FLEETWOOD

Electronic Interactivity— the Ultimate feedback mechanism.

USER MANUAL

Reply® *Mini*

Applies To:

- **Keypad, Model CRS5000**

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A	**01/07/2008**	**Original**
B	**02/07/2008**	**Update FCC info**
C	**04/04/2008**	**Updated EU Compliance**
D	**04/29/2009**	**General Update**

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1.0 Reply® Systems

1.1 Introduction

This product consists of wireless (RF) keypads and a Base Station. The system is generally used to record answers to multiple choice questions as part of a classroom presentation, decision-making session, focus group, or videoconference. It offers methods for collecting and immediately reporting group response data. Reply® systems have been available for several years and have been sold in over 50 countries worldwide.

Reply® is a cordless handheld response system that provides numeric data interaction for meeting or learning environments. Keypad responses are transmitted to the Base Station, which processes and delivers the information to the attached computer.

Application software operates the Base Station and controls its associated Keypads. While the system's hardware may offer powerful features, application software is the essential ingredient in applying the technology to generate useful results.

1.2 Applications/Advantages

Many meeting and learning venues require a mechanism for audience interaction. Moreover, many seek a method of automating surveys and grading activities. Reply® meets the need for such an interactive tool, bringing everyone together and instantly allowing measurement of interest, understanding, and involvement.

- Audience members can participate from their seat and personally indicate their opinions, ideas, and knowledge.
- Results of the interaction are immediately available, and their display offers presenters a valuable insight into the opinion and comprehension level of audience members.
- System setup typically involves handing a Keypad to every participant and connecting the Base Station to a computer. No Keypad wires or cabling need be installed prior to use. This allows fast, reliable, safe, and attractive installation.

1.3 RF Communication

The Keypads communicate with the Base Station using wireless Radio Frequency (RF) technologies. The patented proprietary design has been rigorously tested and optimized for reliability and collection speed.

1.4 Technology Leadership, Patent Protection, and Certification

Fleetwood Group, Inc. maintains a leadership position in wireless development of audience response solutions. United States Patents 5,093,786, Re. 35,449 and other patents reflect the commitment to wireless technology leadership and the unique position that Fleetwood Group, Inc. brings to the market. Additional United States and foreign patents are pending.

Fleetwood Group, Inc. also maintains a commitment to complying with the United States Federal Communications Commission and various foreign regulatory requirements. Others are continuously being added. Please contact your reseller or Fleetwood Group, Inc. for more information on certification.

1.5 Other Fleetwood Group, Inc. Products

Fleetwood Group, Inc. is a manufacturer of quality electronic products that are sold through a worldwide reseller network. All Reply® products are designed and manufactured in Holland, Michigan.

For more information on these products or our customization capability, please visit our website at www.replysystems.com.

2.0 Principles of Operation

This Reply® System uses the latest in 2.4 GHz wireless technology to turn any meeting into a dynamic interactive experience for each participant without having to deal with a nightmare of cables and connectors.

Fleetwood is unique in the marketplace with its patented technology to provide a two-way link with the keypads. This design ensures that no responses are missed by requiring a keypad to retransmit the user's response until it is properly received by the Base Station. The design also allows the system to refuse to acknowledge any invalid entries. This is clearly superior to other technologies using one-way radio or infrared, which do not provide acknowledgment to the keypad when its entry is received and do not have any way of rejecting invalid entries.

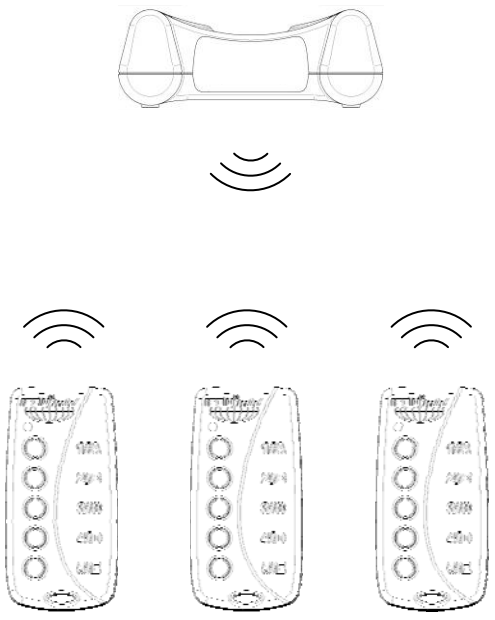

Figure 1. System Diagram

The Base Station is the control center for the system and operates according to commands issued by the application software. The Base Station can be set to any of the 15 available channels through the software. Each Base Station can process responses from up to 250 keypads.

A radio frequency packet is continuously sent out by the base station when the unit is powered on. Each base station's packet can only be heard by keypads that have been set to the same channel.

3.0 System Description and Setup

3.1 Room Layout

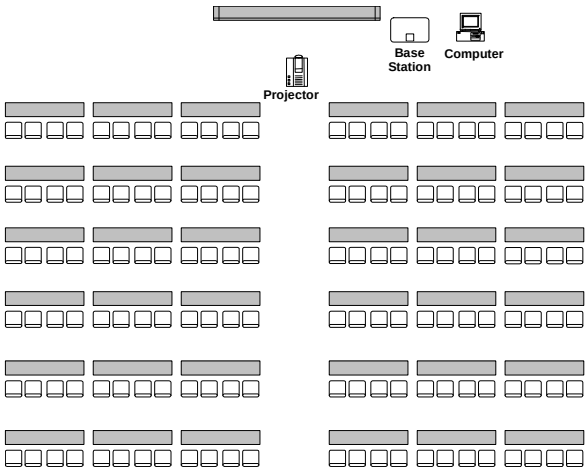

Figure 2. Typical Room Layout

3.2 Placement of the Reply® System

The Base Station can be located anywhere in the area where the keypads are to be used. Reply®*Mini* keypads can operate in a room up to 300' x 300' (100m x 100m) in size. Despite a robust communication system, walls and some other 2.4 GHz devices can moderately to severely limit the system's overall performance. If coverage of a larger area is necessary, elevation of the Base Station or centering in room can usually improve the reception of the keypad signals.

NOTE: Due to the properties of signals operating at 2.4 GHz, Fleetwood does not recommend placing any walls between the base station and the keypads. The material in a wall tends to absorb the RF signal and some reduced performance might be observed.

4.0 How to Use the CRS5000

Figure 3. Reply® *Mini* Keypad

4.1 Powering On

Any key will turn on the keypad. After about 12 seconds, the keypad will automatically power itself off. The keypad will turn off after successfully sending a vote.

4.2 Voting

Make sure a base unit is ready to collect votes. (See appropriate user manual for base station operation.)

There are five number keys that correspond to values 1-5. When pressing any key, the Green LED will light to indicate the keypad has turned on.

The keypad listens for a polling base on the same Base ID. If the keypad is queried by the base, the vote is sent. If successful, the green LED will turn off. A low battery warning may present itself after the keypad has voted. The battery warning is the red LED will blink quickly 4 times.

If the keypad is unable to send the vote after a period of 9 seconds, the Red LED will light to indicate the transfer was unsuccessful. There are several reasons a vote is not able to transmit. First, the Base ID of the base may not be set to the keypad. Second, the base may not be querying the keypad (system not set up to poll enough keypads or possibly even polling) or the keypad is out of range of the base unit.

4.3 Key Lockout

The keypad allows for the base unit to lock out some or all of the five available keys. When a key is locked out, it will light very briefly the green LED and then go immediately to red. The keypad will continue to listen to the base unit if the key is unlocked during the polling time and will transmit. If another key is not selected during this time, the keypad will turn off after 12 seconds to conserve battery life.

4.4 Addressing

Once the keypad is configured, it will retain the settings indefinitely. Both the base unit and the keypads must be set to the same Base ID to 'talk' to each other. Base units can be changed through software to match keypads. If the keypad settings must be changed, including keypad address and Base ID, a trainer device (WRS960X-T) is necessary to address the keypads. See the user manual for the WRS960X-T for further instructions if the keypads need reconfigured. See Section 4.5 to retrieve the current keypad settings.

4.5 Keypad Settings

To verify what settings the keypad has, press the 1 and 5 key simultaneously for 3 seconds. Either the red or the green led will light to start a sequence of blinks representing the Base ID and keypad address. A green LED flash represents the numerical values separated by the red LED indicator. The format is as follows:

Tens Digit of Base ID
Red Flash
Ones Digit of Base ID
Red Flash
small pause
Hundreds digit of keypad Address
Red flash
Tens digit of keypad Address
Red flash
Ones digit of keypad Address
Red flash

If the Base ID is below 10, the sequence will start with a red flash. For any 0 digits, there will be no green flashes.

5.0 Keypad Battery Replacement

Each keypad is powered from a single CR2032 Lithium Coin cell battery. One fresh CR2032 battery can last for up to 20,000 votes.

INSTRUCTIONS

Remove screw from case back.
Separate case parts at screw location.
Using a non-metallic object, carefully push the battery out of the retainer from the back side.
Slide in new battery with positive side away from circuit board.

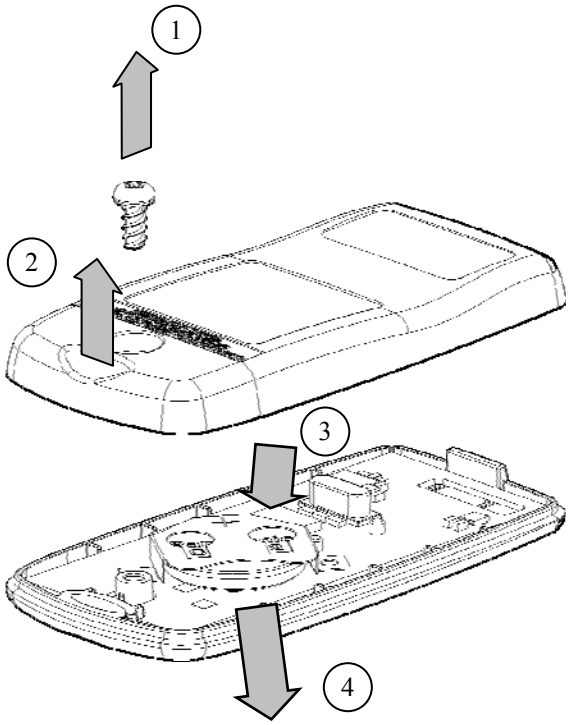

Figure 4. Keypad Battery Replacement

6.0 Software

Off-the-shelf software packages are available for Reply®. These packages are available through Fleetwood's network of qualified dealer-developers. Most Reply®. compliant software applications require the Windows operating system (trademark Microsoft Corporation).
Contact Fleetwood for details on the software applications that are certified for use with Reply® products.

7.0 Accessories

Call Fleetwood or an authorized dealer for information on available storage/shipping cases, lanyards, extra cables or power supply kits.

8.0 Limited Product Warranty

Fleetwood Group, Inc. warrants its Reply® Cordless Response System components for a total period of 24 months from the date of manufacture for any material or workmanship defect in the product, and 90 days from date of shipment on all accessories. This warranty does not extend to batteries or any product component, which has been subjected to misuse, neglect, accidental breakage, improper installation, use outside of present guidelines, or alteration outside of our factory.

Reply® Base Stations and Keypads use internal antennas built directly on the printed circuit board. Modifying the antennas in any way will result in reduced range and will void the warranty.

There are no user serviceable parts inside Reply® Base Stations or Keypads.

Fleetwood Group, Inc. agrees to remedy, at the factory, any product defect, or at its discretion, replace any component or part of the product provided the owner complies with the following procedures:

The owner is to determine that the problem is not the battery or a faulty or improper connection with the personal computer or power source.

The owner will contact our Product Service Coordinator during standard hours Monday through Thursday 7:00 AM to 3:30 PM and Friday 6:00 AM to 12:00 PM Eastern Standard Time at

1-888-GO REPLY (467-3759)

or

www.replysystems.com/rma/

to obtain a Return Material Authorization (RMA) number prior to shipping the product back to the factory.

The owner will send the defective component via prepaid freight to:

Fleetwood Group, Inc.
Electronics Division
Product Service Coordinator
RMA#:
11832 James Street
Holland, MI 49424

If the factory determines the defect is due to negligence or oversight on the part of the owner, the owner will be invoiced for the cost of the repair.

9.0 FCC, IC, and EU Compliance Information

CRS5000 contains N240D RF Module
Responsible Party Pertaining to the Declaration of Conformity

Fleetwood Group, Inc.
11832 James Street
Holland, MI 49424
Attn: Product Service Coordinator
Phone: 888-467-3759

9.1 Standards and Guidelines

This device complies with the following European Directives and USA/Canada Regulations:

- Directive 1999/5/EC on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity
- Directive 2006/95/EC on the harmonization of laws of member states related to electrical equipment designed for use within certain voltage limits
- The USA Federal Communications Commission (FCC) Rules and Regulations
- Industry Canada Rules and Regulations

This device complies with the following national and international standards:

- EN 301 489-1 V1.6.1: 2005: EMR; EMC standard for radio equipment and services. Part 1: Common technical requirements.
- EN 301 489-17 V1.2.1: 2002: EMR; EMC standard for radio equipment and services. Part 17: Specific conditions for 2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment.
- EN 300 328 V1.7.1: Electromagnetic compatibility and Radio spectrum Matters (ERM);Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques.
- EN 60950-1: 2001 + A11: 2004: Information technology equipment – Safety. Part 1: General requirements
- FCC Part 15B, 15.247: 10-01-2006: Radio Frequency devices: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
- IC RSS-210 Issue 7: 2007: Low power license-except radio-communications devices (all frequency bands): Category 1 equipment.

9.2 FCC/IC Compliance

This device complies with Part 15 of the FCC Rules and RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) this device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device. The user is cautioned that changes or modifications to the device that are not approved by the manufacturer could void the user's authority to operate the device.

9.3 EU Compliance

This device is a 2.4 GHz low power response system controller intended for residential and commercial use in all EU and EFTA member states.

CE

Notice

The base and keypad units may be susceptible to *E*lectro*s*tatic *D*ischarge (ESD) and other similar fast transient events causing system interruption. Should system interruption occur, reboot computer, reset base unit by disconnecting and reconnecting USB cable and push any key on keypads which have powered down.

10.0 Technical Specifications

Enclosure

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
d_l	Length	-	3.1	-	in.
d_w	Width	-	1.55	-	in.
d_h	Height (Thickness)	-	0.47	-	in.
w_b	Weight With Battery Without Battery		 0.05 0.045	 - -	lbs

Power

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
V_{DD}	Voltage	2.1	-	3.6	V
V_{lvw}	Low Voltage Warning		2.1		V
V_{lvs}	Low Voltage Shutdown		1.9		V
T	Operating Temperature *	55(15)		100(40)	F(C)

* The keypad will operate from 0 to 50 C when using a new battery, however optimal battery life is only possible over the specified temperature range.

11.0 Troubleshooting Procedures

ISSUE	POSSIBLE CAUSE	SOLUTION
Keypad does not turn on	Battery may be inserted backwards.	Check that the positive side of the battery is touching the coin cell retainer.
	Battery is dead.	Replace the battery.
Poor RF Performance	Base not in open area.	Do not place the base inside cabinets.
	Base located too close to other electronic equipment	Place the base away from other electronic devices, such as TV's, DVD/VCR players and similar.
	More than one base unit on the same Base ID	Check that the bases covering an area are not on the same Base ID.
	Other Interference	Always physically separate other radio devices by at least 10' (3 m). This includes WiFi, Bluetooth, ZigBee and other similar devices.
	Multiple Base Stations are too close	Keep base stations separated and do not stack units.
	Keypad battery dead.	Replace the coin cell battery.
	Keypad operating too far from base station.	Move closer to the base station to see if voting improves.
Short range with keypads	Power level setting too low.	Check that the power level setting of the system is appropriate for the range trying to be achieved (Some countries have restrictions as to the power level setting allowed. See Section 9.0).
	Interference	See "Poor RF Performance".
Keypad vote not sending	Keypad Base ID setting and base setting are not matched.	Change either the base or keypads so they match.

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