

New Product Preliminary Information

NEXEDGE

NX-230EX
NX-330EX

VHF Digital & FM Portable Transceiver

UHF Digital & FM Portable Transceiver

May 2013

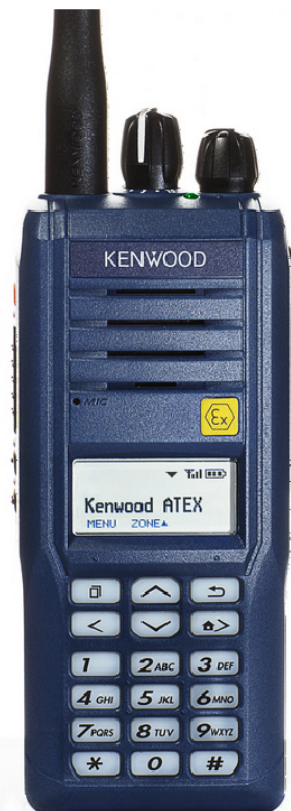
We are pleased to send you product information on our new VHF/UHF Digital/FM Portable Transceivers, the NX-230EX (VHF) and the NX-330EX (UHF). They comply and conform to the international standards ATEX and IECEX.

1. SCHEDULE

Launch:

NX-230EX (136-174MHz)
2013 Summer
NX-330EX (400-470MHz)
2013 Summer

Leaflet: July 2013



2. MAIN FEATURES

ATEX & IECEx Certified

The NX-230EX/330EX are products designed for use in potentially explosive atmospheres. They meet European Union Directive 94/9/EC, commonly called the ATEX Directive, and IECEx International Scheme. The products are designed to ensure the safe functioning of equipment and protective systems with respect to the risks of explosion, as covered by the scope of the standards.



The certified classes, as listed below, provide comprehensive protection for professional radio users. The certified gas group is suitable for use in most of types of gas atmospheres including Hydrogen. The temperature class covers most gases and vapours.

ATEX Directive 94/9/EC

- **II 2G Ex ib IIC T4 Gb** for Gas protection
- **II 2D Ex ib IIIC T110°C Db** for Dust protection
- **I M2 Ex ib I Mb** for Mining protection

IECEx Scheme

- **Ex ib IIC T4 Gb** for Gas protection
- **II 2D Ex ib IIIC T110°C Db** for Dust protection
- **IM2 Ex ib I Mb** for Mining protection

Stable Communication in a Noisy Environment

Digital voice technology offers superior voice quality with the NX-230EX/330EX without the background noise, even in very noisy environments such as a drilling platform or an oil refinery.

In addition to the noise cancelling technology, Kenwood partners offer heavy-duty audio accessories for the NX-230EX/330EX. The combination of Kenwood digital noise cancellation technology and suitable ATEX certified accessories will provide the best clarity to your voice communication within noisy environments.

Extended Communication Range

The NX-230EX/330EX strikes a successful balance between a high protection class, excellent performance and 1.2W of effective radio output power.

As RF signal strength weakens with distance, FM analogue reception becomes increasingly noisy and intermittent. In contrast, NXDN Digital improves communication distance with higher reception performance, coming from better sensitivity of a 6.25kHz very narrow band solution and low bit error rate.

Easy and Controlled Migration to Digital

→ **MIXED MODE**

FM analogue & NXDN digital conventional operation can share the same RF channel. Subscriber units and Base stations autosense incoming FM analogue or NXDN digital calls and talkback or repeat the same mode.

→ **Variety of Signalling**

5-Tone Signalling

Built-in 5-tone encoder/decoder provides 6-different formats, ZVEI, ZVEI2, CCIR, EIA, EEA and the Kenwood format. It is also possible to set not only 5-Tone but up to 8-Tone signalling, 2-frames 5-Tone and the 3-frames 5-tone signalling.

5-tone

Supports MPT1327 trunked operation

The NX-230EX/330EX supports MPT1327 trunking operation. From small groups to large scale of fleets, the radios provide reliable communications over existing MPT trunking networks. This will open up a simple and straight forward migration path from an analogue system to a digital system with the investment spent in a phased approach and controlled manner.

QT/DQT/DTMF

The Encoder/Decoder function uses QT/DQT to segregate talk groups, so users only hear calls from their own group.

DTMF PTT ID is included for dispatch operations or for a simple remote control application. The DTMF decode capabilities include a selective call ID, transpond with ID, "wild card" group calling and radio stun.

FleetSync® PTT ID, SelCall & Emergency

Utilizing Kenwood's FleetSync® digital signalling protocol, the NX-230EX/330EX have PTT ID (ANI: automatic number identification) and Selective Calling capabilities for managed dispatch operations. For hazardous/hostile duty environments, a PF key can also be programmed for Emergency status to alert the dispatcher and/or operator to a user in distress.

FleetSync™
by KENWOOD

Ready for Various Emergency Scenarios

These functions provide security and safety for users who work remotely as well as for those who work in hazardous areas. If the radio user gets into a situation which classifies as an emergency, the transceiver automatically sends a help signal to a pre-determined person or system.

→ **Standard Man-down**

Standard Man-down function is available as a factory setting.

If the radio position changes to horizontal (or slanted)* for a pre-set period, an alert signal is transmitted.

→ **Advanced Motion Detection (Software License Option*)**

* Need activation file

Stationary mode

When the radio user carrying the radio does not move for a pre-set period, an alert signal is transmitted.

Motion mode (Panic)

When the radio user carrying the radio moves a lot (in a running motion for example) for certain period, an alert signal is transmitted.

→ **Lone Worker Function**

This ingenious feature provides an extra layer of security and safety for individuals. As long as the buttons are pressed regularly, the radio operates normally; however, if there is a long pause of no user interaction, it will sound an alert.

In the absence of further response from the user, the NX-230EX/330EX will place an emergency call to a pre-determined person or group of people. Lone Worker function can be used in combination with other Emergency functions.

→ **Emergency Key (Orange Key)**

A clearly identified Orange key can be used exclusively for emergency signalling to send a help signal to a pre-determined person or group of people.

Built-In GPS receiver for Personnel Location Management

A built in GPS receiver is capable to locate personnel for safety and resource management at a communication site. The NX-230EX/330EX has a capability to send GPS data with voice simultaneously. The data communication would not disturb your voice communication.

Over-the Air Alias

Caller Group or Unit name can be displayed automatically on the called units LCD display when a call is made. The user name data is sent with voice data simultaneously. This feature is invaluable for radio fleets where user (or radio names) are changing on a regular basis. Combined with Over-the-Air-Programming (OTAP) this allows easier user management and control, saving costs and increasing efficiencies

Telephone Interconnect

Phone calls to the system or outgoing calls to PSTN or PABX will pass through the Telephone Interface KTI-4. Adding a telephone interconnect solution to a NEXEDGE trunked systems will require a KTI-4 with an external telephone patch.

IP65 / IP67 Protection

The NX-230EX/330EX are compliant with stringent IP65 and IP67 environmental standards. Radios with this certification are designed to provide uncompromising performance in heavy rain or excessively dusty conditions.

MIL-STD 810 C/D/E/F/G

The NX-230EX/330EX are fully compliant with U.S. Department of Defence environmental standards for US MIL-STD 810 C/D/E/F/G for; Low Pressure, High Temperature, Low Temperature, Temperature Shock, Solar Radiation, Rain, Humidity, Salt Fog, Dust, Vibration, Shock and Immersion.

Over-the-Air-Programming

OTAP (Over The Air Programming) is a function to reprogram NEXEDGE terminals remotely, with FPU setting of the terminals over the air. OTAP Management software is required to use the OTAP functionality.

3. OTHER FEATURES

General Features

- VHF (136-174 MHz) / UHF (400-470 MHz) Models
- 512 CH-GID / 128 Zones
- 14 Character Alphanumeric Aliases
- 3-Digit Sub-Display
- RSSI Indicator
- On/Off Volume Knob
- 6 Front PF & Menu Keys
- Emergency/AUX Key
- VOX Ready
- Special Alert Tone Patterns
- Busy Channel Lockout
- Low Battery Alert
- Weather-sealed ACC Connector
- Front Panel Test & Tune
- SDM Manual Input
- Multi-Language Display
- 12-Key Keypad
- Backlit Dot Matrix LCD
- Function/Status LCD Icons
- Transmit/Busy/Call Alert/Warn LED
- 16-Position Mechanical Selector
- 2 Side PF Keys
- 400 mW Speaker Audio
- Emergency Call Features
- Time Out Timer
- LCD Battery Status Indicator
- Battery Saver
- Cloning
- TX LED ON/Off Setting
- Transparent Data Mode

DIGITAL – GENERAL

- NXDN® Digital Air Interface
- 6.25 & 12.5 kHz Channels
- Emergency Call
- NXDN built-in Digital Scrambler
- Remote Stun/Kill
- AMBE+2™ VOCODER
- Over-the-Air Alias (TX)
- Short & Long Data Messages
- Status Messaging
- 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 up to 48 site
- Site Roaming

DIGITAL – TRUNKING MODE

- Individual Private Call
- 4 Priority Monitor ID's
- Broadcast Call
- Transmission Trunked Mode
- Failsoft Mode
- Telephone Interconnect
- Group Call
- Late Entry (UID & GID)
- Remote Group Add
- Message Trunked Mode
- Call Queuing with Priority

DIGITAL – TRUNKING MULTI-SITE MODE

- 60,000 GIDs per Network
- Wide Area All Group Call
- Multi-Site IP Network up to 48 sites
- 60,000 UIDs per Network
- Auto-Roaming / Registration
- Group Registration

SCAN TYPES (FM & NXDN® CONVENTIONAL)

- Single/Multi-Zone Scan
- List Scan
- Dual Priority Scan (Conventional)

FM MODES – GENERAL

- 25, 20 & 12.5 kHz Channels
- DTMF Encode / Decode
- Voice Inversion Scrambler
- FleetSync®/II
- Companded Audio

FM CONVENTIONAL ZONES

- QT / DQT
- Single/Two-Tone Encode
- Voting
- 5-Tone Encode / Decode

FM TRUNKED ZONES

- Kenwood MPT Features

FleetSync®/II (FM)

- PTT ID Digital ANI (TX)
- Status Messaging
- Short Text Messages
- PTT ID & Emergency GPS Reporting
- GPS Ack Request
- Selective Call & Group Call*1
- Emergency Status
- Power On/Off Status Messages
- Status Message Block GPS Reporting

Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

4. QUALITY CONTROL

Made in Japan with ISO 9001 Quality Management

The NX-230EX/330EX are manufactured in Kenwood's factory in Japan, which has been certified to ISO9001 international quality management standard. High-level quality system produces excellent quality product.

Kenwood Original Quality Test Standards for Products

Each transceiver has passed Kenwood's original quality tests, which simulate years of sustained, demanding use in harsh operating conditions. These tests have higher thresholds than any other accepted industry standards in the market.

5. OPTIONAL ACCESSORIES

- | | | |
|---|---------------|---------------------------------------------|
| v | KBH-16EX | Belt-Clip |
| v | KNB-70LEX | (New) Li-Ion Battery (1430 mAh, min) |
| v | KRA-26 | VHF Antenna |
| v | KRA-27 | UHF Antenna |
| v | KRA-22 | VHF Short Antenna |
| v | KRA-23 | UHF Short Antenna |
| v | KRA-43G | (New) VHF/GPS Antenna |
| v | KRA-44G | (New) UHF/GPS Antenna |
| v | KSC-32S *1,2 | Rapid Charger for the KNB-70LEX |
| v | KCT-69EX *1,2 | (New) Fuse Box for the KSC-32S |
| v | KSC-326S *1,3 | (Coming Soon) |
| | | 6 Pocket Multiple Charger for the KNB-70LEX |
| v | KMC-46EX | Heavy-duty Speaker-Microphone |
| v | KLH-188EX | (New) Soft Leather Case |

Programming Accessories for Dealers;

- | | | |
|---|------------|---------------------------------------------------|
| v | KPG-36U * | Programming Interface cable (USB) |
| v | KPG-36A * | Programming Interface Cable (D-Sub 9 pin) |
| v | KPG-111D * | Programming Software (Ver. 4.10 or later) |
| v | KPG-143D * | Programming Software for MPT (Ver. 4.10 or later) |

* 1. Do not use the following accessories in hazardous areas.

* 2. The KCT-69EX is a mandatory product which is required under the ATEX/IECEx directive (60079-11: 2011) at 6.2.5 section for the KSC-32S user.

The KCT-69EX is a fuse box, which protects the IS circuit in the NX-230EX/330EX from breakdown when the KNB-70LEX attached with NX-230EX/330EX are charged with KSC-32S in a non-hazardous area. Please take note the KSC-32S cannot be used in hazardous area even though it is used with KCT-69EX.

* 3. Current KSC-326 cannot be used with the NX-230EX/330EX as ATEX/IECEx certified accessory.

6. Third-Party ACCESSORIES

Third-Party audio accessories will be available. For audio accessories, the NX-230EX/330EX has the identical interface specification as our existing the TK-2260EX/3260EX, ATEX/IECEX model. Third-party suppliers have a generous product line-up of audio accessories from light to heavy duty usage for KENWOOD ATEX radio models.

For further information please see any of these suppliers or contact Kenwood:

- v SAVOX <http://www.savox.com>
- v Peltor (3M) <http://peltorcomms.3m.com>
- v Ceotronics <http://www.ceotronics.de>

Note: The certified class may not be identical to KENWOOD products. It varies depending on the supplier and product. Please ensure the certified class of the audio accessory before use.

7. Information for the ATEX Certified Class and Directives

Equipment Group & Category

Certified Class

Gas : **II 2G Ex ib IIC T4 Gb**

Dust : **II 2D Ex ib IIIC T110°C Db**

Mining : **I M2 Ex ib I Mb**

Group I (Mining)

Category M1

Very high level of protection

Category M2

High level of protection

Group II (Surface Industry)

Category 1

Very high level of protection

Category 2

High level of protection

Category 3

Normal level of protection

Sector G

Gas

Sector D

Dust

The NX-230EX/330EX meet Category M2 of Group 1; the protection level is “High Protection”.

M2 identifies equipment that does not operate when a potentially explosive atmosphere is present. The equipment is intended to be de-energized in the event of an explosive atmosphere.

Equipment Group II is for the equipment intended for use in locations with explosive atmospheres other than in mining (surface Industry). The NX-230EX/330EX meet Category 2 of Group 2; the protection level is “High Protection” for use in Sector G (Gas) and Sector D (Dust).

Explosion Group and Temperature Class

Certified Class

Gas : **II2G Ex ib IIC T4**

ATEX Directive 94/9/EC classifies the gas substances, in which equipment can be used in air of flammable substances.

Explosion Group “IIC” is suitable for this purpose, because it covers most of types of gas atmospheres including Hydrogen and Acetylene.

Temperature class relates to the hot surface ignition temperature of a particular explosive atmosphere. The surface temperature must not exceed the temperature classification of the equipment intended to be used in that atmosphere. “T4” temperature class covers most gases and vapours.

		Temperature Class / Maximum Surface Temperature					
		T1: 450°C	T2: 300°C	T3: 200°C	T4: 135°C	T5: 100°C	T6: 85°C
Explosion Group	I	Methane					
	IIA	Acetone, Ethane, Ethyl acetate, Ammonia, Benzene (pure), Acetic acid, Carbon Monoxide, Methanol, Propane, Toluene	Ethyl alcohol, I-amyl acetate, n-butane, n-butyl alcohol	Benzene, Diesel fuel, Aircraft fuel, Heating Oil, n-hexane	Acetaldehyde, Ethyl ether		
	IIB	Town Gas (Coal Gas)	Ethylene				
	IIC	Hydrogen	Acetylene			Carbon disulphide	Ethyl nitrate

* Group I is for Mining

Definition of Hazardous Area Zone

Certified Class

Gas : **II 2G Ex ib IIC T4 Gb**

Category 2 covers Zone 1 and 2

Dust : **II 2D Ex ib IIIC T110°C Db**

Category 2 covers Zone 21 and 22

Explosive atmosphere generally consists of a mixture of air with flammable substances in the form of gas, vapour or mist, or a cloud of combustible dust in air. Hazardous areas are classified into zones on the basis of the frequency and duration of the occurrence of an explosive atmosphere.

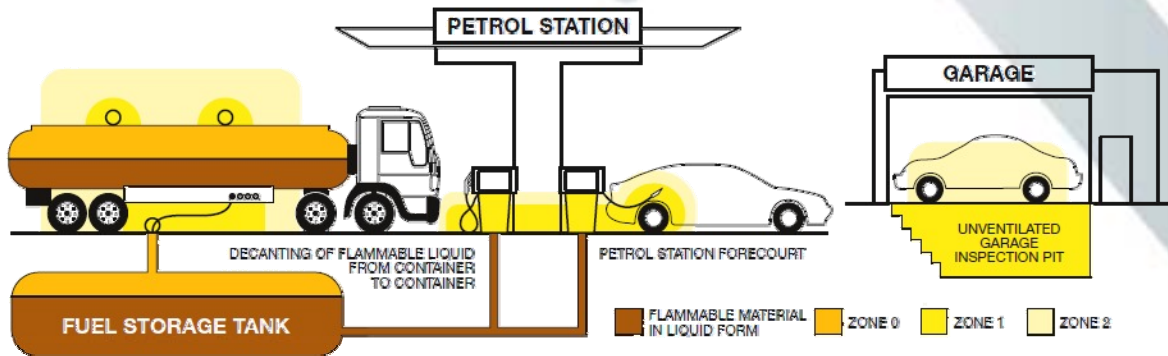
The NX-230EX/330EX can be used in the following zone areas under conditions of specified gas group and maximum temperature.

Gases	Dusts	
Zone 1	Zone 21	Likely to occur in normal operation occasionally (>10hrs, <1000hrs per annum)*
Zone 2	Zone 22	Unlikely to occur in normal operation, if it does will only be for short periods (<10hrs per annum) *

* Durations above are typical.

Example of Hazardous Area Zones

The diagram shows how hazardous area zones may occur in typical circumstances.



– Type of Protection

Certified Class

Gas : **II 2G Ex ib IIC T4 Gb**

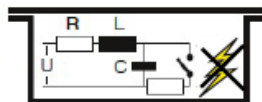
Dust : **II 2D Ex ib IIIC T110°C Db**

Mining : **I M2 Ex ib I Mb**

“ib” Protection Type

“ib” is a type of the protection for Zone 1 and 2, applied to an electrical equipment to prevent possible ignition of the surrounding atmosphere;

It is the protection when no spark or any thermal effect in the circuit, produced in the test conditions prescribed in EN standard, EN 60079-11 (which include normal operation and specific fault conditions), is capable of causing ignition.



– Ingress Protection (IP) Code

Certified Class

IP67*

IP6x (1st digit) : Protection Against Solid Objects. “6” means the equipment is totally protected against dust

IPx7 (2nd digit) : Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1m of submersion).

*NX-230EX and NX-330EX are also certified IP64 as the highest IP rate on ATEX/IECEx directive.

– About ATEX Directives

ATEX 95 The Products Directive 94/9/EC

The ATEX Product Directive (94/9/EC) applies to the manufacture, and distribution of equipment and protective systems intended for use in potentially explosive atmospheres. It defines the requirements of the equipment for each category, such as the Essential Health and Safety Requirements (EHSRs).

The NX-230EX/330EX comply with the Product Directive 94/9/EC.

ATEX 137 The Worker Protection Directive 1999/92/EC

The ATEX Worker Protection Directive (1999/92/EC) applies to the installation and use of such equipment. It classifies the zones and states which products category shall be used in each zone.

It is under the responsibility of DG Employment and Social Affairs of the European Commission. Unlike the product directive, individual countries could adopt or adapt this directive in any way they saw fit, provided that the essential principles were included.

The Combined Effect of Both Directives

It is illegal to “place on the market within the European Economic Area” and/or to “put into use” such equipment intended for use within a plant where there may be a potentially explosive atmosphere, without Declaration of Conformity of the ATEX Directives and getting the appropriate conformity assessment along with the module which is defined by Directives and its Annex.

This type of situation tends to lead to the blurring of responsibility between the manufacturer and the user of the equipment. However, carefully adhering to the structure of the directives, it is up to the user (purchaser), having performed a risk assessment, to specify the nature of the hazard and the required category for the equipment.

It is for the manufacturer through the distribution chain to supply a product which meets the purchaser’s specification and which is accompanied by all the necessary instructions to enable correct commissioning, operation and maintenance.

Where a product is being manufactured speculatively, the manufacturer must fully specify all explosion safety aspects to enable a purchaser to make a correct selection.

The plant owner must also complete the ignition hazard assessment for the installation and this has to be signed off at an appropriate level.

Between the two directives, the intention is that the individuals responsible for safety should sign their names to the paperwork so that there is no argument where the buck stops, whether it is with the manufacturer or the installer.