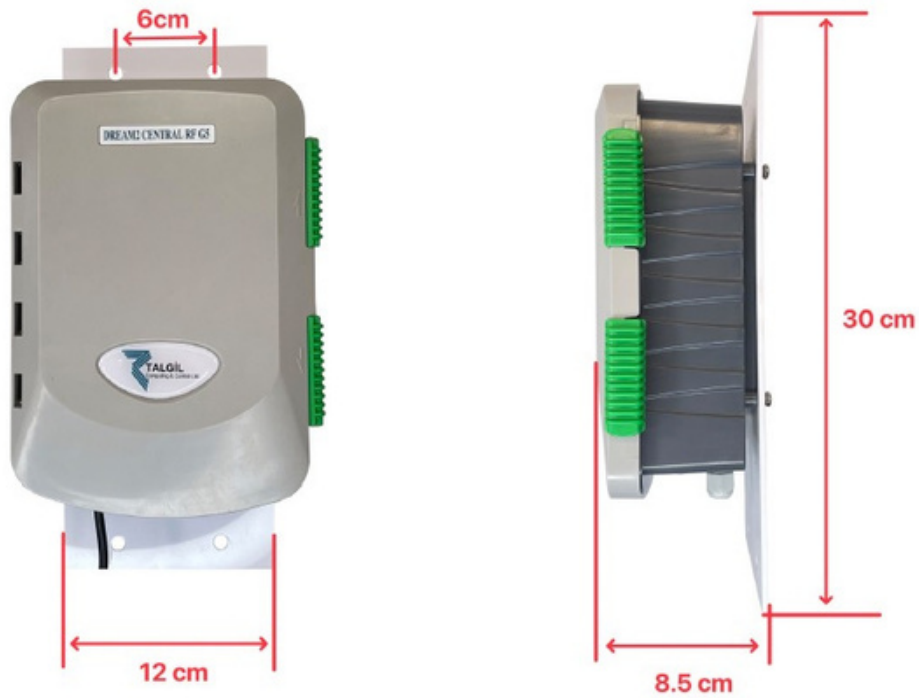
The MASTER is the one who decides the frequency to be used by all the members of the system. When the MASTER is powered up, it starts scanning the area, looking for a frequency that is free enough to be utilized. During the frequency scanning, the NET LED of the MASTER keeps blinking, and when the frequency is selected, the NET LED turns OFF. During operation, the MASTER may decide that the selected frequency is no longer free enough, and then it will repeat the scanning procedure as explained above.

When the RTU is powered up, it starts sending TEST signals, expecting to receive RESPONSE signals from the MASTER or the surrounding ROUTERS. If no RESPONSE is received, then after 3 failing TEST signals, the RTU will move to the next frequency, repeating the same procedure until receiving the expected RESPONSE signal.

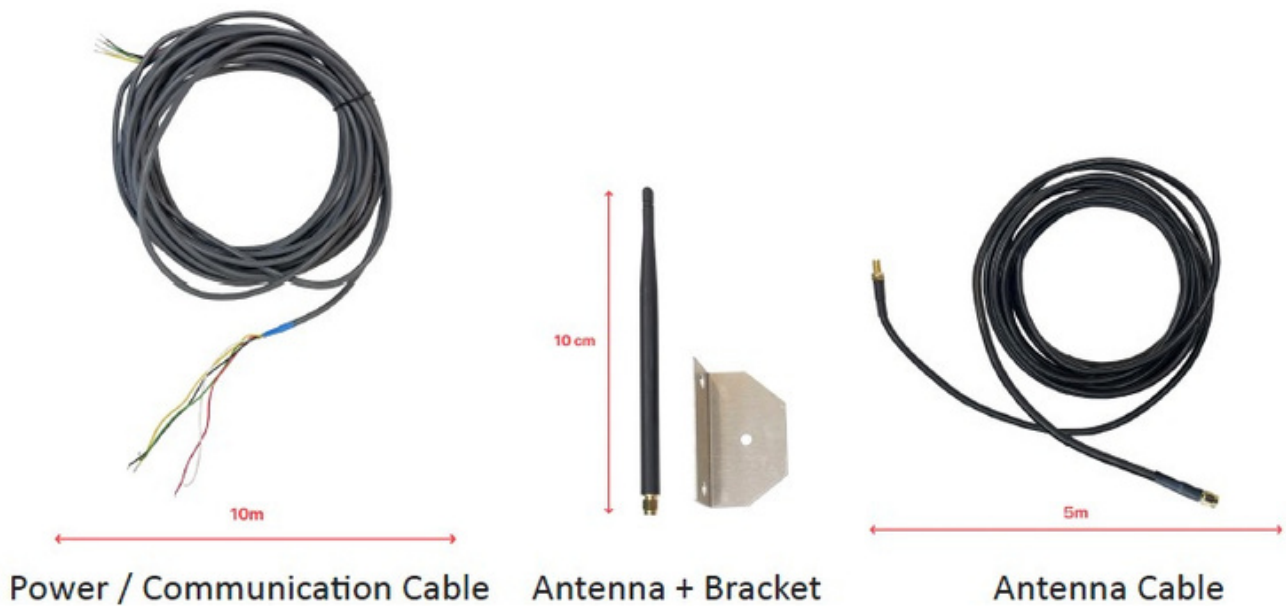
The RESPONSE signal may arrive from several ROUTERS and the MASTER simultaneously. The RTU will prefer to be connected to the MASTER in the shortest path, provided that the RSSI of the connection is good enough. If the RESPONSE signal of the MASTER is strong enough, then the RTU will ask to be connected directly to the MASTER, and then it will be considered to be on LAYER 1. If the signal of the MASTER is not strong enough or cannot be heard at all, the RTU will ask to be connected to the ROUTER that is on the lowest layer but still has a strong enough RSSI picked by the RTU. If the ROUTER is on LAYER N, the RTU will belong to LAYER N+1. The same happens when it is a ROUTER that is trying to connect to the system.

## 1.1 Product Dimensions & Description and Technical Specification

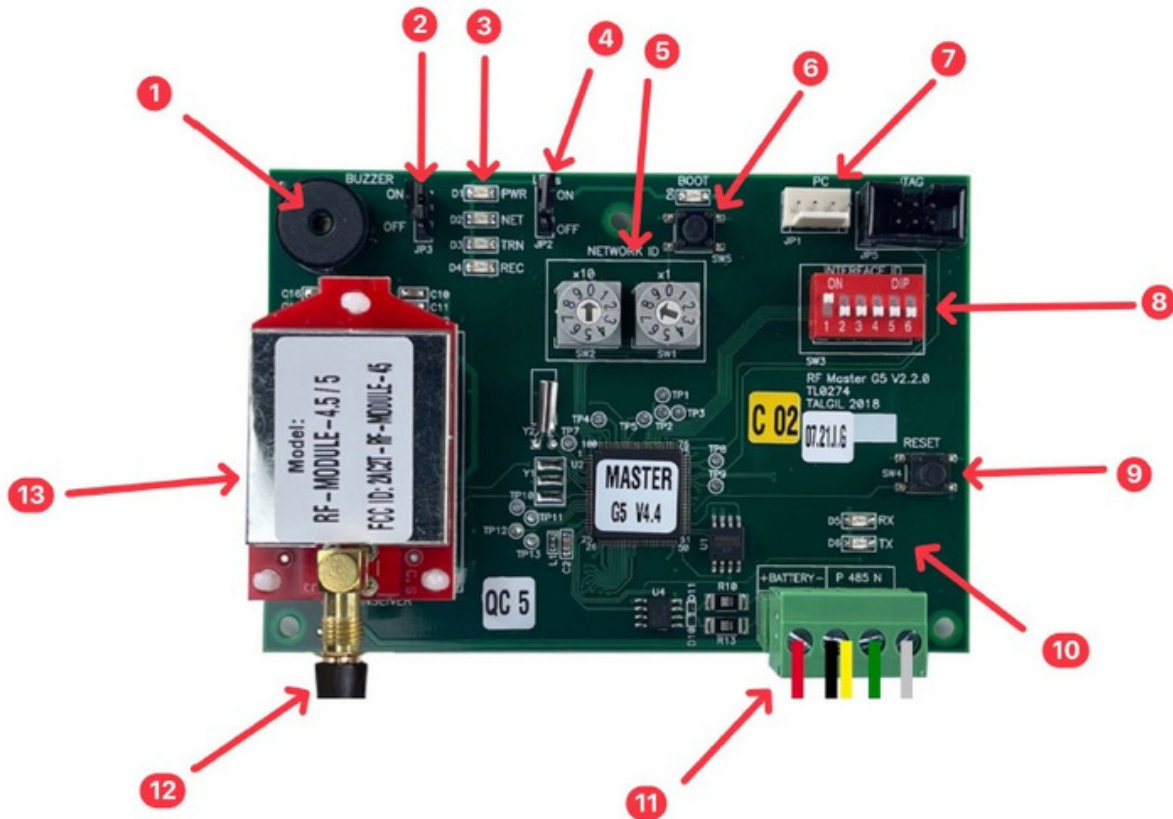
### Enclosure & Holding Plate - Dimensions



### Antenna Cable & Power / Communication Cable - Dimensions



## RTU RF G5 MASTER - CARD Description

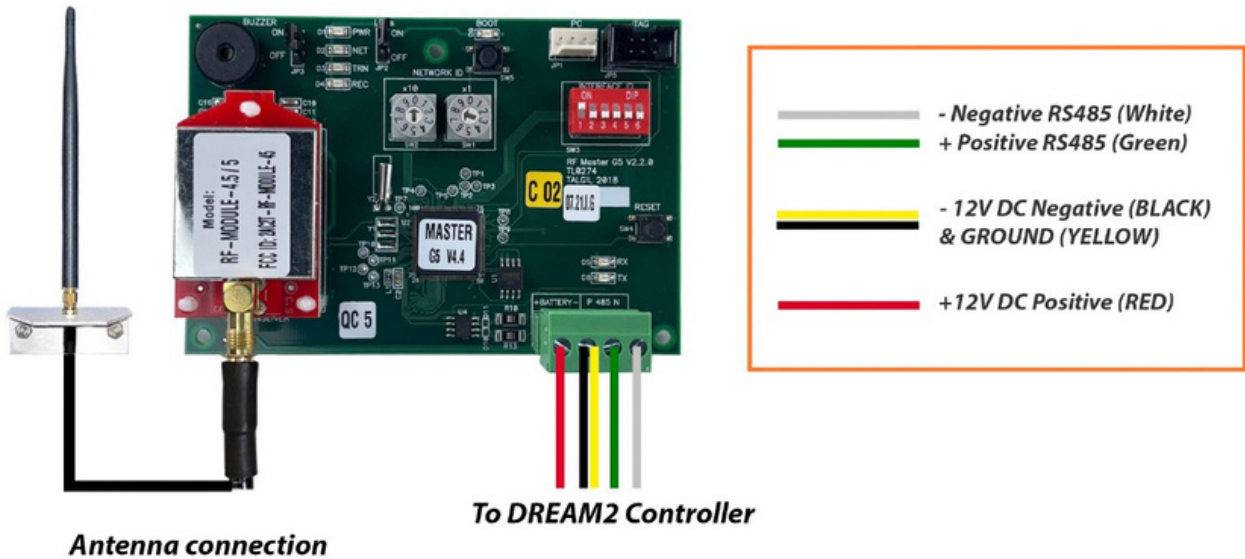


- 1 - Buzzer
- 2 - Buzzer - On/Off Jumper
- 3 - Power, Network, TRN, REC - LEDs
- 4 - LEDs - On/Off Jumper
- 5 - Network ID - Rotary switches
- 6 - Boot Button & Boot LED
- 7 - Programming PC Connector
- 8 - Interface ID - Dip Switch
- 9 - Reset Button
- 10 - Rx, Tx - LEDs
- 11 - Power & Communication terminal (from/to DR2 Controller)
- 12 - Antenna Connector
- 13 - RF / Radio Modem

## RTU RF G5 MASTER - Technical Specifications

Specification	Description
<b>RF Frequency Range</b>	915 - 928 MHz
<b>Channel Spacing</b>	1.5 MHz
<b>Channel Bandwidth</b>	500 KHz
<b>Effective Radiation Power (ERP)</b>	79/250 mW
<b>Modulation</b>	Spread Spectrum LoRa
<b>Number of RF Channels</b>	9
<b>Firmware Upgrade Options</b>	RF or Local Connection (PC)
<b>Ambient Temperature</b>	-20°C + 65°C
<b>Ambient Relative Humidity</b>	0 - 90%

## 1.2 - RF MASTER - Wiring Instructions

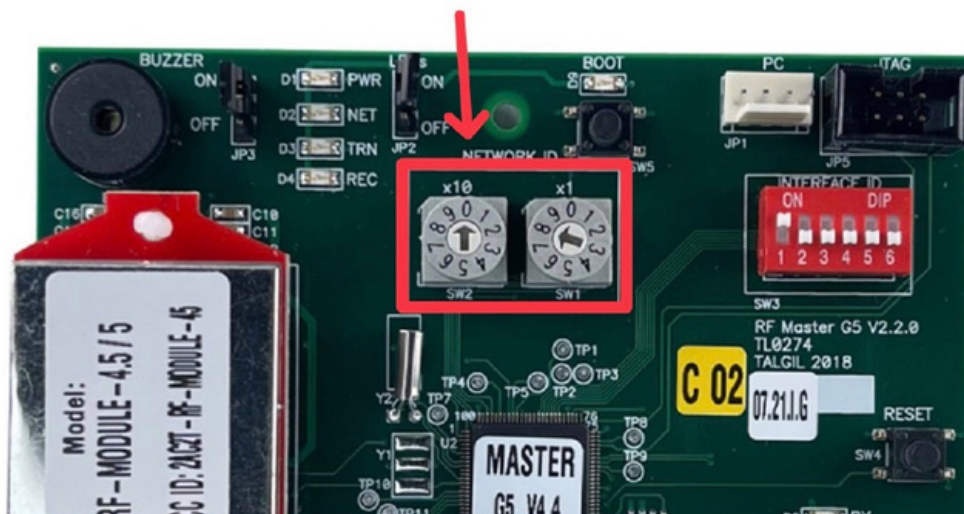


## 1.3 - RF MASTER - Installation Instructions

### 1.3.1 - Setting the RF G5 NETWORK ID

Every RF G5 system must use a unique NETWORK ID. Make sure that in your vicinity, there are no RF G5 systems using your RF G5 NETWORK ID.

In order to set the RF G5 NETWORK ID, use the NETWORK ID rotary switches.



### 1.3.2 - Setting the RF G5 INTERFACE ID

The RF G5 INTERFACE ID can be defined on the Interface ID dip switch.

The Interface ID of the RF G5 system **MUST** have the highest address among the other addresses of the rest of the Interfaces.

We recommend using address 15 - “1,1,1,1,0,0”





### 1.3.3 - RF Master installation

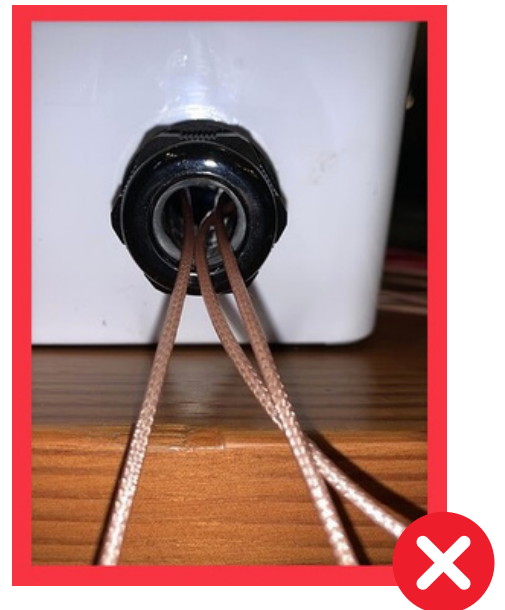
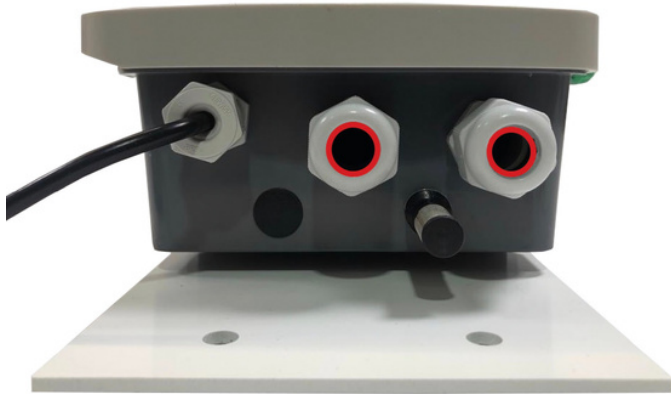
In order to improve the RF reception, install the RF G5 MASTER Antenna in a high place. The top of the RF G5 MASTER Antenna must be installed on a pipe made of non-metallic material.

It is required to install the RF G5 MASTER 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.



### Cable Glands:

It is necessary that all connectors are tightened or covered to prevent any insect or water access.

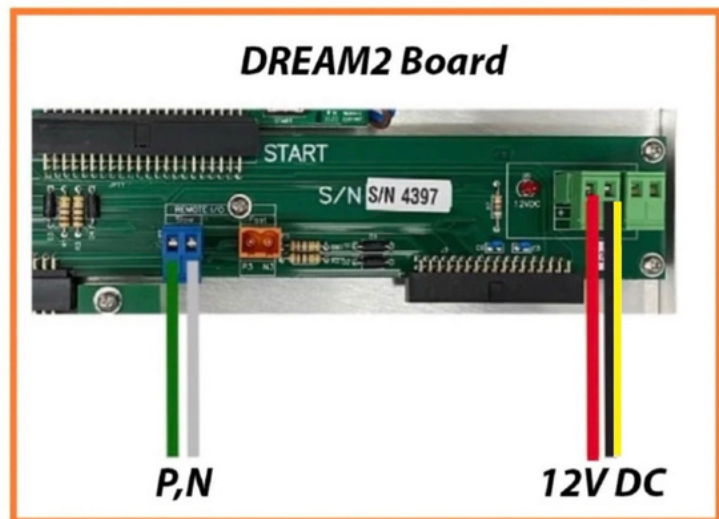


### 1.3.4 - Wiring Instructions

- Connect the RS485 two wires of the RF G5 MASTER to the DREAM2 Controller Remote I/O plug.
- Connect the +12V, -12V DC and GND wires of the RF G5 MASTER to the Dream 12V DC plug. (Alternatively, the Master may be powered by an external 12 VDC power supply).



**To DREAM2 Controller**



### 1.3.5 - Frequency Selection

The RF G5 MASTER will select automatically the RF frequency. It examines the frequencies and chooses the first best available frequency that will find. If a foreign external transmitter uses the frequency which has been used by the RF G5 System, the RF G5 System will skip to another available frequency.

## 1.4 - Hardware Definition

Note:

Hardware definition can be done manually using the DREAM2 LCD screen, but it can also be done remotely using the Console Software.

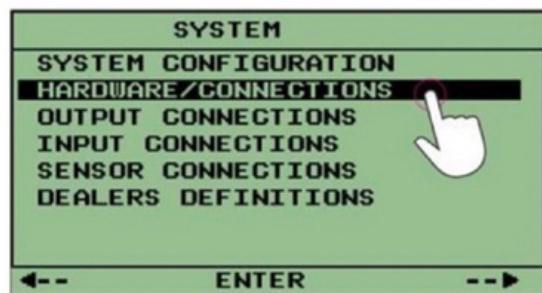
Both Methods are described here.

### 1.4.1 - Hardware Definition - Using DREAM2 Controller

In order to add the RF G5 to the Dream Hardware Definitions, go to the Setup (Screenshot 1 on Image 1), then select the Hardware/Connection option (Screenshot 2). For changing the Hardware Definitions, press Enter and insert the “247” password (Screenshot 3) at the Hardware Definition screen, press Page Down button (Screenshot 4).



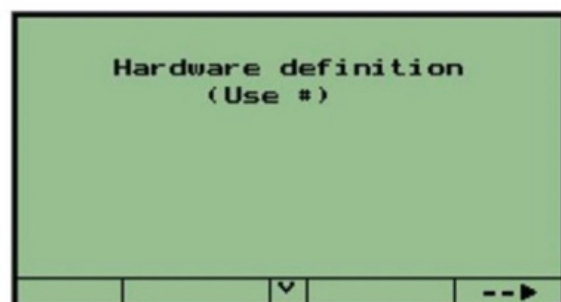
Screenshot 1- Select the SETUP submenu.



Screenshot 2- Select HARDWARE/CONNECTIONS.



Screenshot 3- Enter the “247” password.



Screenshot 4- Click the Page Down button

The RF G5 does not include an interface card. The RF Master G5 card has been used as Master and Interface between the Dream 2 to the RTUs in the field. Add one RF RTU Interface and press the Page Down button (Screenshot 5). Select an available address for the Interface RF (Screenshot 6). Select an available address for the Interface RF (Screenshot 6).

HARDWARE DEFINITION	
Interface card type	Quant.
DC I/O interface	1
AC I/O interface	0
4 wired RTU int.	0
2 wired RTU int.	0
RF RTU interface	1
pH/EC I/O interface	0
Analos I/O interface	0

Screenshot 5-Add one RF RTU Interface, then press the Page down button.

HARDWARE DEFINITION DETAILS		
	Adr	Confis.
IntDC	1	16:8
IntRF	2	5.0

Screenshot 6- Select available address for the Interface RF. Make sure to set the highest address for the Interface RF.

The Interface RF address number must be the highest of all the Interfaces addresses which connected to the Dream 2.

The reason is, that the Interface RF holds the next ten addresses after his address.

On the right side of the Interface RF Address, there is the Polling rate number. The Polling rate is not relevant on RF G5. You can leave it as 5 (Default), as described in screenshot 7 in order to exit from the Hardware Definition screen, press the Page down and F4 button. The Connections Definition screen will appear (Screenshot 8).

Define the Outputs and Inputs connection which connected to RTUs RF in the field. The Interface address should be the RF G5 address.

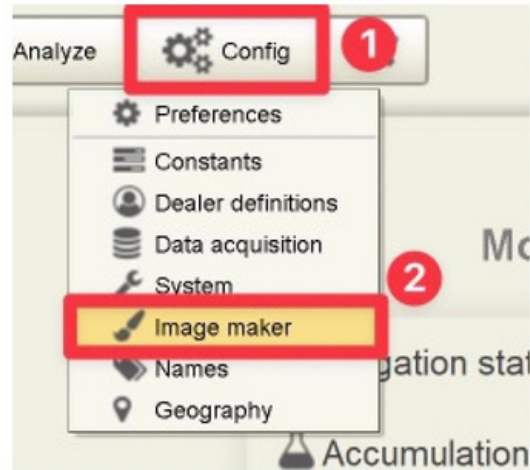
HARDWARE DEFINITION DETAILS		
	Adr	Confis.
IntDC	1	16:8
IntRF	2	5.0

Screenshot 7- The number on the right side of the Int. RF address is not relevant. Leave it as 5. To exit, Press P. Down and F4 buttons.

Connections definition (Use #)		

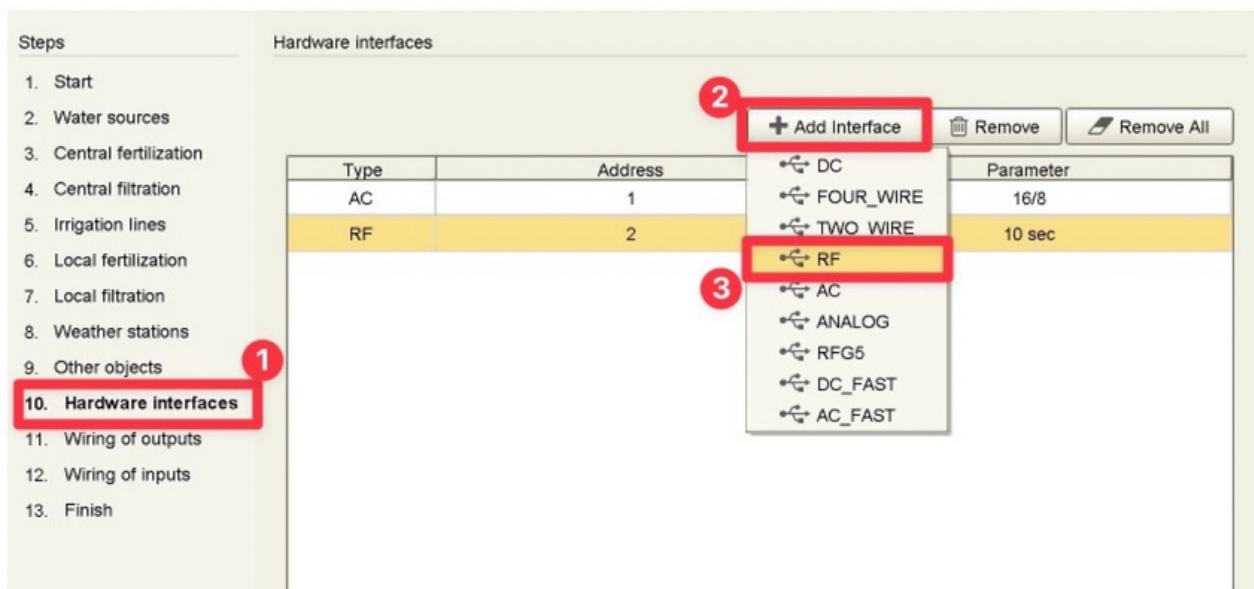
Screenshot 8- In order to set the Outputs and Inputs connection definition, press the Page Down button.

## 1.4.2 - Hardware Definition - Using CONSOLE SOFTWARE



Go to the tab 10. Hardware Interfaces -> Add Interface and select RF.

Note: You can change the interface address by clicking on the Address (2) tab.  
This address must be the same as on the dip switch (hardware) - As described in the last section. - Interface ID = Interface Address.



## 1.5 - Firmware Update

Every RF MASTER comes with the latest firmware available at the time.

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

For more information and the latest firmware version - Please contact us or visit our website - [www.deeco.co.nz](http://www.deeco.co.nz)

