Operation Manual for the iDim Automatic Lighting Control

The system consists of the following devices:

- Cordless Mounted Motion Sensor (CMMS)
- RF Remote Control
- In-Socket Dimmer/Switch
- RF Dimmer/Switch

All devices use a bidirectional RF Simplex (Simplex means that the device uses a two way radio that can only transmit and receive, but simultaneously) to communicate. The RF Remote Controls and CMMSs, each have a unique ID Code and will only communicate with receivers that have been paired to them. Each of the controller devices can be paired with up to 16 receivers, and in the case of the CMMS, unless it receives an acknowledgement from the receivers it is paired to, it will retransmit the command. Retransmitting the command will ensure that the receivers (switches, dimmers, sockets) respond to the command properly, especially when the lights are part of a large system. When there are many units in a system, this could create data collisions, resending the commands will ensure that even with interference or data collisions, the system will do the intended tasks.

Instructions Manual for Cordless Mounted Motion Sensor (CMMS)

The CMMS is a device powered by 2 AAA Lithium Batteries, with battery life estimate of two years or more. The CMMS communicates using two way radio signals only with units that is has been paired to, any signals transmitted from the CMMS may be seen by other devices, but will be ignored if it has not been paired to such devices.

The CMMS has three push buttons:

1. SET1: This is used to pair and erase receiving units
2. SET2: This sets the Time-Out Period
3. SEND: This button used to Send the ON or OFF Command

The SET1 button

It is used to pair or un-pair all devices from the CMMS. To pair a receiver, press SET1 for 1 second, the LED will stay lit, then Press the Pair Button on the receiver, if pairing is successful, the LED will blink twice. Do this to pair all units that you want to pair with the CMMS. If pairing is not successful, both units will not blink, in which case, you can try again, if the pairing fails on the second trial, all the units need to be reset and the pairing must be re-started.

To erase all paired devices, press and hold SET1 for approximately 5 seconds until the LED blinks. Once the CMMS is reset, the devices that were paired with it will also need to be reset by pressing and holding the PAIR button for approximately 5 seconds until the LED blinks. Unless the transmitter and receiver units are reset, they will not be able to communicate.

The SET2 button

This button is used to set the time out period before the CMMS will turn all lights that it controls automatically OFF. The time outs are indicated by the number of blinks of the LED. The time outs are the following: 1, 5, 10, 20, 30 and 60 minutes. By defaults it is set to 5 minutes, to change it, just press the SET2 button, until the desired time out is activated.

Table for SET2 Time Out Durations

LED Blinks	Time Out Duration
1	1
2	5
3	10
4	15
5	30
6	60

The SEND button

The Send button is used to manually send the ON/OFF commands to the units that are paired and it is mainly used to setup and test the system. To send the OFF signal, press the SEND button momentarily, the LED will blink once. To send the ON signal, press and hold the SEND button until it blinks twice. The commands will be sent to all paired units. Once the system is setup, this button and the others will no longer need to be used.

Battery Life

The CMMS is designed to use 2 AAA batteries, we recommend using Lithium Batteries.

Note:

- Non Lithium batteries may leak chemicals that could cause communication issues or damage to the CMMS>>>>>>
- Also, Lithium batteries have very low self-discharge rates that extends battery life to the CMMS. If lithium batteries are not available, then only use name brand alkaline batteries, which usually don't leak, however, battery life may be significantly shorter than that of Lithium batteries

Battery life for the CMMS will depend mainly on the usage and how many units are paired with it. Based on the battery type and capacity, it is estimated that the CMMS has a battery life of 2 years. iDim does not warrant the battery life. Heavy use may shorten the battery estimated life, as well as light use of the device will extend the estimated two years.

Low Battery:
When the battery begins to be too low for proper functioning, the LED will begin to blink continuously. At this point, the batteries should be replaced as quickly as possible. The CMMS will keep its settings when its batteries are replaced. Once the batteries have a low charge, the system may not perform properly because the RF strength is in direct proportion to the battery voltage.

Installation

The CMMS can be mounted on the ceiling and on the wall, and should be mounted centrally located to all the units that it controls. Do not install on any metal surface as this will limits its range and thus negatively affect it communication with devices that it controls.

The CMMS is only meant to be used indoors, away from the elements and extreme temperatures since it is not a sealed device. Installing this device other than indoors will limit its performance and may actually cause permanent damage to it.

Pairing to Receivers

Pairing: Press “SET 1” switch on the motion sensor for about 1 second the LED lights up and stays lit, now press PAIR switch on the RF Switch. If pairing is successful, both devices blink twice. Neither device retries sending data during pairing, it either happens or it does not. Once successfully paired, you can start using the system, or if you have additional units to control, you can pair the next device.

To test the system, momentarily press the “SEND” button on the motion sensor, this will send the OFF command to all paired devices. Pressing and holding the “SEND” switch for 3+ sec will send ON signal to all paired devices. If more than one motion sensor is paired with the switch, the switch has to receive OFF signal from all known motion sensors before it turns OFF. However, if the lights are OFF, these lights will turn ON on a single ON signal, clearing all OFF flags from other motion sensors.

The motion sensor will attempt to resend the command if it does not receive a response from the receiving device. It will retransmit the OFF command three times. If the power to the receiver is OFF, this receiver will not be able to respond to the OFF command, thus we limit the retransmitting of the OFF command three times to save battery life of the CMMS.

Instruction Manual for F Dimmer and RF Switch

Warning:

These devices are designed to only work with 120-240VAC 60Hz. Connecting them to any other AC source could cause unwanted results, and/or damage to the device itself and possible damage to the lighting load. They are rated for 200W load, which can be incandescent, LEDs or Linear fluorescent lighting. When using the RF Dimmer, the load needs to be dimmable as well, use of non-dimmable load with the RF Dimmer can damage the load and/or the RF Dimmer.

As a safety precaution both devices have thermal shutdown in case of an overload. If the load is too large or Output1 is shorted to the Neutral line, it will blow the non-replaceable internal fuse, safely disabling the device.

The RF Dimmer and RF Switch are almost identical, with just a few hardware changes and different software. These devices have four wires, Live In, Neutral In, Output 1 and Antenna Wire.

Operation

These devices require both Live and Neutral to operate. The load is connected the Neutral line and to Output1. For best RF performance, the antenna needs to be extended and as far from any of the AC wires as possible.

The RF Switch can be used to control any light source, including incandescent, LEDs, CFLs and Linear Fluorescent lights. The dimmer will dim any incandescent light, it can also control dimmable electronic lights such and CFLs and LEDs.

Warning: Trying to dim non-dimmable electronic lights may result in damage to those lights, to the dimmer or both.

The RF Switch has a single push button, the **PAIR** button. It is used to pair it with CMMS as well as RF Hand Held Remote Controls, and also to reset the device. Pairing needs to be initiated by the CMMS or Hand Held Remote. For Instructions on how to pair the RF Switch or Dimmer to these two devices, please read the CMMS and Hand Held Remote Paring sections.

The RF Dimmer has two buttons, the **PAIR** button and the **LOW LIM** or Low Limit button. The Pair button has the same functionality as it does in the RF Switch, which is to pair the Dimmer with RF Remotes or CMMSs.

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The PAIR button

Pairing: Press “SET 1” switch on the motion sensor for about 1 second the LED lights up and stays lit, now press PAIR switch on the RF Switch. If pairing is successful, both devices blink twice. Neither device retries sending data during pairing, it either happens or it does not. Once successfully paired, you can start using the system, or if you have additional units to control, you can pair the next device.

To test the system, momentarily press the “SEND” button on the motion sensor, this will send the OFF command to all paired devices. Pressing and holding the “SEND” switch for 3+ sec will send ON signal to all paired devices. If more than one motion sensor is paired with the switch, the switch has to receive OFF signal from all known motion sensors before it turns OFF. However, if the lights are OFF, these lights will turn ON on a single ON signal, clearing all OFF flags from other motion sensors.

The motion sensor will attempt to resend the command if it does not receive a response from the receiving device. It will retransmit the OFF command three times. If the power to the receiver is OFF, this receiver will not be able to respond to the OFF command, thus we limit the retransmitting of the OFF command three times to save battery life of the CMMS.

The LOW LIM button

This button is used to set the lowest dimming level on the RF Dimmer. Most electronic lights sources such as dimmable LEDs and CFLs cannot be dimmed all the way down as incandescent lights, thus this functionality is very useful when used to control these types of lights. To use this function, turn on the lights at maximum level, then hold the DIM button on the RF Hand Held Remote until the light(s) begin to either flicker or blink, at this moment, press briefly the INC (Increase) button on the Hand Held Remote, then press LOW LIM on the RF Dimmer. The LOW LIM level gets programmed into its memory, and is saved even when the power is turned off. To reset this setting, press and hold for 5 seconds or more the LOW LIM button on the RF Dimmer until the LED blinks.

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In-Socket Dimmer/Switch

Warning: Trying to dim non-dimmable electronic lights may result in damage to those lights, to the dimmer or both.

Note: These devices are designed to only work with 120VAC 60Hz, connecting them to any other AC source could cause unwanted results, and/or damage to the device itself maybe even to the load. The Socket Switch and Dimmer are rated for 60W incandescent or its equivalent in electronic lights.

As a safety precaution both devices have thermal shutdown in case of an overload. If the load is too large or Output1 is shorted to the Neutral line, it will blow the non-replaceable internal fuse, safely disabling the device.

The In-Socket Switch/Dimmer is a small device that screws directly into an E26/27 socket and a light can be screwed directly into it. The Socket Dimmer/Switch is designed to control any light source with a rated at 60W or less.

Advantages of the Socket Dimmer/Switch

The Socket Dimmer/Switch offers many advantages over existing solutions. One of the biggest advantages of the Socket Dimmer/Switch is the ability to add Remote Control capability to almost any light source rated at 60W or lower. The following are some of these advantages:

- Convert any socket into in a remote controlled light
- Be able to automatically control any socket when used together with a CMMS
- The ability to dim almost any dimmable light source, especially some of the low power dimmable LEDs
- Being able to control many lights with just one Remote Control
- When used in night stand, being able to turn on the lights at a low level from the comfort of your bed

Operation

The RF Socket Switch can be used to control any light source, including incandescent, LEDs, CFLs and Linear Fluorescent lights. **The Socket Dimmer** will dim any incandescent light, however, electronic lights such and CFLs and LEDs, need to be dimmable, if it does not specifically states that it is dimmable, please don't dim it. See previous section on how to word regarding dimmable lights.

The RF Socket Switch has a single push button, the PAIR button. It is used to pair it with CMMS as well as RF Hand Held Remote Controls, and also to erase all the stored codes from

those transmitters. The pairing needs to be initiated by the CMMS or Hand Held Remote. For Instructions on how to pair these two devices, please read the CMMS and Hand Held Remote Pairing Sections.

The RF Dimmer has two buttons, the PAIR button and the LOW LIM or Low Limit button. The Pair button has the same functionality as it does in the RF Switch. The LOW LIM button is used to set the lowest dimming level for the RF Dimmer. Some if not most electronic lights sources such as dimmable LEDs and CFLs cannot be dimmed all the way as incandescent lights, thus this functionality is very useful when used to control these types of lights. To use this function, turn on the lights at maximum level, then hold the DIM button on the RF Hand Held Remote until the light(s) begin to either flicker or blink, at this moment, press briefly the INC (Increase) button on the Hand Held Remote, then press LOW LIM on the RF Dimmer. To reset this setting, press and hold for 5 seconds or more the LOW LIM button on the RF Dimmer until the LED blinks. The setting is kept in memory even if power is removed from the device.

If you want the full dimming range, basically from Off to Maximum, simply reset the LOW LIM by holding it for 5 seconds until the LED blinks.

Hand Held RF Remote Control (HHR)

The RF Hand Held Remote Control is a device that can be used to control the RF Switch/Dimmer as well as the RF Socket/Dimmer. This device is powered by a single CR2032 Lithium Coin Cell Battery, and is available in two versions: one that controls Switches and one that controls Dimmers.

Each HHR has a unique ID Code, which is used to be able to communicate only with the units that the HHR is paired to. All other devices will ignore any commands sent by the HHR.

Operation

The HHR for the RF Switch and RF Socket Switch only has two buttons: ON and OFF.
The operation of this remote is very simple: ON turns on the all the lights that are paired to it and OFF turns them OFF.

The Hand Held Remote for the RF Socket Dimmer and the RF Dimmer, has four buttons: INC, PRESET, DEC and OFF.

INC (Increase): This button will turn on the lights at the previous level if the lights are off and will slowly increase them until they are the maximum level.

PRESET: This button will turn the lights ON (if lights were off) to the last state/lighting level. If this button is pressed again, the lighting level will go to the next level and continue to cycle through the lighting levels until it goes back to the minimum level and cycles again.

DEC(Decrease): This button will turn the lights ON (if lights were off) to the last used lighting level and if you hold it, it will slowly decrease the lights until they are the minimum level set by the LOW LIM switch. .

OFF: This button will turn OFF any light that is paired to the remote.

FCC Information

NOTE: 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 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.
Caution: Changes or modifications not expressly approved iDim LLC could void the user's authority to operate this equipment.

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