

MRF-350i Installation Manual

Optimizing Narrow Band Reception with the RFX-250i and MSC System Remotes



COMPLETETM
CONTROL

 **Universal Remote Control**[®]

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TABLE OF CONTENTS

Introduction	1
Features and Benefits	2
Parts Guide	2
Optimizing Range and Reliability	3
Connecting IR and Setting Output Levels	6
Front Blaster Overload	7
Disabling the Front Blaster - Step by Step via PC	7
Controlling An Array of Identical Components or Zones	8
Identical Components/Zone - Step by Step via PC	8
Programming For Multiple Equipment Locations	11
Frequently Asked Questions	12
Specifications	12
Limited Warranty Statement	13
End User Agreement	15
Regulatory Information to the user	16
Precautions and Information Concerning Rechargeable Lithium-Ion Batteries	17

Introduction

The MRF-350i base station is an “addressable” base station like the MRF-350. RF Addressing gives you the ability to control as many as 90 identical components throughout a house. However, the MRF-350i includes an RFX-250i, which is tuned to 433.92 MHz, so is only compatible with “i” series remote controls.

1. MSC System remote controls send radio waves in every direction, so your client enjoys “No More Pointing” operation!



2. The RFX-250i RF Sensor can be freely positioned out of way of the interference the A/V components create, connecting to the MRF-350i via a 10' cable (which can be extended).



3. The MRF-350i's built-in Front Blaster sends commands to components in the same cabinet space as the MRF-350i.



4. Self-adhesive “Flashers” affix to the Infrared sensors on the front panels of your client's components. The Flashers relay commands to components out of sight of the MRF-350i's Front Blaster. The flashers plug in to the MRF-350i's rear flasher line outputs via their 10 foot cables. *Uniquely, the MRF-350i can also connect to rear panel IR Inputs via its adjustable IR Line Outputs.*

Features and Benefits

Interference Rejection and Extended RF Range via RFX-250i

The MRF-350i receives RF (radio frequency) signals via the RFX-250i RF Sensor. The RFX-250i displays RF interference via a bright red LED, which flickers when interference is present. Simply relocate the RFX-250i out of the interference.

Expand Range by Adding RFX-250i RF Sensors in Remote Areas

The MRF-350i can power up to three RFX-250i RF Sensors connected in parallel to the RF Input connector.

Variable IR Output Matches Rear Panel IR Inputs

The MRF-350i is equipped with adjustable IR line outputs, each output can be individually matched to rear panel IR inputs on any component that is designed to be operated by a standard IR repeater. The outputs utilize a 3.5mm jack.

Up To Fifteen Equipment Locations With Identical Components

Each MSC System remote is “addressable.” They can be programmed to specifically control components in a particular room by installing a base station at each location. In operation it’s simple: when you select a device located in the Den, the MX series remote only sends commands to the Den. When you select a device located in the Family Room, the MX-3000i only sends commands to it.

A Single MRF-350i Can Control an Array of Identical Components or Identical Zones of a Multi Zone Preamp/Matrix Switcher

Each MRF-350i has six “addressable” IR Line Outputs. For example, you can control up to six identical TV’s with one MRF-350i or route volume commands for a specific zone to a particular zone IR input on a multi-zone preamp. If you have more than six identical components or zones, up to 15 additional MRF-350is can be installed to control them (thus allowing up to 90 identical components or zones in one house).

IR Input for Keypads or IR Repeater Systems

The MRF-350i rear panel IR input will relay IR Data from IR repeaters or Multi-Zone Keypads to all IR line outputs (does not support IR routing). The 5V, 100 milliamp output will directly power some brands and models of keypad directly.

Parts Guide

- | | |
|--|---|
| 1 - RFX-250i RF Sensor with integrated antenna | 6 - Visible Flashers with 10 foot plug in cables. |
| 1 - Mounting plate for RFX-250i | 6 - Extra self adhesive pads for Emitters |
| 1 - MRF-350i Base Station | 1 - 12"Connecting Cable |
| 1 - Mounting Plate for wall mounting the MRF-350i | 1 - Adjustment Tool (Screwdriver for RF ID and IR level adjustment) |
| 8 - Screws for wall mounting the two mounting plates | 2 - Depluggable screw connectors for RF connections when extending wires. |
| 1 - 9V-300mA Power Supply | |

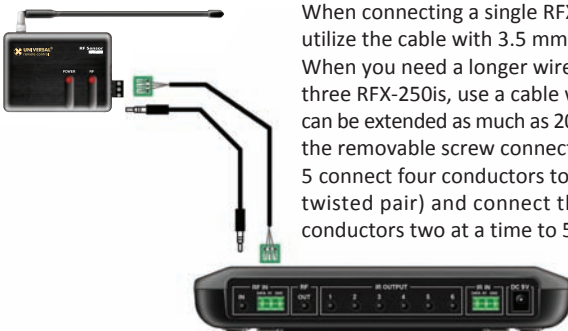
Optimizing Range and Reliability

1. Power on all AV components, lower all dimmers to 50% and power on anything that may create RF Interference (particularly devices with high speed microprocessors or hard drives).
2. Check that the address wheel on the bottom of the MRF-350i is set to ID#0 (the interference “sniffing” position).



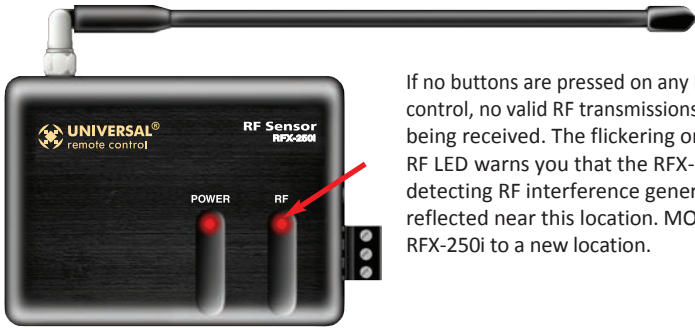
Slide off the mounting plate to reveal the RF ID# rotary switch. Check that the arrow pointer in the center of the wheel is pointed to 0, the default “interference sniffing” position. If it is not, use a small flat blade screwdriver (included) to set the RF ID# to 0.

3. Connect the MRF-350i to its DC wall adapter and plug the wall adapter into a live AC outlet. Place the MRF-350i in a convenient central location in the equipment rack. Unlike an MRF-250i, the MRF-350i can be placed next to components with hard drives or high speed microprocessors. There is no RF circuitry inside the MRF-350i itself.
4. Connect the RFX-250i to the MRF-350i’s RF INPUT. You can connect to either the screw connector or the jack as shown:



When connecting a single RFX-250i to the MRF-350i utilize the cable with 3.5 mm plugs on both ends. When you need a longer wire or are connecting up to three RFX-250is, use a cable with tinned ends. Cable can be extended as much as 200', then connected to the removable screw connector plugs. If you use CAT 5 connect four conductors to GND (one from each twisted pair) and connect the remaining conductors two at a time to 5V and DATA.

5. Observe the RF LED of the RFX-250i. Cup your hand over the RFX-250i's RF LED. If it is glowing or flickering you must relocate the RFX-250i to a location where the LED doesn't flicker.



If no buttons are pressed on any remote control, no valid RF transmissions are being received. The flickering or glowing RF LED warns you that the RFX-250i is detecting RF interference generated or reflected near this location. MOVE the RFX-250i to a new location.

6. Observe the STATUS LED of the MRF-350i. It is a little more sensitive than the RFX-250i. If you see any flickering of this LED, move the RFX-250i to a new location.



The flickering or glowing STATUS LED warns you that the RFX-250i is detecting RF interference generated or reflected near this location. MOVE the RFX-250i to a new location.

If your installation location simply doesn't offer you any choice and you are detecting interference everywhere you place the RFX-250i you have three last resort options:

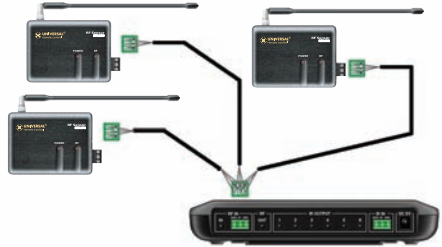
- a. Remove the RFX-250i's antenna. This will reduce the range enormously, but may still be enough for this client.
- b. Extend a wire to another room. Try this over the floor first, before attempting to conceal the wire.
- c. Admit defeat and install a "pointing again" IR repeater system.

- Once you have found a location that is absolutely clean with everything on, test to see if the range is adequate and that macro reliability is perfect. Start with the antenna angle set to 45 degrees and positioned so that the long side of the antenna is facing the customer's favorite seating position.



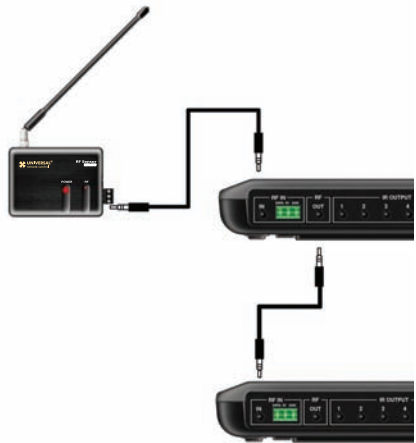
When testing, set both the remote and the MRF-350i to the same VALID RF ID#. Keep in mind that zero (0) is not a valid RF ID#. Watch the STATUS LED on MRF-350i - it should light every time you press a button on the remote. This will tell you that the signal was received and understood. You can ignore the RF LED on the RFX-250i (it only indicates that a signal was received, not that it was understood).

- If the range is inadequate, you may extend wire to any area that is not giving good results and place an additional RFX-250i in that area. Up to three RFX-250is can be connected to one MRF-350i.



- Should you need more than six IR Outputs, connect as many as three different MRF-350is to one RFX-250i in a daisy chain using the supplied cable.

To preserve addressability, set each MRF-350i to a different RF ID number. Remember "0" (zero) is not a valid RF ID.



Connecting IR and Setting Output Levels

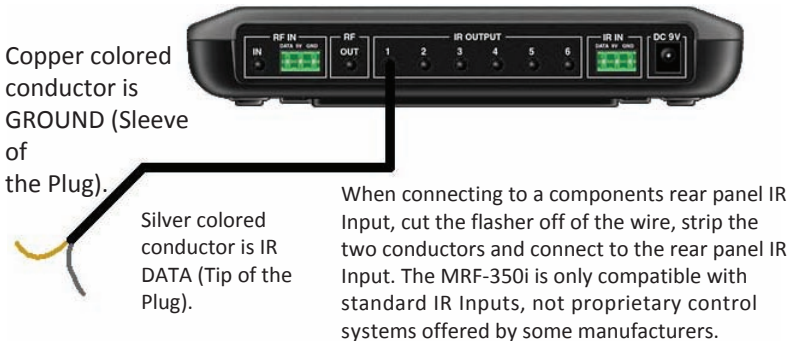
1. Connect an IR emitter to each IR output and run the emitter wire to the front panel of each component. DO NOT STICK the emitter in place. ADJUST the level first.
2. Adjust each of the IR Output levels for best operation. If the component operates best at minimum level, but is still operating sluggishly or intermittently, move the emitter farther away from the components IR sensor.



NOTE: TiVo, Replay TV, Satellite Receivers and Cable Boxes are all extremely sensitive to IR overload or saturation. Put up the on screen guide and test the navigation arrows. Compare operation via RF to the original remote control. Operation should be identical. RF is not slower. If operation is inconsistent or sluggish, LOWER the IR line output.

If you still have sluggish operation, check that the remote control is set to a particular LINE OUT, rather than ALL. When IR commands are sent to all the flashers in a cabinet, you can have difficulty adjusting the IR Output.

Reprogram the remote control to send IR commands only via a specific (1-6) Line Output, then readjust the IR Line Output level.



Front Blaster Overload

A few models of audio/video components can be OVERLOADED by the Front Blaster. If you are having intermittent or inconsistent results with a particular component, try repositioning the MRF-350i and facing the Front Blaster in a different direction. If this improves the situation but is impractical, it may be necessary to utilize the self-adhesive flashers only and follow the steps below to Disable the Front Blaster. This will limit the number of components your MRF-350i can control to six. If you have more than six components you can purchase an additional MRF-350i.

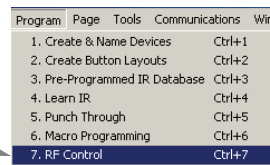
Disabling the Front Blaster - Step by Step via PC

Note: If you are programming a URC MX “addressable” remote control that sets up without a PC, refer to the owners manual to disable the Front Blaster.

Open the PC software, then plug the MX PC programmable remote control into the PC. Open your saved configuration and follow these steps to turn off the front blaster:

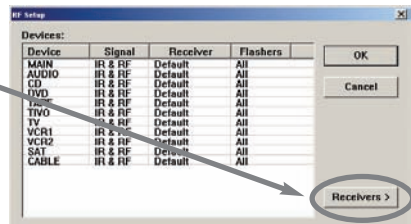
Step 1 - Open the RF Setup Window

The RF Setup window opens after selecting RF Control from the Program Menu.



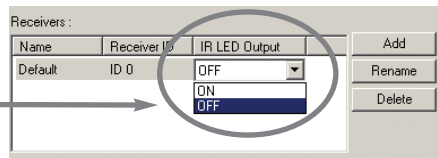
Step 2 - Setup the Receiver

Extend the RF Setup window by clicking on the RECEIVERS button.



Step 3 - Turn off the Front Blaster

Click on the cell in the IR LED OUTPUT/IR BLASTER column. A list box will appear. Select OFF from the



Next, click on OK to apply your change.

list.

SAVE your changes using File|Save and DOWNLOAD to the remote control.

Controlling An Array of Identical Components or Zones

There are several considerations to take into account when you are installing an MRF-350i to control an array of identical components:

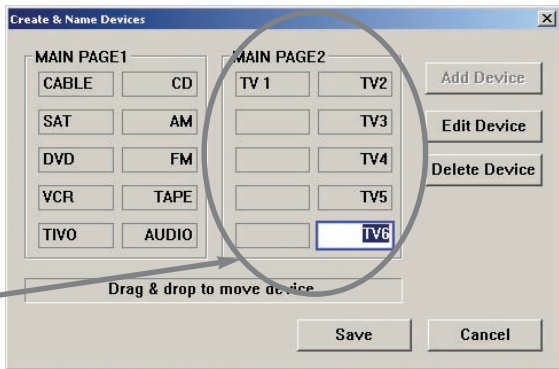
1. The RF ID# cannot be set to Code 0, the universal setting. You must use one of the fifteen unique IR Routing addresses.
2. Each identical component must receive IR commands ONLY from a dedicated Flasher affixed to its front panel or a rear panel direct IR input. The SIGNAL of the remote should be set to RF ONLY for each identical component. IR can still be utilized for other devices in your system!
3. You must note the NUMBER of the Flasher Output you have utilized for EACH of the identical components.
4. When you use a wired connection to a component's rear panel IR input, you must cut off the LED emitter, strip the two conductors, connect the silver conductor to the DATA input and the copper colored conductor to the GROUND connector of the component's rear panel IR input. Then adjust the line output of the MRF-350i for the best performance if needed.

Identical Components/Zones - Step by Step via PC

Step 1 - Create a Device for Each Component/Zone in the MX Editor Software.

In this example, six identical TVs are utilized in a Media Room array. The programmer has created devices for all of the equipment in the cabinet on Main Page 1.

On Main Page 2, he/she has created a device for each of the TVs.



Step 2 - Program One Device With IR commands.

Using either the IR Database or Learning, program one of the identical devices to operate one of TV's (leave the others powered off right now). Test all commands, correct if necessary, then click on SAVE from the FILE menu.

Step 3 - Copy The Programmed Device

In tree view, right click on the device you programmed. From the context menu that appears, select COPY.

Rename	F2
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Delete Contents...	
Move Device Up	Ctrl+Up
Move Device Down	Ctrl+Dn

Step 4 - Paste The Programmed Device

In tree view, right click on the first device that is NOT PROGRAMMED. From the context menu that appears, select PASTE.

Rename	F2
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Delete Contents...	
Move Device Up	Ctrl+Up
Move Device Down	Ctrl+Dn

Repeat this PASTE on all of the other identical device. Save your work.

Step 5 - Open the RF Setup Window

The RF Setup window opens after selecting RF Control from the Program Menu.

Program	Page	Tools	Communications
1. Create & Name Devices			Ctrl+1
2. Create Button Layouts			Ctrl+2
3. Pre-Programmed IR Database			Ctrl+3
4. Learn IR			Ctrl+4
5. Punch Through			Ctrl+5
6. Macro Programming			Ctrl+6
7. RF Control			Ctrl+7

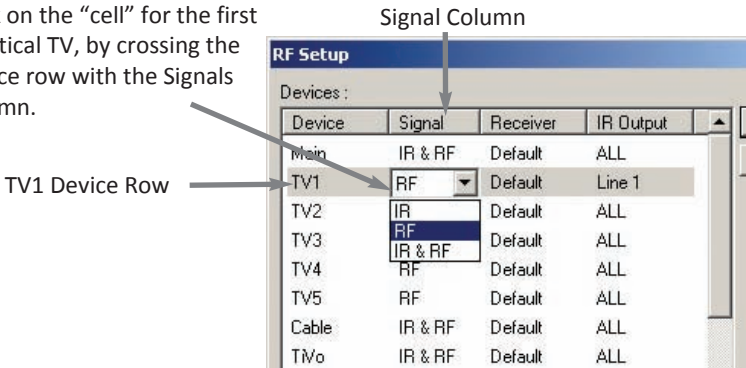
The RF Setup window is composed of a “spread sheet” of options for EACH of your devices. By looking at the Signal column, you can see that the factory default programming sets all of the devices to send both IR and RF commands. If you look at the column for Flashers, you can see that the default sends IR commands for all devices to ALL of the flashers. Both options must be changed for identical components. Additionally, if you are not using it, you may wish to disable the Front Blaster (see page 7 for directions).

Device	Signal	Receiver	IR Output
Main	IR & RF	Default	ALL
TV	IR & RF	Default	ALL
Audio	IR & RF	Default	ALL
DVD	IR & RF	Default	ALL
Satellite	IR & RF	Default	ALL
VCR	IR & RF	Default	ALL
Cable	IR & RF	Default	ALL
CD	IR & RF	Default	ALL
Aux	IR & RF	Default	ALL

Step 6 - Adjust the Signal For Each of the Identical Devices

The RF Setup window enables you to adjust the Signal output for each device individually, by clicking on the intersection of a row and a column and then selecting RF from the three options shown in the pull down list box .

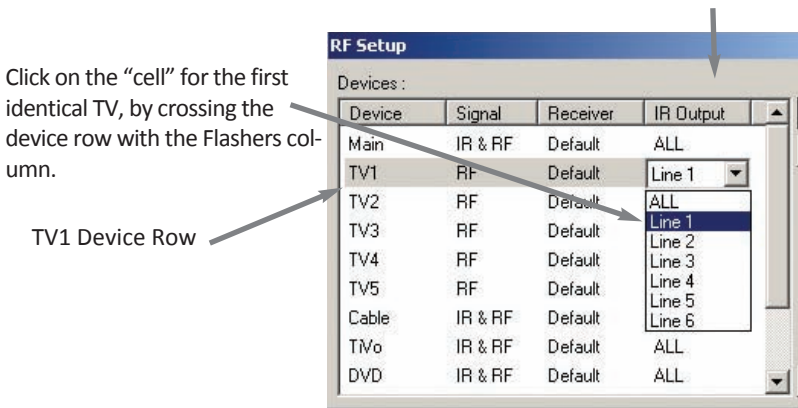
Click on the “cell” for the first identical TV, by crossing the device row with the Signals column.



Select RF from the three options shown for EACH of the identical TVs. You may leave the other components of the system set to IR & RF.

Step 7 - Adjust the Flashers For Each of the Identical Devices

The RF Setup window enables you to adjust which Flashers output by the remote control for each device individually, by clicking on the intersection of a row and a column and then selecting 1-6 from the seven options shown in the pull down list box.



Select the correct Flasher (refer to your connection notes) for EACH of the identical TVs. You may leave the other components of the system set to ALL.

Step 8 - Apply, Save, Download and Test

First click on the OK button of the RF Setup window. Next, Save your work. Finally, download to your remote. When you select TV1 with your remote, commands are only sent to it. Likewise for the rest of your identical TVs!

Programming For Multiple Equipment Locations

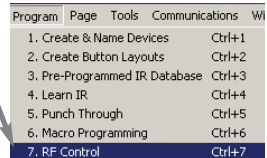
You can operate up to 15 different equipment locations, each with an MRF-350i assigned a unique Receiver ID#. You program each of your remotes to talk to the equipment locations you want by assigning each of your devices to a receiver. First, you must add and name your receivers for the locations they are placed in:

Step 1 - Open the RF Setup Window in MX Editor

The RF Setup window opens after selecting RF Control from the Program Menu.

Step 2 - Reveal the Receiver settings

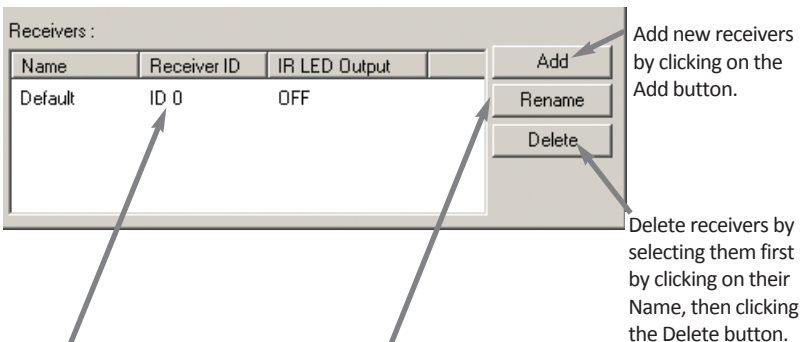
Extend the RF Setup window by clicking on the Receivers button of the RF setup window.



Program	Page	Tools	Communications	WI
1. Create & Name Devices				Ctrl+1
2. Create Button Layouts				Ctrl+2
3. Pre-Programmed IR Database				Ctrl+3
4. Learn IR				Ctrl+4
5. Punch Through				Ctrl+5
6. Macro Programming				Ctrl+6
7. RF Control				Ctrl+7

Step 3 - Add, Name and Assign Receiver ID#

Using the controls at the bottom extended portion of the RF Control window, add new receivers and rename them for the equipment location.



Receivers :

Name	Receiver ID	IR LED Output
Default	ID 0	OFF

Add
Rename
Delete

Add new receivers by clicking on the Add button.

Delete receivers by selecting them first by clicking on their Name, then clicking the Delete button.

Assign the correct Receiver ID# for each LOCATION by clicking on the desired CELL and selecting the ID# you want from the pull down list. Each LOCATION should have a unique ID#. It is ok to install multiple MRF-350i's in one location.

You may rename the Default receiver to something more descriptive by clicking on the Rename button.



Rename

Enter new name:

Downstairs

OK Cancel

Step 4 - Save and Download to your remote.

Frequently Asked Questions

Can I use flasher/emitters that I have already installed in the system to connect to the MRF-350i?

Yes, the flashers are compatible if they use 3.5mm mono mini plugs with the same polarity (Tip is data, sleeve is ground).

I'm getting inconsistent operation regardless of flasher level or position.

Some components are easily overloaded with IR from nearby flashers. Prevent IR from affecting the problem component from other flashers or the front panel blaster by setting the device to a specific IR Line Output instead of ALL, then adjust the Line Output.

I have a row of identical TVs. I've correctly set the flasher outputs using the Editor software, yet when I send a command to one of them, the TV next to the selected TV also responds. How do I stop this?

First, check the RF ID#, if the RF ID# is set to 0, IR routing does NOT work. The RF ID# from 1-9 or A-F must be set on both the remote control and the bottom of the MRF-350i, second, check that the flasher level is set to the minimum necessary, third, check that the emitter is facing the component, fourth, make sure the RFX-250i is correctly connected to the MRF-350i RF Inputs (Step 4, Page 3)

Specifications

Power Supply: 9V 300mA

IR Flasher Line Outputs: 3.5mm Mono Mini Jack

RF Frequency: 433.92 MHz

Size: 8" x 3.5" x 1.25"

1. LIMITED WARRANTY AND DISCLAIMERS

Universal Remote Control, Inc. ("URC") warrants that URC equipment purchased directly from URC or from an authorized URC dealer or distributor shall be free from defects in material and workmanship under normal usage for a period of one (1) year from the date of purchase of the product by the end-user, but no longer than thirty-six (36) months from the date of shipment of the URC equipment by URC to an authorized URC dealer or distributor, except that with respect to Total Control® whole-house products, the warranty extends for two (2) years from the date of purchase by the end-user, but no longer than forty-eight (48) months from the date of shipment of the URC equipment by URC to an authorized URC dealer or distributor.

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All the URC equipment returned for service, exchange or repair require an RGA number. To obtain an RGA number, you must complete a Return Request Form which you may obtain by calling (914) 835-4484 or contacting URC at returnrequest@universalremote.com. To obtain warranty service, end user must deliver the URC equipment, freight prepaid, in its original packaging or packaging affording adequate protection to URC at 420 Columbus Avenue, Valhalla, NY 10595. It is end user's responsibility to backup any macro programming, artwork, software or other materials that may have been programmed into the unit. It is likely that such data, software, or other materials will be lost during service and URC will not be responsible for any such damage or loss. A dated purchase receipt, bill of sale, installation contract or other verifiable proof of purchase is required. For the URC equipment support and other important information, please visit URC's website available at www.universalremote.com or call the Customer Service Center at (914) 835-4484.

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IN NO EVENT SHALL URC BE LIABLE FOR THE ACTS OR OMISSIONS OF END USER OR ANY THIRD PARTY.

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SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO END USER. THIS LIMITED WARRANTY GIVES END USER SPECIFIC LEGAL RIGHTS AND END USER MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.

End User Agreement

The terms and conditions of the End User Agreement available at www.universalremote.com/eua.php shall apply.

Regulatory Information to the user

■ 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 by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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.

■ Caution

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note: The manufacturer is not responsible for any Radio or TV interference caused by unauthorized modifications to this equipment.

Such modifications could void the user's authority to operate the equipment.

■ CE conformity Notice

Products with "CE" marking comply with the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EEC issued by the commission of the European Community.

1) EMC Directive

- Emission : EN 55022
- Immunity : EN 55024
- Power : EN-61000-3-2, 3

2) Low Voltage Directive

- Product safety : EN 60950-1

■ **Safety instruction for charging internal rechargeable battery of remote control Caution**


Use only with EN60950-1 approved as Limited power source and double insulation(□) marked power adaptor & same ratings described on the product label (9Vdc, 0.3A).

Precautions and Information Concerning Rechargeable Lithium-Ion Batteries

- ◆ If you will not be using your remote control for an extended period of time, be sure to remove the battery
- ◆ Do not attempt to disassemble, alter or apply heat to the battery.
- ◆ Use care to avoid dropping the battery or subjecting it to severe impact that could damage the case.
- ◆ The battery should not be immersed in water.
- ◆ Lithium Ion batteries are recyclable. For the address of a recycle drop-off location near you call toll Free 1-800-822-8837 or visit <http://www.rbr.com>

■ **Declaration of Conformity**

“Hereby, Ohsung Electronics co.Ltd, declares that this MRF-350i is in compliance with the Essential requirements.”

Type No.(Model No.)	MRF-350i
Manufacturer	Ohsung Electronics Co.Ltd
Batch/Serial No.	-
Power Rating	9.0V  0.3A
Frequency band	

FC CE



 **Universal Remote Control®**

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