



NEXEDGE™

- Digital Conventional
- Digital Trunking
- Digital Trunked Wide Area IP Networks
- FM Conventional & LTR® Trunking

# NEXEDGE™: Multiple Solutions – One System

All NEXEDGE™ products use advanced DSP-driven digital voice technologies and support both FM analog and new digital fleets. System type conversion or expansion only requires software options and/or additional base station units, i.e., no “forklift” upgrading. Kenwood offers high-power turnkey NEXEDGE™ conventional, trunked and wide area trunked IP network solutions with secure digital voice and an array of advanced digital feature sets for business and government sectors.

## NXDN™ Digital Air Interface

NEXEDGE™ is powered by the NXDN™ digital air interface, an FDMA digital access methodology generated with optimized DSP coding, AMBE+2™ voice coding technology, unique filtering and a 4-level FSK modulation technique producing an industry-leading low bit error rate (BER) digital performance even at weak RF signal strengths.

- **Natural Sounding Digital Voice** The AMBE+2™ VOCODER, a state-of-the-art voice digitization technology, replicates an individual's natural human speech nuances accurately unlike early technologies that sounded unnatural and synthesized. The AMBE+2™ offers superior voice quality at varying signal strengths even at highway speeds.
- **Extended Range over FM** As RF signal strength weakens with distance, FM analog reception becomes increasingly noisy and intermittent. NXDN™'s low BER improves reception in fringe areas, thereby increasing the effective range by as much as twenty percent over FM.
- **Large Group & Individual ID Capacity** The NXDN™ subscriber air interface protocol supports 60,000 GID's & 60,000 UID's for system sharing and large organizations (maximum ID's available depend on operational mode). ID's can be organized by agencies, divisions, departments and individuals.
- **Spectrum Efficient, Today & Tomorrow** The NXDN™ digital air interface is compliant with current channel bandwidths and converts easily to very narrow bandwidths in the future.
  - FM Analog @ 25 & 12.5 kHz Channels
  - NXDN™ Digital @ 12.5 & 6.25 kHz Channels

## Digital Common Features

NEXEDGE™ supports common call features in both digital conventional and trunked modes.

- **Over-the-Air Alias** A calling unit's UID alphanumeric alias is sent over the air and displayed on a receiving unit's LCD, so there is no need to program every fleet alias in every radio.
- **Paging Call** Up to five UID unit-to-unit pages are dated, time-stamped and stored for recall and review – useful for unattended radio messages and non-voice selective paging operations.
- **Emergency Call** Subscriber units can declare an Emergency to a console, an individual, a group or all groups. This signal can be triggered by a manual key, a footswitch (mobiles) or man-down tilt-switch (portables).
- **Remote Stun/Kill\*** Enables a dispatcher to temporarily or permanently disable a lost, stolen or compromised radio unit over the air for system security and personnel safety.

\* Remote Stun/Kill available in a future release.





## Digital Conventional Mode

**NEXEDGE™ conventional systems offer extended system sharing capabilities. Also both FM analog & digital units can share the same NEXEDGE™ RF channel!**

- **RAN (Radio Access Number)** NXR-700/800 base units include a 16 RAN capacity conventional repeater controller for 16 user group site sharing (RAN range: 1-63; analogous to CTCSS/DCS use in FM).

- **1,000 GIDs** Large talk group ID capacity for group selective calling.
- **1,000 UIDs** Large unit ID capacity for individual selective calling.
- **Mixed Channel Type** FM & NXDN™ conventional units can share the same RF channel. Both subscriber units and bases auto-sense incoming FM or NXDN™ digital calls and talkback or repeat the same mode.

## Digital Trunking Mode

**NEXEDGE™ trunking provides increased capacity, enhanced call capabilities, improved security and faster communications with less user operation than conventional systems require.**

- **Fast System Access** Channels selection is automatic and no user monitoring is required.
- **Enhanced Efficiency** Users share a pool of channels per site and thereby experience less busies during peak hours.
- **30 Channels @ Site** NEXEDGE™ sites can be operated as single-channel sites to take advantage of the trunking feature sets or as many as 30 channels for full trunked efficiency.
- **Message Trunking** Users are granted a traffic channel for the length of a two-way call thereby reducing interruptions (utilizes more system resources).
- **Transmission Trunking** Users are granted a traffic channel only during each push-to-talk, thus optimizing channel resources during peak traffic hours.
- **3,000 GIDs** Large talk group capacity for fleet dispatch operations.
- **3,000 UIDs** Large unit ID capacity for private unit-to-unit calling.

- **Call Queuing** Automatically stacks call requests when the system is busy and processes calls when a channel becomes available.
- **8 Priority Levels with Pre-emption** Processes the call queue in order of priority. Pre-emption allocates a talk path for priority personnel, dispatch and emergency calls.
- **Priority Monitor ID 1 & 2** Automatically switches radios to a high-priority call such as a dispatcher or supervisor, even when on a low priority call.
- **Late Entry** Permits subscriber units to join a call already in progress after powering on or entering system coverage.
- **Broadcast Call** Calls all fleets or all units in a fleet for emergencies and incident response scenarios.
- **Remote Group Add\*** Adds a new GID to subscriber units remotely over-the-air to form a workgroup for emergencies, special events, operations or incidents (available in multi-site release).
- **Failsoft Mode\*** If trunking capability is disabled, the system reverts to conventional operation so basic communications can continue.
- **ESN Validation\*** Each subscriber unit has a unique factory-embedded ESN validated by the system to protect against unauthorized access.
- **Control/Traffic Channel Switching** Designates a Traffic Channel as a new Control Channel should the original become disabled. Disabled Traffic Channels are automatically removed from service.

\* Available in a future release.

## Multi-Site IP Networks\*

**The network option\* leverages the power of IP to link NEXEDGE™ digital trunked sites together for wide area call capabilities.**

- **16 Sites Per Network\*** Multiple trunked sites can be linked together as one network for campus, citywide, countywide, regional or inter-state communications.
- **LAN/WAN Connectivity** Scalable networks can be created over existing IT assets, private microwave, spread-spectrum links or carrier services.
- **Off-the-Shelf 10/100 Base-T Ethernet Switching & Routers** Uses standard IT telecom-grade network equipment – no proprietary servers, gateways or audio-switching hardware required.

- **Virtual Private Network** Inter-site data routing uses VPN tunneling techniques with IPsec encryption and authentication for independent secure communications links within any IP network.
- **60,000 GID's & 60,000 UID's @ Network** Large subscriber capacity for shared networks and large fleets.
- **Automatic Roaming** Subscriber units automatically search for the best accessible sites while moving throughout a network. Subscriber units use advanced control channel hunting algorithms and RF signal strength (RSSI) monitoring to make accurate and prudent roaming and registration decisions.

\*16 site network option is available in a future release.

## Multi-Mode Flexibility/Migration Guaranteed

NEXEDGE™ equipment supports FM and digital modes providing a self-paced migration path from analog to fully digital.

- **All Mode Capable** Modes are either included or available as software flash options.
- **FM Mode** Includes all traditional signaling capabilities.
- **High-power Coverage** Uses existing FM power amps and site management equipment in both FM and digital modes to retain a large coverage footprint.

	NX Subscriber Units	NXR Base Stations
Digital Conventional Mode	●	●
Digital Trunked Mode	●	○
Digital Trunked IP Networks (future releases)	●	○
FM Conventional Mode	●	●
Mixed Channel Type (FM/NXDN™ Conventional)	●	●
FM: 25 & 12.5 kHz Channels	●	●
Digital: 12.5 & 6.25*1 kHz Channels	●	●
FM** : QT/DQT, 2-Tone, DTMF, FleetSync® /II	●	●
FM LTR™ Mode (NXR requires ext. LTR™ logic)	●	○
FM Power Amps for FM & Digital Modes	—	●
FM Conventional Repeater Control Included	—	●
External FM Controller Interface	—	●
LTR™/NXDN™ Traffic Channel Sharing (future release)	—	●

● Included/supported ○ Option

\*1 NXR-700/800 6.25 kHz operation requires a KXK-3 OXCO option per site.

\*\*2 NXR repeats 2-Tone, DTMF & FleetSync®/II in-band signaling; QT/DQT sub-audible signaling is decoded/encoded.

## Secure Voice

NEXEDGE™ offers voice security for personnel safety and reduced liability exposure by protecting sensitive communications for your facilities and operations.

- **Inherent Level of Security** NXDN™ digital air interface prevents casual eavesdropping.
- **FM & NXDN™ Voice Security Options** Protects against more sophisticated eavesdropping.

	FM Modes	NXDN™ Modes	Security Level
Frequency Inversion	●	—	Low
Encryption Board Control (option port for aftermarket boards)	●	—	Basic to Very High
NXDN™ Digital Scrambler*	—	●	Basic
AES Encryption Module Option (Module and NX subscriber firmware support available 2010)	—	○	Very High

● Included ○ Option

\* NX-200/300/700/800 only

## Integrated Data Services

NEXEDGE™ includes unit ID, emergency, GPS location, status and message capabilities in both FM and NXDN™ digital modes\*.

- **Fleet Management & Location**
- **Messaging & Data**
- **Emergency**

	Features
FM: FleetSync®/II	PTT ID, Emergency, Status Messaging, GPS AVL* Short & Long Text Messaging*
NXDN™	Unit & Group ID (CAI), Emergency, Status Messaging*, GPS with Voice*, Short (100 byte) & Long (4096 byte) Data Messaging*

\* NXDN™ GPS w/ voice and Short/Long Data available in a future NX subscriber firmware release. FleetSync® & NXDN™ compatible messaging and GPS AVL software applications will be available as future product releases. NXDN™ GPS AVL and FleetSync® GPS AVL with Voice require GPS options installed in NX subscriber units.

## System Management

The NEXEDGE™ KPG-110SM System Manager cuts operational and maintenance costs by providing remote configuration & diagnostics to NXDN™ single- and multi-site trunked networks in a user-friendly Windows® application (not used for FM and NXDN™ conventional sites). Sites can be accessed via on-site equipment connection, dialup PSTN modem connection or IP connection.

- **System Parameters** Operators are provided with full site and network configuration control by remote connection.
- **Subscriber Privileging** UID/GID validation and class-of-service privileging permit operators to limit access and prioritize level of service for any individual or group of users.

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- **Channel Loading** Site usage graphs can be generated to view peak usage and blocking statistics to identify site/network capacity issues and troubleshoot possible problems.
- **NXR Software Uploading** Operators can remotely update NXR operational software and install options without ever having to drive to a site.
- **NXR Base Diagnostics** Operators can remotely monitor electrical, RF, temperature and operational parameters to identify possible base or network interface problems with each NXR unit at any site.
- **Secure Access** USB encrypted hardware keys limit access to authorized personnel only.
- **Call Logs\*** Operators can download detailed call activity per channel, per site and per individual or group for traffic, security and incident analysis.

\* Call logging available in a future release.

## Listen to the Future

Kenwood has always connected with people through sound. Now we want to expand the world of sound in ways that only Kenwood can, listening to our customers and to the pulse of the coming age as we head toward a future of shared discovery, inspiration and enjoyment.

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