RC4*Magic*

Wireless DMX and Wireless Dimming System

User Manual

RC4 Wireless

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Wireless DMX and Wireless Dimming System

User Manual R1.3 May-2007

Disclaimers

WIRING AND INSTALLATION OF BATTERIES, DIMMERS, AND LOADS MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.

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RC4 Wireless accepts no liability for direct, indirect, or consequential damages resulting from the use of any RC4 Wireless product or group of products. RC4 Wireless does not guarantee the suitability of any product for any purpose; user assumes all risk. RC4 dimmers must be used strictly in accordance with manufacturer's instructions and cannot be used for unsupervised operation. RC4 Wireless products must be installed and operated only by qualified technicians, as outlined in the manufacturer's documentation, and should be inspected and tested on a regular basis to ensure proper operation.

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RC4 Wireless receivers should not be used to control pyrotechnics of any kind. A brief output surge on dimmer outputs during power-up could trigger these devices. RC4 Wireless accepts no liability if RC4 equipment is used for this or any other purpose.

Product Safety

RC4 receiver/dimmers are capable of controlling very large currents at up to 30VDC (typically 12V or 24V). Dimmers should not be allowed to operate at dangerous temperatures. Appropriately sized wire and connectors must be used, along with suitable ventilation and external fuses rated for the load being operated. Additional information is provided in this manual.

RC4 Wireless devices and equipment are operated at the user's own risk and RC4 Wireless accepts no liability, either direct or consequential, as a result of using this equipment.


RC4Magic
DMX2dim
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RC4*Magic – An Overview*

DMX Cable Replacement / DMX Distribution

The DMXtx and DMXrx are simple plug-n-play devices that replace DMX data cables in lighting control applications. They work reliably to 200 feet or more inside theatres and other performance spaces. (Range can be much greater in outdoor rural environments with line-of-sight between units, but this is rarely how RC4Magic devices are used.)

Any number of receivers can be used in an RC4Magic system. Thus, an RC4Magic system can take the place of splitters and distribution boxes, and provides a superior level of electrical isolation.

The DMXtx decodes the incoming DMX universe, encodes and encrypts it, and broadcasts it using Direct Sequence Spread Spectrum (DSSS) digital radio. Unlike wired DMX, the broadcast signal includes error checking and correction codes, and is not affected by minor interruptions and interference. DMX channels that are changing are allocated more bandwidth than channels that are not changing, but all channels are broadcast with appropriate speed, redundancy and accuracy.

The DMXrx decodes the rf signal from the DMXtx, rebuilds the DMX universe, and regenerates a standard DMX signal.

DMX in and out are compliant with USITT DMX512/1990 dimmer level data. Any number of DMX channels are accepted by the transmitter over a wide timing range as required by the standard. A full universe of 512 channels is always output by the receiver with a refresh rate of approximately 42 frames per second.

The RC4Magic system ignores DMX messages with start codes other than zero. Thus, it can only be used for dimmer data. It will not work with non-zero packets carrying proprietary data or RDM packets. (RDM functionality is expected to be added in future firmware updates.)

Wireless Low-Voltage Dimming

The DMX2dim receiver-dimmer decodes the rf signal from the DMXtx, rebuilds the DMX universe, and sends user-assigned DMX channel levels to two build-in low-voltage dimmers. Channel assignments are made with two recessed pushbuttons that are operated with a bent paper-clip or small tool. In addition to DMX channel, each dimmer can also be assigned either a linear or square-law dimmer curve.

Any number of DMX2dim receivers can be used in an RC4Magic system.

System ID Numbers

Every RC4Magic device is factory programmed with a unique system ID, or SYS number. This number is indicated on the outside of each unit. Only RC4Magic units with the same SYS number will communicate with each other.

To add devices to your RC4Magic system, you must specify the correct SYS number when ordering. You cannot borrow units from other RC4Magic systems because they will not have the same SYS number. It is not possible for users to reprogram the SYS numbers. (Limited selection of SYS numbers is expected to be added in future firmware updates.)

Power-Up Sequence and Radio Channel Assignments

When the RC4Magic DMXtx transmitter first powers up, it scans the 2.4Ghz radio band, which is quite large and supports many radio channels, looking for the frequency with the lowest existing power levels. It then sets itself to operate on that frequency and begins transmitting encoded DMX packets. When this power-up process is complete, and signals are being broadcast, the RF Active led blinks steadily.

When an RC4Magic DMXrx or DMX2dim receiver first powers up, it scans the 2.4GHz band looking for encoded signals from an RC4Magic transmitter with a matching SYS number. When it finds the transmitter and receives valid data, the RF Con led blinks steadily (and faster than the RF Active led on the associated transmitter).

If a receiver does not receive valid data from the transmitter for 10 seconds, the start-up scan procedure repeats. Thus, if the transmitter has been turned off and back on (or there has been a power failure) and it is now transmitting on a different radio frequency, the receiver will reconnect after a brief period of disconnection.

Multiple RC4Magic systems can be operated at the same time in the same space, and each system will provide a separate wireless DMX universe. In a space with little or no other radio activity, there is enough space in the 2.4GHz band to support 10 or more RC4Magic systems, each with any number of receivers and/or dimmers. Even in more crowded environments there will usually be enough bandwidth for 3 or more separate RC4Magic systems to operate simultaneously.

Advanced Settings

Inside each RC4Magic DMXtx and DMXrx there are 4 dipswitches. These switches are normally left in their default positions. There are some cases, however, where changing settings may be necessary. For example, one of the switches in the DMXtx selects rf output power to comply with regulations in either North America or Europe/Japan.

The switch settings in the DMXtx transmitter are sent to all system receivers via radio, allowing global setup changes to all system components, including DMX2dim receiver-dimmers which do not have internal dipswitches. For example, when rf power is adjusted at the receiver, an identical adjustment takes place at all receivers automatically (this is important, because RC4Magic data is bidirectional).

For additional information see *Advanced Settings: Internal Dipswitches* later in this manual.

RC4*Magic DMXtx Transmitter Setup*

Connections

To start using an RC4Magic DMXtx transmitter, simply connect your DMX signal and the supplied power supply.

The DMX input is compliant with USITT DMX512/1990(4us), with no internal termination. If you are putting the DMXtx at the end of a long DMX cable, a terminator plug should be inserted in the DMX output jack. For short cable runs, termination is often unnecessary.

Power should be 8V – 12VDC and can come from the power supply provided (wall transformer) or batteries. A small pack of 6 AA or AAA batteries can be used for portable operation with, for example, a battery powered DMXter, Pocket Console DMX, or other portable DMX signal source. The power inlet is a standard 2.1mm receptacle, center-positive.

The DMX output jack is ideal for inserting the DMXtx in a wired DMX network. In many cases, it can be used right at the output of your lighting console or other controller, before your DMX signal continues to other devices in your system.

Once everything is connected, position the red circle RF Hotspot so it is facing the receivers in your system, and position the receivers to be facing the transmitter. If this is difficult, face the RF Hotspots towards a common reflective surface, like a wall, ceiling, or open floor area.

Line-of-sight is NOT required for RC4Magic units, but dense objects between RC4Magic units – like concrete walls – will attenuate the radio signal and reduce the available range.

LED Indicators

Four LED indicators assist with troubleshooting. On power-up, a chase or 'light show' indicates that all led are functional.

The **DMX Input** indicator is on when valid DMX data is present at the DMX input. It goes out after 1 second if valid data is no longer present. *In normal operation with DMX data present, this led should be solidly on.*

The **Data Transmit** indicator appears to shimmer or flicker rapidly. It indicates that data is being sent to the radio transmitter. *In normal operation this led should appear 'fluttery'.*

The **RF Active** indicator will light continuously while radio channels are being scanned. When a clear channel is located and transmission has begun, this indicator will blink steadily. *In normal operation, this led should be blinking.*

The **COP** indicator – Computer Operating Properly – steadily blinks with a short duty cycle (more off time than on time) to show that the sophisticated software inside the transmitter is running properly. *In normal operation, this led should be blinking.*

RC4*Magic DMXrx Receiver Setup*

Any number of DMXrx receivers can be used in an RC4Magic system.

Connections

To start using an RC4Magic DMXrx receiver, simply connect your DMX devices, and the supplied power supply.

The DMX output is compliant with USITT DMX512/1990. If you are putting the DMXrx at the beginning of a long DMX cable run, a terminator plug should be inserted in the end, just as you would do with any DMX network. For short cable runs, termination is often unnecessary.

Remember: The DMXrx is a DMX data source and acts as the controller in the DMX network it is connected to.

Power should be 8V – 12VDC and can come from the power supply provided (wall transformer) or batteries. A small pack of 6 AA or AAA batteries, or a 12V battery, can be used for portable operation. The power inlet is a standard 2.1mm receptacle, center-positive.

Once everything is connected, position the red circle RF Hotspot so it is facing the transmitter in your system. If this is difficult, face the RF Hotspots of your transmitter and receivers towards a common reflective surface, like a wall, ceiling, or open floor area.

Line-of-sight is NOT required for RC4Magic, but dense objects between RC4Magic units – like concrete walls – will attenuate the radio signal and reduce the available range. It can take 10 seconds or more for the DMXrx to connect to the DMXtx transmitter and begin outputting useful DMX data, but it will often connect much faster. (It will take longer if new dipswitch settings have been sent from the transmitter.)

LED Indicators

Four LED indicators assist with troubleshooting. On power-up, a chase or 'light show' indicates that all led are functional.

The **DMX Output** indicator is on when DMX data is being generated at the output. *In normal operation, this led is continuously on.*

The **Data Receive** indicator appears to shimmer or flicker rapidly. It indicates that valid data on the correct SYS number is being received by radio. *When all DMX levels are steady (not changing), this led may appear to blink; when levels are changing, it will appear 'fluttery'.*

The **RF Connect** indicator will light continuously while radio channels are being scanned. When a transmitter with the correct SYS number is found, the radio link is established and this indicator will blink. *In normal operation, this led should be blinking.*

The **COP** indicator – Computer Operating Properly – steadily blinks with a short duty cycle (more off time than on time) to show that the sophisticated software inside the receiver is running properly. *In normal operation, this led should be blinking.*

RC4*Magic DMX2dim Receiver-Dimmer Setup*

The DMX2dim is a completely standalone unit that includes a built-in RC4Magic radio receiver and 2 low-voltage pulse-width-modulation dimmers.

Any number of DMX2dim receiver-dimmers can be used in an RC4Magic system.

The radio operates identically to the DMXrx unit. Line-of-sight is NOT required for RC4Magic, but dense objects between RC4Magic units – like concrete walls – will attenuate the radio signal and reduce the available range. It can take 10 seconds or more for the DMX2dim to connect to the DMXtx and begin powering the dimmer outputs, but it will often connect much faster. (It will take longer if new dipswitch settings have been sent from the transmitter.)

Connections

Small screw terminals are provided for connection of the power supply (+/-DC IN) and load devices (+/-DimA and +/-DimB). **The power supply operates both the internal electronics and the connected loads and must be powerful enough to run the load without significant voltage drop.** The dimmers use high-frequency pulse-width-modulation, switching on the negative side of the circuit.

The most typical power supply is a 12V rechargeable sealed lead-acid battery, sometimes called a "gel cell". **The maximum voltage for the DMX2dim is 30V (24V nominal).** An internal self-resetting circuit breaker protects the microcontroller, radio, and dimmer electronics. A user-accessible blade-type automotive fuse (Bussmann ATC series) protects the connected wiring and loads and is in the positive side of the circuit. **The maximum fuse size is 15A (ATC-15), and should be the fast-blow type. Always use the smallest possible fuse value for the connected load, and be sure the wire gauge you are using is suitable for the fuse rating chosen.**

The internal circuitry of the DMX2dim requires 5V to operate efficiently. It will run at voltages as low as 3.5V, but this is not recommended because the dimmer circuitry may overheat.

Once everything is connected, position the red circle RF Hotspot so it is facing the DMXtx transmitter in your system. If this is difficult, face the RF Hotspots of your transmitter and receivers towards a common reflective surface, like a wall, ceiling, or open floor area.

WIRING AND INSTALLATION OF BATTERIES, DIMMERS, AND LOADS MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES. Low voltage circuitry CAN be dangerous. RC4 Wireless devices and equipment are operated at the user's own risk and RC4 Wireless accepts no liability, either direct or consequential, as a result of using this equipment.

Assigning DMX Channels to DMX2dim Dimmers

Assigning DMX channels and dimmer curves is easy. The process requires a functioning DMXtx transmitter and DMX2dim dimmer, and a DMX data source. It is easiest if you set everything up together, near your DMX console. If you are not using a console, useful alternatives include a DMXter, a Pocket Console DMX, or any similar DMX tester or controller capable of outputting DMX on a specific channel.

Follow these simple steps:

1. Apply power to your DMXtx and DMX2dim. Wait for the scanning process to complete. The RF Active indicator on the transmitter, and the RF Con indicator on the receiver, should both be blinking. (The indicator on the receiver blinks faster than the indicator on the transmitter.)

2. At your DMX source, set all DMX channels to zero.

3. Bring up the level of a single channel you wish to assign to a DMX2dim dimmer. To assign a linear dimming curve (ideal for incandescent and halogen fixtures, like MR16s and MR11s), set the channel at 50% (a level between 34% and 66%). To assign an inverse-square-law dimming curve (ideal for LEDs), set the channel to 100% (a level higher than 66%).

4. On the DMX2dim, use the end of a bent paper clip or other small tool to press the Set DimA or Set DimB recessed button. The selected dimmer will be assigned to the lowest non-zero DMX channel currently being broadcast from the associated DMXtx Wireless Transmitter.

The unit retains channel assignments in non-volatile memory, even when power is removed, until the assignment process is repeated.

LED Indicators

Five LED indicators on the narrow front side of the DMX2dim assist with troubleshooting.

The **DimA** and **DimB** indicators are directly connected to the dimmer outputs, after the power fuse. Thus, a blown fuse will disable these indicators. These indicators will appear to dim more smoothly when using the inverse-square-law dimming curve – this is because leds have a square-law response.

The **RF Con** (connect) indicator will light continuously while radio channels are being scanned. When a transmitter with the correct SYS number is found, the radio link is established and this indicator will blink. *In normal operation this led should be blinking.*

The **Data Receive** indicator appears to shimmer or flicker rapidly. It indicates that valid data on the correct SYS number is being received. *When all DMX levels are steady (not changing), this led may appear to blink; when levels are changing, it will appear 'fluttery'.*

The **COP** indicator – Computer Operating Properly – steadily blinks with a short duty cycle (more off time than on time) to show that the sophisticated software inside the receiver is running properly. *In normal operation this led should be blinking.*

Optimizing Radio Performance

Under ideal circumstances, the range of RC4Magic radios exceeds 300 feet. Our published specification is 200 feet to better represent common situations.

Range is generally affected by:

1. The distance between radios.
2. The orientation of the antennas (RF Hotspots) relative to each other.
3. The number of obstructions between radios.
4. The density of obstructions between radios.
5. Other activity in the 2.4GHz radio band, including leaky microwave ovens.
6. General electrical interference.

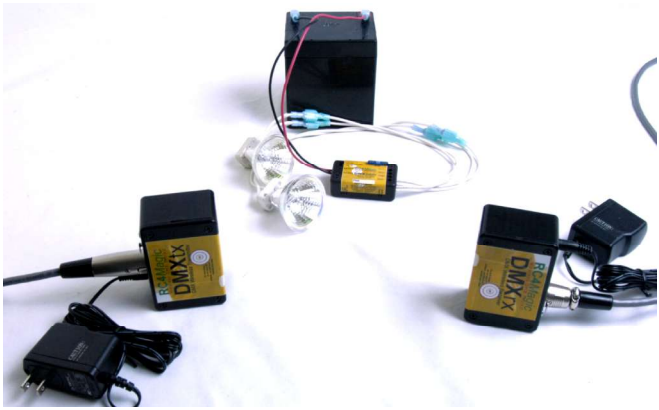
Each piece of the RC4Magic system has a radio antenna inside which must not be obstructed with metal or other dense objects. The position of the antenna is indicated with red circles on the device label – this is called the RF Hotspot.

For best performance, face RF Hotspots towards each other. For a simple wireless DMX link, for example, face the RF Hotspot of the DMXtx towards the RF Hotspot of the DMXrx.

Sometimes there are numerous obstructions between the transmitter and receivers, or there are several receivers positioned in various locations around a room or performance space. In this case, aim all the RF Hotspots toward a common reflective surface like a ceiling or wall.

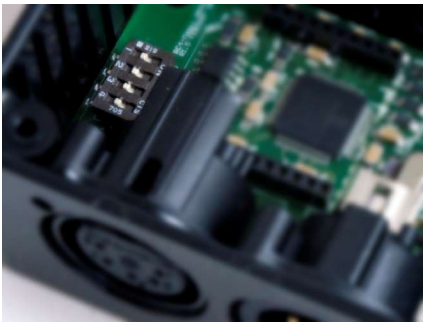
The high frequency radio signals used by the RC4Magic system tend to reflect more than penetrate. This means that more of the signal will bounce around a room, rather than radiate through the walls to an adjacent space. This helps improve performance between receivers in a performance space, even when line-of-sight between devices is not possible.

Even so, some of the radio signal does penetrate walls and other objects. Provided the transmitter is not too far away, you can successfully place receivers inside theatrical props and practicals, behind flats, and under risers. In these cases, try to place the transmitter as close as possible to these pieces.



Advanced Settings: Internal Dipswitches

The DMXtx and DMXrx each have 4 internal dipswitches. They can be accessed by removing 4 screws in the corners of the top cover. These screws may be under the product label, requiring the label to be cut away or partially peeled back for access.



DMXtx Dipswitches

Firmware versions up to and including 1.002:
Dipswitches not implemented.

Firmware version 1.003:
Dipswitches 1 – 3 not implemented.
Dipswitch 4 OFF: North American rf configuration (18dBm output)
Dipswitch 4 ON: Europe/Japan rf configuration (10dBm output)

Make changes with the power removed. Settings are not changed until after the first power cycle.

Transmitter dipswitch settings are transmitted to all receivers. The first time a receiver is powered on after a transmitter dipswitch change, the receiver will take longer to start up and will indicate a different led 'lightshow'. This is because the receiver must also accommodate and save the new settings.

DMXrx Dipswitches

Firmware versions up to and including 1.000:
Dipswitches not implemented.

Firmware version 1.001:
Dipswitches 2 – 4 not implemented.
Dipswitch 1 OFF: DMX output data rate 42 packets per second.
Dipswitch 1 ON: DMX output data rate 30 packets per second.

If changed with power on, data rate change is immediate (power cycling is not required).

Some DMX devices are unable to process DMX data at the maximum data rate specified in USITT DMX512/1990. When using such equipment, set dipswitch 1 ON to reduce the data rate from the RC4Magic receiver.

Troubleshooting and Frequently Asked Questions

General

What simple actions can I try if I am having performance difficulties with my RC4Magic?

First, turn your DMXtx off and on. This will force it to rescan the 2.4GHz radio band and find a new radio channel. Receivers that are already running will take approximately 10 seconds to respond to the loss of data and find the transmitter on the new channel.

The most common cause of problems with DMX2dim dimmers (and all other wireless dimmers on the market) is weak or dead batteries, or batteries that are too small to reliably operate the intended load and the radio electronics. Replace, recharge, or upgrade your batteries to resolve the issue.

Test your battery and load by directly connecting them together. If they don't work on their own, or they don't last very long, they will not work with the dimmer either.

Radio Performance

What is the maximum range of the RC4Magic radio link?

Under ideal circumstance, range exceeds 300 feet. More typically, it is around 200 feet. Depending on your situation, range could be less. Please see the *Optimizing Radio Performance* section of this manual.

Is it possible to extend the range of the RC4Magic radio link?

Range can be improved by reducing obstructions, aiming the RF Hotspots differently, eliminating sources of electrical interference, and trying other frequencies (by turning the DMXtx off and on).

It is also possible to use high-gain external antennas with the DMXtx and DMXrx. This requires returning the units to the factory for modifications at nominal additional cost.

A high-gain version of the DMXtx with a whip antenna is now offered as a regular item; note, however, that most users and situations do not require it.

How common are radio interference problems?

Not common at all. We give this issue a fair amount of attention because users fear radio problems and are very concerned about them. In fact, RC4Magic radios are among the best available and rarely suffer problems. Their ability to automatically seek out and use unoccupied frequencies virtually eliminate radio related issues.

How can I tell if a performance problem is related to radio interference or not?

Watch the LED indicators on the RC4Magic units. On the DXMtx, be sure the RF Active indicator is slowly blinking, which means it has found a frequency and is transmitting. On the DMXrx, first see that the RF Connect indicator is blinking. If it is, then the receiver has found the transmitter. Now check the Data Receive indicator. It should be continuously shimmering with high-speed data. If it occasionally drops out or appears dim, the signal strength is poor. In this case, try aiming the RF Hotspot differently and/or reducing the distance between the transmitter and receiver.

You can also monitor radio activity in the 2.4GHz rf band with external test equipment. The low-cost Wi-Spy spectrum analyzer from www.metageek.net is particularly useful.

What causes radio interference?

Radio interference is caused by other radio signals on or near the same frequency. Sources include other radio devices (including WiFi, Bluetooth, and Zigbee devices) and leaky microwave ovens.

Many radio devices (including WiFi, Bluetooth, and Zigbee) only transmit when they need to. Thus, it is possible that the RC4Magic could find a free channel that is not actually free all the time – intermittent interference could occur when the other device occasionally transmits. In this case, turn the RC4Magic DMXtx off and on, forcing it to find a new channel. Ideally, turn it on when the other device is transmitting.

Very few rf devices are as accommodating as RC4Magic – most are user-configured for a particular rf channel and stay there. Thus, it is often best to turn on your RC4Magic system last, after all other systems are up and running.

Mounting and Positioning

Can I put an RC4Magic receiver inside a metal prop, practical, or wagon?

If a radio receiver is completely surrounded by metal, particularly grounded metal, it is unlikely that it will work at all. This is why our product cases are made of plastic – so radio signals will go through to the antenna inside. Some signal will usually get through openings and wire mesh. Note, however, that mesh does not pass radio at all frequencies – this is part of the reason why a glass and mesh window can be used in the door of a microwave oven. In general, the more open the mesh, the better it will pass the RC4Magic radio signal.

If possible, build your set pieces out of fibreglass, wood, and plastic. These materials are more transparent to radio than metal is. Minimize the use of metal. Metal framing is fine, but a non-metallic covering over the frame is preferred.

How critical is it to point the RF Hotspots towards each other?

At short distances it is usually not critical at all. When trying to operate at the greatest possible distance, it is more important. Even so, performance is sometimes better when all Hotspots face up, rather than towards each other.

DMX2dim Dimmer Drop-Outs

One of the dimmers on a DMX2dim is occasionally blinking or flickering. The other is fine. Why?

This is most likely caused by loose wiring, faulty or poorly mated connectors, or broken solder joints. If everything outside the dimmer seems fine, take the dimmer apart and check the screw terminals and solder joints on the DMX2dim circuit board – the connector pins and solder joints can break under heavy use, particularly after over-tightening.

Some users may choose to remove the original screw terminals and solder 14- or 16-gauge wires directly to the circuit board. Done neatly and carefully, this will not void your product warranty.

Both of the dimmers on a DMX2dim occasionally go off by themselves at the same time, and stay off for quite a long time. Why?

The radio receiver is resetting, and then takes up to 10 seconds to reconnect to the DMXtx transmitter. This is usually a power-supply problem, but could also be a radio range or interference problem, or a DMX fault before the DMXtx transmitter.

First, be sure the DMX data source at the DMXtx transmitter is operating properly. If DMX input data disappears for more than 1 second, all levels will drop to zero and are broadcast this way to connected receivers.

Next, confirm that the RF Con indicator on the DMX2dim is blinking, and the Data indicator is continuously shimmering with high-speed data. If not, then you may be beyond the useable radio range.

Be sure the battery is in good condition, is fully charged (if rechargeable), and is large enough to power the connected load. Measure the battery voltage with a volt-meter while you bring up the dimmer channels. If the voltage drops substantially under load, the battery is inadequate for the task at hand.

RC4*Magic Specifications*

RC4Magic RF Technology

Indoor/Urban Range:	Up to 300' (100 m), 200' (66 m) typical
Outdoor Line-of-Sight Range:	Up to 1 mile (1.6 km)
Transmit Power Output:	Up to 100 mW (20 dBm) EIRP [1]
Receiver Sensitivity:	-100dBm
Operating Frequency:	2.4 GHz band
Agency Approvals:	United States FCC OUR-XBEEPRO Canada IC 4214A XBEEPRO Europe CE ETSI [1] Japan 005NYCA0378 [1]

[1] RC4Magic radio modules must be configured for 10dBm output in Europe, Japan and some other jurisdictions. Output power is configurable with an internal dipswitch in the DMXtx transmitter.

RC4Magic DMX Protocol Compliance

DMX inputs and outputs comply with USITT DMX512/1990(4us).
Packets with non-zero start codes are ignored and not transmitted. Thus, RC4Magic cannot be used to transfer proprietary data or RDM packets. (RDM functionality is expected to be added in future firmware updates.)

DMXtx Transmitter

RF Specifications as indicated above. Hidden internal antenna.

Dimensions:	3.4" x 2.2" x 1.6" nominal (approx. 86mm x 56mm x 40mm)
DMX Input:	meets USITT DMX512/1990(4us) with 1-second data hold after dropout NO INTERNAL DMX TERMINATION
DMX Output:	straight-thru hardware connection from DMX input
Power Input:	8VDC – 12VDC, 500mA standard 2.1mm power receptacle, center positive

DMXrx Receiver

RF Specifications as indicated above. Hidden internal antenna.
Any number of DMXrx receivers may be used in a system.

Dimensions:	3.4" x 2.2" x 1.6" nominal (approx. 86mm x 56mm x 40mm)
DMX Output:	meets USITT DMX512/1990 Always outputs 512 data slots per frame, 42 frames per second, regardless of DMX format at DMXtx input
Power Input:	8VDC – 12VDC, 500mA standard 2.1mm power receptacle, center positive

DMX2dim Receiver-Dimmer

RF Specifications as indicated above. Hidden internal antenna.
Any number of DMX2dim receiver-dimmers may be used in a system.

Dimensions:	2.4" x 1.4" x 0.8" nominal (approx. 61mm x 36mm x 21mm)
Power Input:	6VDC – 30VDC (12V typical), 50mA minimum, screw terminal connection
Dimmer Outputs:	2 individual dimmer channels, each with independently assignable DMX channel and dimmer curve, screw terminal connections
Dimmer Technology:	MOSFET PWM (pulse-width-modulation), 24KHz carrier, 1024 steps maximum output power per channel 10A maximum total device output power 15A

MAXIMUM TOTAL OUTPUT POWER IS LIMITED BY CIRCUIT BOARD TRACE SIZE. User changeable Bussmann ATC load fuse should not exceed 15A and should be fast-blow type.

RC4Magic technical specifications are subject to change without notice.

Warranty Policy

Seven-Day Easy Return

You may return any RC4 Wireless Products delivered to you new within the last seven days for a refund, *excluding custom engineered and/or custom manufactured items*. We regret that we cannot refund the shipping charges, or pay for shipping the item back to us. We will not hassle you with mountains of paperwork, but we do require that items be returned *unused in the original packaging*.

Thirty-Day Replacement or Fast-Turn Service Guarantee

If RC4 Wireless technology delivered new to you during the last thirty days fails to perform to published specifications while being used for its intended application, we will ship a replacement unit to you and arrange for pickup of your original unit. We will pay all shipping charges using your choice of next-day carrier (typically Federal Express or UPS). You will usually have a functioning unit within two business days (including Saturday where delivery services are available) at no charge to you. If a replacement unit is not in stock, we will service your unit in our shop with 48 hour turnaround.

One Year Parts and Labor General Guarantee

If RC4 Wireless technology you have received during the last twelve months fails to perform to published specifications while being used for its intended application, we will service it in our own shop with no charge to you for parts or labor. You pay the shipping to return the unit to us. We pay the shipping to send it back to you fully repaired. Service work is guaranteed for thirty days, during which our fast-turn policy (with free shipping) applies.

Out of Warranty Service Policy

If your RC4 Wireless technology requires servicing after the first year, our regular shop rate will apply and parts will be billed at nominal costs. You pay the shipping charges both ways. Service work is guaranteed for thirty days, during which our fast-turn policy (with free shipping) applies.

Disclaimers We Must Make

All repair periods are subject to parts availability. For critical projects, we recommend purchasing spare equipment. You cannot use our equipment in a show, then try to return it for a refund: our warranty is not a free rental program. The above warranty policies will not apply if equipment has been abused, misused, or mishandled. We will not be responsible for physical damage, failures caused by incorrect wiring, electrical overloading and/or over-voltage, overheating caused by insufficient ventilation, or damage caused by insufficient packaging during return shipping. We will not be responsible for consequential damages to other equipment, or for lost revenues. We do not guarantee our equipment to be suitable for applications other than those discussed in our application notes and brochures. Published power output ratings of some items are accurate only at specific voltages, duty-cycles, and operating temperatures. Some items may require additional cooling and/or protection circuitry to operate reliably with certain loads. Call RC4 Wireless for advice if you are unsure about any operating characteristics.

If your account payments are not up to date, we reserve the right to withhold service until payment is received.

RC4 Wireless pricing, warranty terms, and technical specifications are subject to change without notice.

We want you to be a happy and satisfied customer. Please help us serve you better by letting us know exactly what you need. Thank You!

How to Reach Us

Physical Address

RC4 Wireless is a registered trade-name of Soundsculpture Incorporated

Soundsculpture Incorporated (Toronto)
88 St. George St.
(Near Islington & Evans)
Etobicoke ON
Canada M8Z 3Y7

Soundsculpture Incorporated (Buffalo)
60 Industrial Parkway, #580
Cheektowaga NY
USA 14227
(warehousing only at this location)

Telephone / Fax

Toronto Office 416-259-8499
Emergency Cellular 416-720-5802
New York 646-808-0402 (SkypeIn)
Toll Free Office 1-866-258-4577 (North America only)
Toll Free Fax 1-866-237-6641 (North America only)

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RC4 Wireless