Intrinsically Safe NEXEDGE® Handheld Radios
For Use in Potentially Explosive Atmospheres

Complies with
SOLAS Chapter II-2, Regulation 10.10.4.

ATEX Certifications

Gas : II 2G Ex ib IIC T4 Gb
Dust : II 2D Ex ib IIIC T110°C Db
Mining : I M2 Ex ib I Mb
IP Code : IP65/IP67
Intrinsically Safe ATEX/IECEx-Certified Radios Featuring Advanced NEXEDGE® Digital Technology

Introducing the latest additions to KENWOOD’s renowned NEXEDGE® range of digital radios, the NX-230EX/330EX. As well as offering the benefits of advanced digital technology – including increased effective coverage area, low noise for superior clarity, and inherently secure voice communication – these radios are ATEX/IECEx-certified for use in potentially explosive atmospheres such as oil refineries, chemical plants, grain silos, pipeline and other chemical applications.

ATEX & IECEx CERTIFIED

Offering the highest levels of safety in the industry, the NX-230EX/330EX complies with both the ATEX Directive (ATmospheres Explosive) and the IECEx (International certification system for Ex products) Scheme. These trusted certifications ensure the safe functioning of equipment and protective systems with respect to the risks of explosion covered by these standards. As listed below, the various classes relate to the use in specific environments.

### ATEX/IECEx Gas Certification

<table>
<thead>
<tr>
<th>ATEX Gas Protection: II 2G</th>
<th>Ex ib IIC T4 Gb</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Use enabled in Group II environments such as chemical industries, refineries, etc.</td>
</tr>
<tr>
<td>2G</td>
<td>High-level of protection, suitable for use in Sector G (Gas), Zones 1 and 2.</td>
</tr>
<tr>
<td>Ex</td>
<td>The product is explosion-proof equipment.</td>
</tr>
<tr>
<td>IIC</td>
<td>Protection in the most explosive gas environments (hydrogen, acetylene, etc.).</td>
</tr>
<tr>
<td>T4</td>
<td>Device surface temperature will not exceed 135°C; Class T4 covers gasses and vapours in classes T1, T2, and T3.</td>
</tr>
<tr>
<td>Gb</td>
<td>Protection level suitable for Sector G (Gas).</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>IECEx Gas Protection: Ex ib IIC T4 Gb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex ib IIC T4 Gb</td>
</tr>
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</table>

### ATEX/IECEx Dust Certification

<table>
<thead>
<tr>
<th>ATEX Dust Protection: II 2D</th>
<th>Ex ib IIC T110°C Db</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Use enabled in Group II environments such as chemical industries, refineries, etc.</td>
</tr>
<tr>
<td>2D</td>
<td>High-level of protection, suitable for use in Sector D (Dust), Zones 21 and 22.</td>
</tr>
<tr>
<td>Ex</td>
<td>The product is explosion-proof equipment.</td>
</tr>
<tr>
<td>ib</td>
<td>Type of intrinsic safety protection.</td>
</tr>
<tr>
<td>IIC</td>
<td>Protection in conductive dust environments.</td>
</tr>
<tr>
<td>T110°C</td>
<td>Surface temperature will not exceed 110°C.</td>
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<tr>
<td>Db</td>
<td>Protection level suitable for Sector D (Dust).</td>
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</table>

<table>
<thead>
<tr>
<th>IECEx Dust Protection: Ex ib IIC T110°C Db</th>
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<tbody>
<tr>
<td>Ex ib IIC T110°C Db</td>
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### ATEX/IECEx Mining Certification

<table>
<thead>
<tr>
<th>ATEX Mining Protection: I M2</th>
<th>Ex ib I Mb</th>
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</thead>
<tbody>
<tr>
<td>I</td>
<td>Use enabled in Group I mining environment.</td>
</tr>
<tr>
<td>M2</td>
<td>High-level of protection. The equipment does not operate in a potentially explosive atmosphere, and must be de-energized when an explosive atmosphere is encountered.</td>
</tr>
<tr>
<td>Ex</td>
<td>The product is explosion-proof equipment.</td>
</tr>
<tr>
<td>ib</td>
<td>Type of intrinsic safety protection.</td>
</tr>
<tr>
<td>I</td>
<td>The equipment is protected for use in an explosive gas environment (methane).</td>
</tr>
<tr>
<td>Mb</td>
<td>Protection level suitable for Sector M (Mining)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IECEx Mining Protection: Ex ib I Mb</th>
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<tbody>
<tr>
<td>Ex ib I Mb</td>
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</table>
STAFF SAFE FUNCTIONS

For crew working remotely or in hazardous areas, various staff safe functions are available that make use of the built-in motion sensor to identify a potential emergency and automatically transmit an alert to a designated person or system.

The NX-230EX/330EX is manufactured in KENWOOD’s ISO 9001 certified factory in Japan under strict quality management. Each transceiver has passed KENWOOD’s own stringent quality tests, which simulate years of sustained, demanding use in harsh operating conditions. These tests are more exacting than any other accepted industry standards.

Special enclosure and circuitry designs ensure that these portables meet ATEX requirements for intrinsic safety. Anti-static resin is used for the casing, battery and belt hook. Also effective RF output is 1.2W, maintained within the upper limit set by ATEX directive.

Simplified migration

Mixed Mode enables sharing of the same RF channel by both FM analogue and NXDN digital conventional radios. Subscriber units and base stations sense incoming analogue and digital calls, automatically enabling talkback or repeat in the same mode. The NX-230EX/330EX also supports a variety of signalling modes to facilitate the coexistence of analogue and digital radios.

STAFF SAFE FUNCTIONS

For crew working remotely or in hazardous areas, various staff safe functions are available that make use of the built-in motion sensor to identify a potential emergency and automatically transmit an alert to a designated person or system.

- Man-down: Factory default. When the radio is not upright for a length of time.
- Stationary*: When the radio is stationary for a preset period.
- Motion Mode (Panic)*: When the radio is being shaken/swung violently as when someone is running for a length of time.
- Lone Worker: If the radio is not operated for a certain amount of time (programmable).
- Orange Emergency Key: Clearly identified orange key can be assigned exclusively for emergency signalling to send alert to a designated person or system.

*Software license option; requires activation file.

INTRINSIC SAFETY

Special enclosure and circuitry designs ensure that these portables meet ATEX requirements for intrinsic safety. Anti-static resin is used for the casing, battery and belt hook. Also effective RF output is 1.2W, maintained within the upper limit set by ATEX directive.

QUALITY CONTROL

The NX-230EX/330EX is manufactured in KENWOOD’s ISO 9001 certified factory in Japan under strict quality management. Each transceiver has passed KENWOOD’s own stringent quality tests, which simulate years of sustained, demanding use in harsh operating conditions. These tests are more exacting than any other accepted industry standards.

Other Features

- Built-in GPS receiver for personnel location management.
- Over-the Air Alias for displaying caller group or unit name.
- Telephone Interconnect for making phone calls to a trunked system or outgoing calls to PSTN or PABX via KTI-4 option and external patch.
- OTAP (Over-the-Air-Programming) for reprogramming NEXEDGE terminals remotely using OTAP Management Software. Compatible with Over-the-Air Alias for efficient and easy user management.
- Applicable MIL-STD & IP standards.

**NXDN® INDUSTRY STANDARD FOR DIGITAL RADIOS**

These NEXEDGE® radios feature NXDN® digital technology by KENWOOD. There are several advantages of digital radio over analogue, but most prominent are high voice quality with low noise for superior clarity, wide effective coverage area, and inherently secure voice communication.

- **Reliable communications in a noisy environment**
  AMBE+2™ Vocoder voice compression & digitisation technology delivers superior voice quality, eliminating most of the background noise even in such loud environments as drilling platforms and oil refineries. When used with the ATEX-certified audio accessories offered by KENWOOD partners, the NX-230EX/330EX assures mission-critical clarity, safety and reliability.

- **Extended communications range**
  Whereas RF signal strength weakens with distance, making communications increasingly susceptible to noise, NXDN® digital technology delivers better sensitivity and higher reception performance, effectively extending the range of clear, noise-free communications.
## FUNCTIONS & FEATURES

### General
- **VHF (136-174 MHz)/UHF (400-470 MHz) Models**
- **512 CH-GID/128 Zones**
- **12-Key Keypad**
- **14-Character Alphanumeric Aliases**
- **Backlit Dot Matrix LCD**
- **3-Digit Sub-Display**
- **Function/Status LCD Icons**
- **Transmit/Busy/Call Alert/Warn LED**
- **On/Off Volume Knob**
- **16-Position Mechanical Selector**
- **NXDN® Digital Air Interface**
- **AMBE+2™ Vocoder**
- **6.25 & 12.5 kHz Channels**
- **Over-the-Air Alias (TX)**
- **Over-the-Air Programming**
- **Emergency Call**
- **Short & Long Data Messages**
- **NXDN® Built-In Digital Encryption**
- **Status Messaging**
- **Remote Stun/Kill**
- **GPS Location with Voice**
- **64 (including “none”) Radio Access Numbers (RAN)**
- **Individual & Group Selective Call**
- **Mixed FM/Digital Operation**
- **Conventional IP Networks**
- **Site Roaming**
- **Individual call with Acknowledgment**
- **60,000 GIDs per Network**
- **60,000 UIDs per Network**
- **Wide Area All Group Call**
- **Auto-Roaming/Registration**
- **Multi-Site IP Network**
- **Location/Group Registration**

### DIGITAL – General
- **NXDN® Digital Air Interface**
- **AMBE+2™ Vocoder**
- **6.25 & 12.5 kHz Channels**
- **Over-the-Air Alias (TX)**
- **Over-the-Air Programming**
- **Emergency Call**
- **Short & Long Data Messages**
- **NXDN® Built-In Digital Encryption**
- **Status Messaging**
- **Remote Stun/Kill**
- **GPS Location with Voice**

### DIGITAL – Conventional Mode
- **64 (including “none”) Radio Access Numbers (RAN)**
- **Individual & Group Selective Call**
- **Mixed FM/Digital Operation**
- **Conventional IP Networks**
- **Site Roaming**
- **Individual call with Acknowledgment**

### DIGITAL – Trunking Multi-Site Mode
- **60,000 GIDs per Network**
- **60,000 UIDs per Network**
- **Wide Area All Group Call**
- **Auto-Roaming/Registration**
- **Multi-Site IP Network**
- **Location/Group Registration**

### DIGITAL – Trunking Mode
- **Individual Private Call**
- **Group Call**
- **4 Priority Monitor IDs**
- **Late Entry (UID & GID)**
- **Broadcast Call**
- **Remote Group Add**
- **Transmission Trunked Mode**
- **Message Trunked Mode**
- **Failsoft Mode**
- **Call Queuing with Priority**
- **Telephone Interconnect**

### GENERAL – FM Modes
- **25, 20 & 12.5 kHz Channels**
- **FleetSync®/II**
- **DTMF Encode/Decode**
- **Companded Audio**
- **Voice Inversion Scrambler**

### FM Conventional Zones
- **QT/DQT**
- **5-Tone Encode/Decode**
- **Single/Two-Tone Encode**
- **Voting**

### FleetSync®/II
- **PTT ID Digital ANI (TX)**
- **Selective Call & Group Call**
- **Status Messaging**
- **Emergency Status**
- **Short Text Messages**
- **Power On/Off Status Messages**
- **PTT ID & Emergency GPS Reporting**
- **Status Message Block GPS Reporting**
- **GPS Ack Request**
Options

- **KBH-16EX**
  - BELT CLIP

- **KNB-70LEX**
  - Li-ion BATTERY PACK
  - (1,430 mAh, min)

- **KNB-77LEX**
  - Li-ion BATTERY PACK
  - (2,860 mAh, min)

- **KRA-26**
  - VHF HELICAL ANTENNA
  - (Standard Length)

- **KRA-27**
  - UHF WHIP ANTENNA
  - (Standard Length)

- **KRA-22**
  - VHF HELICAL ANTENNA
  - (Low Profile)

- **KRA-23**
  - UHF HELICAL ANTENNA
  - (Low Profile)

- **KRA-43G**
  - VHF HELICAL ANTENNA
  - (GPS Combination)

- **KRA-44G**
  - UHF HELICAL ANTENNA
  - (GPS Combination)

- **KSC-32S**
  - RAPID CHARGER
  - (Tri-Chemistry, for KNB-70LEX/77LEX)

- **KCT-69EX**
  - FUSE BOX FOR KSC-32S**1**

- **KCT-69EX**
  - FUSE BOX FOR KSC-32S

- **KCT-69EX**
  - FUSE BOX FOR KSC-32S

- **KRC-326S**
  - MULTIPLE CHARGER
  - (6-pocket for KNB-70LEX/77LEX)

- **KMC-46EX**
  - SPEAKER MICROPHONE

- **KLH-188EX**
  - LEATHER CASE

*ATEX/IECEx-certified accessories only when used with the NX-230EX/330EX.  
** Do not use this accessory in hazardous areas.  
*** The KCT-69EX is mandatory for the KSC-32S user, required under the ATEX/ IECEx directive (60079-11: 2011), section 6.2.5.  
The KCT-69EX fuse box protects the IS circuit in the NX-230EX/330EX when the KNB-70LEX or KNB-77LEX battery is charged with KSC-32S rapid charger in a non-hazardous area. It is important to remember that the KSC-32S cannot be used in hazardous areas (even with the KCT-69EX).  
**3 Note that the standard KSC-326 multiple charger cannot be used with NX-230EX/330EX batteries as it is not an ATEX/IECEx-certified accessory.

All accessories and options may not be available in all markets. Contact an authorised KENWOOD dealer for details and complete list of all accessories and options.
Main Specifications

**GENERAL**

- **Frequency Range**: 136-174.1 MHz / 400-470 MHz
- **Number of Channels**: 512
- **Zones per Radio**: 128
- **Max. Channels per Zone**: 250
- **Channel Spacing**: Analogue - 25 / 20 / 12.5 kHz
  - Digital - 12.5 / 6.25 kHz
- **Operating Voltage**: 7.5 V DC, 6.2-8.4 V
- **Weight (net)**: Radio Only - 343 g (12.09 oz)
  - with KNB-70LEX - 493 g (1.08 lbs)
- **Dimensions (W x H x D)**: 138 x 58 x 39.8 mm (5.43 x 2.28 x 1.56 in)

**RECEIVER**

- **Signal Sensitivity**:
  - Digital @12.5 kHz: 0.32 µV (3% BER), -1 dBµVemf (1% BER)
  - Digital @6.25 kHz: 0.25 µV (3% BER), -4 dBµVemf (1% BER)
  - Analogue @25 / 20 kHz: 0.28 µV (EIA 12 dB SINAD), -3 dBµVemf (EN 20 dB SINAD)
  - Analogue @12.5 kHz: 0.31 µV (EIA 12 dB SINAD), -1 dBµVemf (EN 20 dB SINAD)
- **Adjacent Channel Selectivity**
  - Digital @25 / 20 kHz: 76 / 75 dB
  - Analogue @12.5 kHz: 68 dB

**TRANSMITTER**

- **RF Power Output**: 1.2 W
- **Modulation Limiting @Analogue**
  - ±5.0 kHz at 25 kHz
  - ±4.0 kHz at 20 kHz
  - ±2.5 kHz at 12.5 kHz

**SPECIFICATIONS**

- **Specifications are subject to change without notice, due to advancements in technology.**
- **Specifications shown are typical.**
- **Analogue measurements made per EN 300 086 and 113.**
- **Digital measurements made per EN 300 113 and EN301 166.**

**Approved Standard**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Digital</th>
<th>ID</th>
</tr>
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<tbody>
<tr>
<td>Low Voltage Directive</td>
<td>EN 60065, EN 60950-1, EN 60215</td>
<td></td>
</tr>
<tr>
<td>RATV Directive</td>
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<tr>
<td>ATEX Directive</td>
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<tr>
<td>Gas: 0 IIC Ex ia II T4 Gb</td>
<td>EN 60079-0, EN 60079-11</td>
<td>DEKRA 13ATEX0114 X</td>
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<tr>
<td>Dust: 0 IIC Ex ia II T110°C Db</td>
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<tr>
<td>Mining: IIA Ex ia I M6</td>
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<td>IECEx Scheme</td>
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<td>Gas: Ex ia IIC T4 Gb</td>
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<tr>
<td>Dust: Ex ia IIC T110°C Db</td>
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**Applicable MIL-STD & IP**

<table>
<thead>
<tr>
<th>MIL Standard</th>
<th>MIL 810C Methods/Procedures</th>
<th>MIL 810D Methods/Procedures</th>
<th>MIL 810E Methods/Procedures</th>
<th>MIL 810F Methods/Procedures</th>
<th>MIL 810G Methods/Procedures</th>
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</thead>
<tbody>
<tr>
<td>Low Pressure</td>
<td>500.1/Procedure I</td>
<td>500.2/Procedure I, II</td>
<td>500.3/Procedure I, II</td>
<td>500.4/Procedure I, II</td>
<td>500.5/Procedure I, II</td>
</tr>
<tr>
<td>High Temperature</td>
<td>501.1/Procedure I, II</td>
<td>501.2/Procedure I, II</td>
<td>501.3/Procedure I, II</td>
<td>501.4/Procedure I, II</td>
<td>501.5/Procedure I, II</td>
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<td>Low Temperature</td>
<td>502.1/Procedure I, II</td>
<td>502.2/Procedure I, II</td>
<td>502.3/Procedure I, II</td>
<td>502.4/Procedure I, II</td>
<td>502.5/Procedure I, II</td>
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<tr>
<td>Temperature Shock</td>
<td>503.1/Procedure I, II</td>
<td>503.2/Procedure I, II</td>
<td>503.3/Procedure I, II</td>
<td>503.4/Procedure I, II</td>
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<td>Solar Radiation</td>
<td>505.1/Procedure I, II</td>
<td>505.2/Procedure I, II</td>
<td>505.3/Procedure I, II</td>
<td>505.4/Procedure I, II</td>
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<td>507.2/Procedure I, II</td>
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<td>Salt Fog</td>
<td>509.1/Procedure I, II</td>
<td>509.2/Procedure I, II</td>
<td>509.3/Procedure I, II</td>
<td>509.4/Procedure I, II</td>
<td>509.5/Procedure I, II</td>
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<td>Vibration</td>
<td>514.2/Procedure D1, X, Y, Z</td>
<td>514.3/Procedure D1, X, Y, Z</td>
<td>514.4/Procedure D1, X, Y, Z</td>
<td>514.5/Procedure D1, X, Y, Z</td>
<td>514.6/Procedure D1, X, Y, Z</td>
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<td>Immersion</td>
<td>516.2/Procedure F1, I, IV</td>
<td>516.3/Procedure F1, I, IV</td>
<td>516.4/Procedure F1, I, IV</td>
<td>516.5/Procedure F1, I, IV</td>
<td>516.6/Procedure F1, I, IV</td>
</tr>
</tbody>
</table>

**International Protection Standard**

- **Dust & Water Protection**: IP54/IP67. Protection for the radio body only. Meets IP65 when used with the KMC-46EX heavy duty speaker microphone

FleetSync® is a registered trademark of JVCKENWOOD Corporation.
AMBE+2® is a trademark of Digital Voice Systems Inc.
NXDN® is a registered trademark of JVCKENWOOD Corporation and Icom Inc.
NEXEDGE® is a registered trademark of JVCKENWOOD Corporation.

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