



OSMAC RDR Retrofit Narrow Band Decoder Module, Part No. 102-2012 Installation Guide

Introduction

The RDR retrofit decoder module was developed to allow existing wide-band UHF radio frequency users to migrate into narrow band frequencies. The following instructions assume the RDR retrofit module has been programmed with a licensed frequency or will use one of the four pre-programmed frequencies available while awaiting confirmation of a licensed frequency.

Note: It is the end-user's responsibility to apply for a new narrow band frequency license or update the current license on file with the FCC as part of the retrofit process.

Procedure

Step 1: Locate the RDR decoder module and remove the black ground wire to disconnect power to the module. After power is disconnected, continue to remove the orange 12 V a.c. power wire, red 26 V a.c. power wire and the flat ribbon cable. Remove all wires connected from the terminal block of the decoder module and note their position for rewiring. See **Figure 1**.

⚠ CAUTION: Potential damage can occur to the RDR decoder module components if power is not shut off by detaching the ground wire first.

Step 2: Remove the decoder module by pulling it straight out.

Step 3: Select the desired operating channel frequency on the RDR retrofit module by placing the jumper on the appropriate pin set. See **Figure 2**.

The pre-programmed frequencies are as follows:

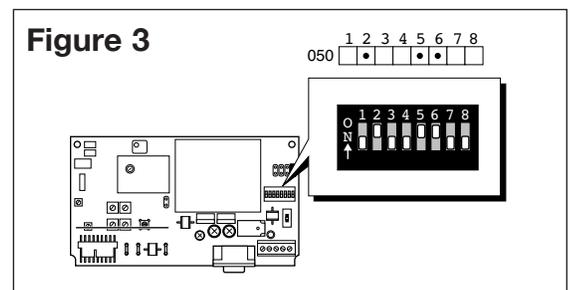
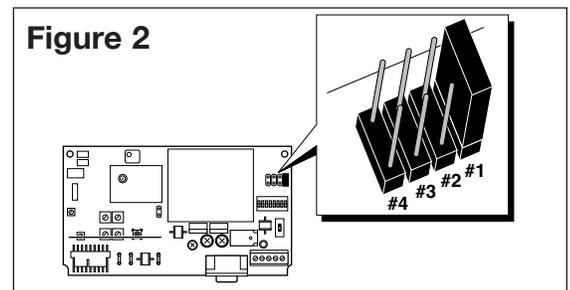
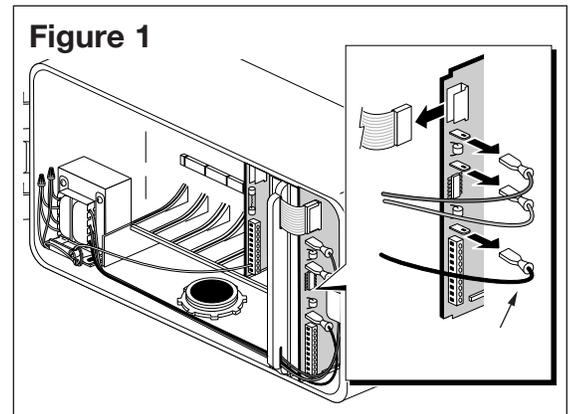
Channel 1	462.2125
Channel 2	462.4375
Channel 3	467.2125
Channel 4	467.4375

Note: These frequencies are not Toro licensed and does not imply that they are usable in any application. Obtaining a narrow band frequency is the responsibility of the end-user.

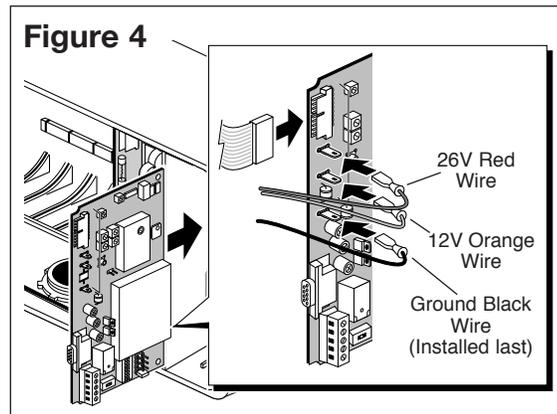
Each of the four frequencies is programmable using kit P/N 102-1208 for 120 V a.c. or P/N 102-1230 for 240 V a.c.

Step 4: Set the address code of the RDR retrofit decoder module to match the address code on the decoder card removed. See **Figure 3**. The number 1 DIP-switch is the least significant bit. This is opposite to the Wide Band decoder module DIP-switch settings. Refer to the **Address Code Table** on the back page.

Step 5: Carefully place the RDR retrofit decoder module into the cabinet. Do not force it into position.



Step 6: Connect the ribbon cable, orange 12 V a.c. power wire, red 26 V a.c. power wire and terminal block wires. Connect the black ground wire last to ensure power is not applied to the RDR retrofit decoder module until all other connections are made. The position of wires are labeled on the module and shown on **Figure 4**. The red LED should illuminate indicating proper connection. Position all wires in cabinet to prevent interference with cabinet door.



Step 7: Test communication and RDR controller operation.

- Confirm the RDR field satellite is ON by observing the red LED on the decoder module.
- With the RDR field satellite address set and the power on, send a series of commands to the field satellite using the Base Station programmed to the correct transmitting frequency and controller address. Verify that the LED on the decoder and frequency module is blinking which signifies that it is receiving the Base Station's commands.
- Once proper operation is observed, verify that all connections are tight and secure.

Step 8: Close and lock the cabinet to ensure protection from elements.

RDR Retrofit Module Troubleshooting Guide

Problem	Possible Cause
RDR does not respond to hand-held commands.	Incorrect address code being accessed. Hand held battery power is low. Frequency select jumper is incorrectly set. Jumper loop is not cut when using an external antenna. Data in EEPROM is corrupted. See Resetting the EEPROM on page 3.
The LED on RDR decoder module does not illuminate after all wires are installed.	Improper wire connections. Wires are not securely installed.
The RDR does not respond to the base station.	The transmit frequency on the base station is not the same frequency as the frequency on the RDR retrofit decoder module. Frequency select jumper is incorrectly set. Jumper loop is not cut when using an external antenna. Data in EEPROM is corrupted. See Resetting the EEPROM on page 3.
Communication is sporadic.	The signal strength in decibel fade is weak. If it is below 16dB, an external antenna maybe necessary. Cabinet ground does not meet product specification of 10 ohms or less.

Field Satellites With External Antenna

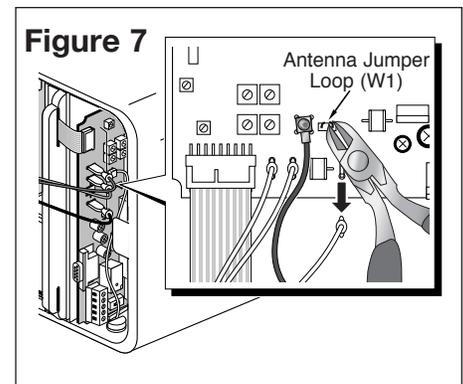
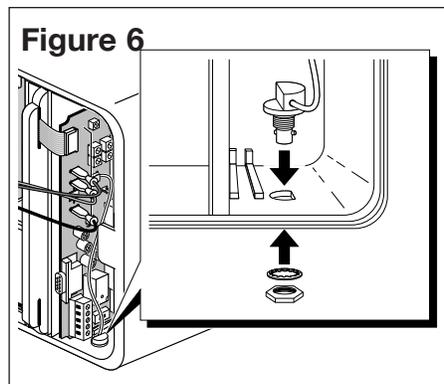
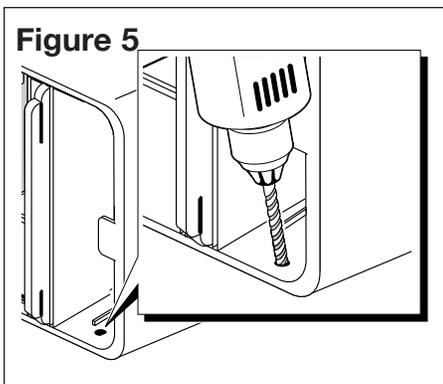
The RDR retrofit decoder module utilizes the same antenna interface cable (Kit P/N 102-2013) as other E-Series OSMAC products. This interface cable terminates with a BNC connector and can be used with short “rubber ducky” type antenna. It can also be connected with another cable to interface with other types of external antenna. The antenna jumper loop “W1” should be cut to initiate any external antenna.

Note: Once the antenna jumper loop is cut, the decoder module can only be used with satellites that utilizes external antenna.

Antenna Interface Cable Installation

- Step 1:** Detach the black ground wire to disconnect power to the decoder module. Detach the remaining cables from the decoder module and remove the module from the cabinet completely.
- Step 2:** Locate the D-shaped knockout in the lower corner of the cabinet and drill a 1/2” (12.7 mm) hole into it. See **Figure 5**.
- Step 3:** Install the antenna interface cable to the RDR cabinet and connect it to the RDR retrofit decoder module. See **Figure 6**.
- Step 4:** Clip the wire loop labeled W1 on the decoder module. See **Figure 7**.
- Step 5:** Connect a “rubber ducky” type antenna or cable from other types of external antenna to the antenna interface cable.
- Step 6:** Reinstall the decoder module and cables. Connect the ground wire last. Test the satellite controller for proper operation.

For satellites that requires an external antenna, service kit P/N 102-2053 is available that includes the antenna interface cable, metal mounting bracket and short “rubber ducky” antenna to be mounted under the plastic lid.



Resetting the EEPROM

To reset the EEPROM, first remove the power from the RDR retrofit decoder module by removing the black ground wire. Slide the switch on the decoder module from the “NORMAL” position to the “RESET” position. See **Figure 8**. Restore power to the retrofit card by plugging back the black ground wire onto the spade connector. Wait 15 seconds, then slide the switch back into the “NORMAL” position. This process will reset the EEPROM to factory defaults.

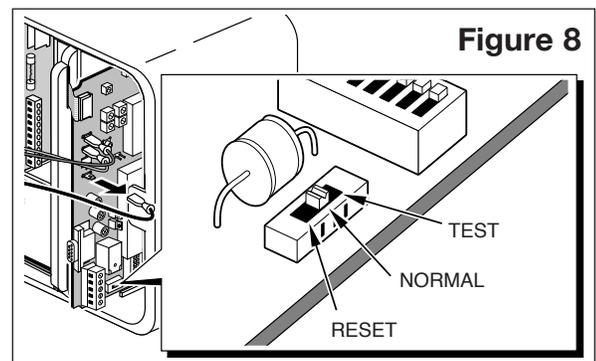
As a second option, if the base station is currently in operation, reset can be initiated using the base station’s keypad or a hand-held radio. If using the base station key-pad, choose the satellite number and key-in 8011 command.

For over-the-air hand-held command, press the “push to talk” button on the hand-held radio and send *9, the satellite number and 8011# command.

Testing Satellite Operation

A self-test feature is provided to check the functionality of various key satellite control circuits. Before performing the test, ensure the Field Common, Pump and Station Output control switches are set to the “AUTO” position.

The test is initiated by positioning the switch, located on the decoder module, to the “TEST” position as shown in **Figure 8**. Testing will begin immediately and is indicated by the audible clicks of the control relays and momentary illumination of the LED’s on the various PCB assemblies. The test will repeat continuously until the switch is positioned to the “NORMAL” position.



Address Code Table

Satellite address DIP switch matrix – = On = Off

	1	2	3	4	5	6	7	8
001	•							
002	•	•						
003	•	•						
004			•					
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