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Client: Fleetwood Group, Inc.  
Model: N240D  
Standards: FCC 15.247/IC RSS-210  
FCC/IC ID: FBRN240D/1859A-N240D  
Report #: 2007270

## **Appendix L: Manual**

Please refer to the following pages.

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# USER MANUAL

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## N240D RF Module

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**Revision History:**

<b>Rev</b>	<b>Date</b>	<b>Description</b>
<b>A</b>	<b>10/31/2007</b>	<b>Original</b>
<b>B</b>	<b>11/01/2007</b>	<b>Updated EN test standards</b>

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## 1.0 N240D RF Module

### 1.1 Description

The N240D is a low power wireless response keypad module. It has 14 available inputs, and two available outputs. The N240D module is used to interact with an audience so they can provide real time feedback to questions. It communicates at 2.4GHz, GFSK to a base station. The base unit polls keypads, and displays result.

The overall operation of the N240D module is controlled by a microcontroller. This microcontroller is powered from approximately 3V and uses a 16 MHz reference. The microcontroller handles control of the RF communications and keypad inputs.

RF communications use the Nordic 2401A 2.4 GHz transceiver. The Nordic chip uses a 16 MHz reference oscillator that is shared with the microcontroller for TX/RX and is also powered by 3V. The Nordic transceiver uses an integral PCB inverted F antenna with a gain of approximately 3.6 dBi.

### 1.2 Keypad Battery Replacement

Each keypad is powered from a single CR2032 Lithium Coin cell battery. The battery is replaceable. To replace battery, slide out the old battery from its holder, and replace with a new battery noting its polarity. The negative side of the battery should be facing the PCB.

### 1.3 FCC, IC, and EU Compliance Information

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**

### 1.4 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 301 489-3 V1.4.1
- EN 300 440-2 V1.1.2
- 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: 2006: Safety of Information Technology Equipment
- 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.

- FCC Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.
- IC RSS-210 Issue 7: 2007: Low power license-except radio-communications devices (all frequency bands): Category 1 equipment.

### 1.5 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.

### 1.6 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 except in Bulgaria, France, Italy, Luxembourg, Norway and Romania where restrictive use applies. See table below for explanation of restrictions.

### 1.7 Explanation of EU Restrictions

Country:	Restriction:	Reason/remark
Bulgaria		General authorization required for outdoor use and public service.
France	Outdoor use limited to 10 mW E.I.R.P. within the band 2454-2483.5 MHz. Derogation in French overseas departments of Guyane and La Réunion: outdoor use not allowed in band 2400-2420 MHz	Military Radiolocation and Fixed Service use
Italy		If used outside of own premises, general authorization is required.
Luxembourg	None	General authorization required for public service
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Alesund
Romania	On a secondary basis. Individual license required. T/R 22-06 not implemented	

### Notice

The module may be susceptible to Electrostatic Discharge (ESD) and other similar fast transient events causing system interruption. Should system interruption occur, remove and replace battery to reset the module.

This equipment shall only be installed and operated with the antenna types shown in this application with gains not more than those shown for each of the antennas, respectively, and installed with a minimum of 20 cm of separation distance between the antenna and all persons during normal operation.

## 1.8 Technical Specifications

### Enclosure

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
$d_l$	Length	-	2.77	-	in.
$d_w$	Width	-	1.2	-	in.
$d_h$	Height (Thickness)	-	.23	-	in.
Symbol	Parameter	Value			Unit
		Min	Typ	Max	
$V_{DD}$	Supply Voltage USB	2.2	3	3.3	V
$Op\ temp$	Operating Temperature	0		30	Deg C