USER MANUAL

PowerCom Mini

WRS7000DSI-5

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Table of Contents

1.0 PowerCom Mini

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.

PowerCom Mini 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. PowerCom Mini 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 About PowerCom

PowerCom® is an Audience Response Software division of Dynamic Services International, Inc. (DSI). DSI was founded in 1988 with a mission to help businesses of all sizes to build stronger communications with their customers, employees and business partners. With a focus on building strong autonomous communication channels, DSI is able to help companies collect and exchangevaluable business information.

Our technology solutions focus around generating fewer errors, fewer returned documents, and fewer lost documents, as well as a much faster response time. As a premier provider of Information Technology and Business Processes, DSI s a trusted technology partner for many commercial and government clients.

1.5 Other PowerCom Products

PowerCom® has developed its software in 9 major languages and offices around the world; we are committed to bringing the highest level of products and customer service to users in every country! We provide Audience Response System distribution, rental service, and full support to PowerCom® customers all over the

world! With Interactive PowerPoint Presentation software in nine languages, PowerCom® provides the highest quality audience response systems for international businesses. Recognized by Microsoft as a Partner, PowerCom is the most respected Interactive Presentation Software developer in the business. We guarantee that we provide the lowest priced ARS packages and rental service in the world!

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

2.0 Principles of Operation

PowerCom Mini 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

All PowerCom® hardware uses Fleetwood's patented technology, which is unique in marketplace to provide two-way communication 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 acknowledgement to the keypad when its entry is received and do not have any way of rejecting invalid entries.

Figure 1. System Diagram

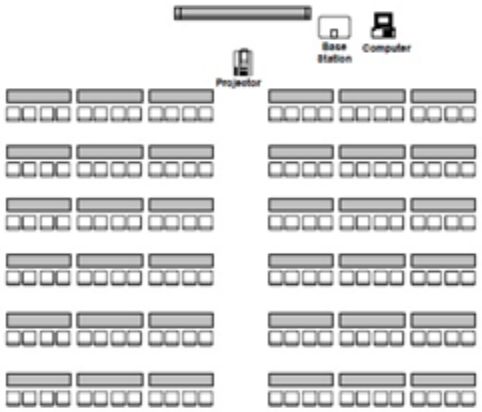
The Base Station is the control center for the system and operates according to commands issued by the application software. The Base Station can be set to any of the 75 available channels through the software. Each Base Station can process responses from up to 500 keypads.

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 PowerCom Mini System

The Base Station can be located anywhere in the area where the keypads are to be used. PowerCom Mini keypads can operate in a room up to 650' x 650'feet (WRS970-DSIH or WRS970DSI) 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 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, we 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 PowerCom Mini (WRS7000-DSI-5)

Figure 3. PowerCom 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 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 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 and will transmit. If another key is not selected during this time, the keypad will turn after 12 seconds to conserve battery life.

5.0 Static mode keypad

A keypad in Static mode is configured to a specific Base ID and address. Each keypad on a system must be set to the same Base ID of the Base Station to be used. The address of each keypad in a system must be a unique number between 1 and 500.

To obtain best system performance, start at address 1 and continue up to the number of keypads to be used.

Once the system is configured, the settings are maintained indefinitely. The keypad can only be used on the Base ID it is programmed. If more flexibility is desired (moving a keypad from base to base or room to room, for example) use Dynamic mode operation.

Note: PowerCom Mini only supports Static address mode, no Dynamic mode operation.

6.0 Keypad Settings Retrieval

6.1 Keypad locally

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 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

6.2 Changing Keypad and Channel Number

Make sure base station is detected properly. Choose ***"Change Keypad Channel and Address"*** from the drop down menu of the ***Device*** group in ***Powercom Tab***. Follow the instructions to continue.

7.0 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 :

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

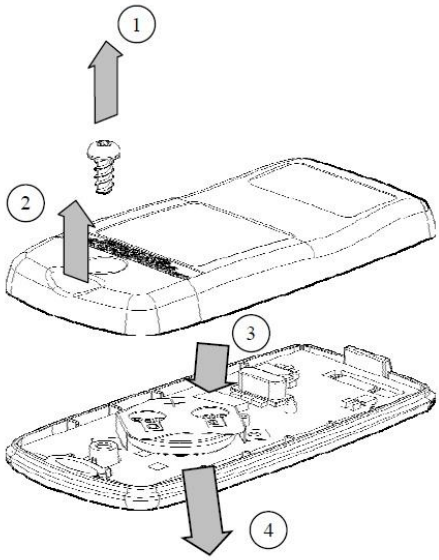


Figure 3. Keypad Battery Replacement

8.0 Software

PowerCom® is PowerPoint Add-in software available for keypad and it can be installed for Office 2007, Office 2010 and Office 2013. Please contact powercom@dsii.net for more information about PowerCom software.

9.0 Accessories

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

10.0 Limited Product Warranty

PowerCom® warrants its serial components for a period of 24 months from the date of manufacture for any material or workmanship defect in the product. 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.

PowerCom 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 PowerCom Base Stations or Keypads. PowerCom 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:

1. 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.

2. The owner will contact PowerCom during standard hours Monday through Friday 9:00 AM to 5:00 PM Eastern Standard Time at 212-997-2000 **or** powercom@dsii.net to obtain a Return Material Authorization (RMA) number prior to shipping the product back to the factory.

3. 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

4. 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.

11.0 FCC, IC, and EU Compliance Information

WRS7000DSI-5 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

12.0 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.

13.0 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.

14.0 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.

Notice

The base and keypad units may be susceptible to Electrostatic Discharge (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.

15.0 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_{lw}	Low Voltage Warning		2.1		V
V_{ls}	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.

16.0 Troubleshooting Procedures

ISSUE	POSSIBLE CAUSE	SOLUTION
Keypad does not turn on	Battery may be inserted backwards. Battery is dead.	Check that the positive side of the battery is touching the coin cell retainer. Replace the battery.
Poor RF Performance	Base not in open area. Base located too close to other electronic equipment More than one base unit on the same Base ID Other Interference Multiple Base Stations are too close Keypad battery dead. Keypad operating too far from base station.	Do not place the base inside cabinets. Place the base away from other electronic devices, such as TV's, DVD/VCR players and similar. Check that the bases covering an area are not on the same Base ID. Always physically separate other radio devices by at least 10' (3 m). This includes WiFi, Bluetooth, ZigBee and other similar devices. Keep base stations separated and do not stack units. Replace the coin cell battery. Move closer to the base station to see if voting improves.
Short range with keypads	Power level setting too low. Interference	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 15.0). 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.

Note: We cannot possible list all troubleshooting issues here. We only list the common hardware issues. Please search www.powercomars.com **web site to locate the issue and possible solution.**

17.0 Index