KENWOOD

# Intrinsically Safe & Non-Incendive Two-Way Portable Radios


## What is Intrinsically Safe (IS) and Non-Incendive (NI)?

Intrinsically Safe and Non-Incendive are protective certifications to ensure safe operation of electronic equipment in explosive atmospheres and under irregular operating conditions.

Intrinsically Safe, required for Division 1 operations, refers to equipment that is incapable of releasing sufficient electrical or thermal energy under normal or abnormal operating conditions to cause ignition of a specific hazardous mixture and air.

The Non-Incendive (N.I.) rating is required for equipment to be used in Division 2 environments. N.I. equipment is incapable of releasing sufficient electrical or thermal energy under normal operating conditions only which cause ignition of a specific hazardous mixture and air.

Intrinsically Safe and Non-Incendive approvals are classified by Class, Division, Groups. The Intrinsically Safe (IS) rating is required for equipment to be used in Division 1 environments and the Non-Incendive (NI) rating is required for equipment to be used in Division 2 environments.

## Kenwood provides the largest offering of CSA Intrinsically Safe portables.

Approved by CSA as Intrinsically Safe for use in Class I, II & III, Division 1, Groups A, B, C, D, E, F, and G.

Kenwood offers a **COMPREHENSIVE** Intrinsically Safe and Non-Incendive product offering including **VHF, UHF, 700/800, 800 and 900 MHz** models. Operational at 12.5kHz & 25kHz (narrow & wide) **analog** and 6.25kHz & 12.5kHz (very narrow & narrow) NEXEDGE© and P25 **digital**, **conventional** and **trunked** mode operations, to outfit countless requirements.

## **Class** is defined by relating to the industry type in which the equipment will operate.

### Class I: Petroleum / Gas / Oil

***Division 1:*** Where ignitable concentrations of flammable gases, vapors or liquids can exist *all* or *some* of the time under normal operating conditions.

***Division 2:*** Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions.

### Class II: Heavy Engineering (Iron Ore / Magnesium / Coal / Charcoal)
### Food Industry (Starch / Grain processing)

***Division 1:*** Where combustible dust is or may be in suspension in air continuously, intermittently, or periodically under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures.

***Division 2:*** Where combustible dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment, but such dust would be present in insufficient quantities.

### Class III: Industries dealing with fibers (Saw mills, Textile mills, Flax processing plants)

***Division 1:*** Where readily ignitable fibres or materials producing combustible flyings are handled, manufactured or used.

***Division 2:*** Where readily ignitable fibres other than those in process of manufacture are stored or handled.

## **Groups** are types of atmosphere and ranges from Group A through to Group G.

**Group A** - Consisting of atmospheres containing Acetylene gas.

**Group B** - Consisting of atmospheres containing Butadiene, Ethylene Oxide, Hydrogen, (or gases or vapors equivalent in hazard to hydrogen, such as a manufactured gas) or Propylene Oxide.

**Group C** - Consisting of atmospheres containing acetaldehyde, cyclopropane, diethyl ether, ethylene, hydrogen sulphide, or unsymmetrical dimethyl hydrazine (UDMH), or other gases or vapours of equivalent hazard.

**Group D** - Consisting of atmospheres containing acetone, acrylonitrile, alcohol, ammonia, benzine, benzol, butane, ethylene dichloride, gasoline, hexane, isoprene, lacquer solvent vapours, naphtha, natural gas, propane, propylene, styrene, vinyl acetate, vinyl chloride, xylenes or other gases or vapors of equivalent hazard.

**Group E** - Consisting of atmospheres containing combustible metal dust, including aluminium, magnesium, and their commercial alloys, and other metals of similarly hazardous characteristics.

**Group F** - Consisting of atmospheres containing carbon black, coal, or coke dust.

**Group G** - Consisting of atmospheres containing flour, starch, or grain dust, and other dusts of similarly hazardous characteristics.

**NOTE:** For description outlining Classes, Divisions and Groups for using communications equipment in Hazardous Locations in Canada please refer to the Canadian Electrical Code, Part I. Safety Standard for Electrical Installations.

# Class I Division 1 Groups A & B


## NX-200/300

NXDN® FleetSync® P25 COMPLIANT IP55 COMPLIANT MPT1327

**Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 136-174 MHz, 2W (ABP Models) & 5W (ISP Models)
- 400-470 MHz, 2W (ABP Models) & 5W (ISP Models)
- 512 CH-GID / 128 Zones
- 14-Character Alphanumeric LCD
- NXDN® Digital Conventional / Trunked
- 6.25, 12.5 & 25 kHz Channels
- Over-the Air Alias
- Over-the Air Programming
- Paging Call / Emergency Call
- AES & DES Encryption Module
- All Group Call
- Status Messaging
- Remote Stun/Kill & Check
- FleetSync® II, MDC-1200
- Short & Long Data Messages
- NXDN® Scrambler Included
- MPT Option
- 5 / 6 Tone Firmware Available
- *P25 Digital Upgradable
- IP54/55
- IP67 Immersion Option
- Colour Cases Option Available on 6 Front PF Key Models Only.

## NX-210/410/411

NXDN® FleetSync® COMPLIANT IP55 MPT1327

**Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 136-174 MHz, 2W (ABP Models) & 5W (ISP Models)
- 806-870 MHz, 2W (ABP Models) & 3W (ISP Models)
- 896-902, 935-941 MHz, 2W (ABP Models & 3W (ISP Models)
- 512 CH-GID / 128 Zones
- 14-Character Alphanumeric LCD
- NXDN® Digital Conventional / Trunked
- 6.25, 12.5 & 25 kHz Channels
- Over-the Air Alias
- Over-the Air Programming
- Paging Call / Emergency Call
- AES & DES Encryption Module
- All Group Call
- Status Messaging
- Remote Stun/Kill & Check
- FleetSync® II, MDC-1200
- Short & Long Data Messages
- NXDN® Scrambler Included
- MPT Option
- IP54/55
- 5 / 6 Tone Firmware Available

## Class I Division 1 Groups A & B


### TK-5220/5320

FleetSync® P25 COMPLIANT COMPLIANT IP55

**Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 136-174 MHz, 2W (ABP Models) & 5W (ISP Models)
- 400-470 MHz, 2W (ABP Models) & 5W (ISP Models)
- 128 Zones / 512 Channels
- P25 Conventional
- P25 Trunked Option
- 12-Keypad Models
- 14-Character Alphanumeric LCD
- 8 Programmable Function/LCD menu keys
- 16-Position Selector Knob with detent feel & mechanical stop
- FleetSync® II, MDC-1200
- Emergency Features
- AES & DES Encryption Module
- VGS-1 Option / Easy Option Port
- IP54/55
- IP67 Immersion Option

## Class I Division 2 Groups A & B

### TK-2180/3180

FleetSync® COMPLIANT COMPLIANT IP55 MPT1327

**Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 136-174 MHz, 5W
- 400-470 MHz, 5W
- 512 CH/128 Zones/512 GID
- 12 Character Alphanumeric LCD
- 6 PF Keys
- Dual Priority Scan
- FleetSync® II
- DTMF & Two-Tone Decode/Encode
- Voice Inversion Scrambler Built-In
- Encryption / ANI Control
- VGS-1 Option / Easy Option Port
- PassPort® NTS Option
- MPT Option
- IP54/55
- 5 / 6 Tone Firmware Available

# Class I Division 2 Groups A & B


## TK-5210/5310

FleetSync® P25 COMPLIANT COMPLIANT IP55

**Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 136-174 MHz, 5W
- 400-470 MHz, 4W
- 100 Zone / 1024 Channels Models
- 32 Zone / 128 Channels Models
- FM Conventional
- P25 Conventional
- P25 Trunked Option
- Basic, 4-Key & 4-Key / DTMF Models
- 16-Character Alphanumeric LCD
- 3 Side PF Keys, Emergency Key
- FleetSync® II, MDC-1200
- Toggle & 3-Position Switches
- DES, AES & OTAR Options
- VGS-1 Option / Easy Option Port
- IP54/55
- IP67 Immersion Option


## TK-5410

P25 COMPLIANT COMPLIANT IP55

**Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Class I, Division 2, Groups A, B, C and D**

- 700/800 MHz, 3W
- 1024 Channels, 100 Zones
- P25 Conventional
- P25 Trunked
- 4-Key & 4-Key / DTMF Models
- 16 Character Alphanumeric Aliases
- 16-Position Selector Knob
- 3 Side PF Keys, Emergency Key
- Toggle & 3-Position Switches
- Priority Monitor Scan
- Dual Priority Scan
- Limited Talk Group Scan
- Talk Group ID Lists
- Individual ID Lists
- Caller ID Display
- DTMF Encode
- Emergency Call Features
- AES & DES Encryption Module
- VGS-1 Option / Easy Option Port
- IP54/55
- IP67 Immersion Option

## CSA Portable Matrix

| Model | A & B Division 1 | A & B Division 2* | C & D Division 1 | E, F & G Division 1 | RF Power Watts | Battery | Chemistry | Capacity | Modes | Band |
|---|---|---|---|---|---|---|---|---|---|---|
| **INTRINSICALLY SAFE PORTABLES: CLASS I, DIVISION 1, GROUPS A&B RATING** | | | | | | | | | | |
| **NX-200 & NX-300 Series Portables A&B Division 1 Rating** | | | | | | | | | | |
| NX-200ABP | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 136-174MHz |
| NX-200ABP2 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 136-174MHz |
| NX-300ABP2 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 403-470MHz |
| NX-300ABP4 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 403-470MHz |
| **NX-210 Series Portables A&B Division 1 Rating** | | | | | | | | | | |
| NX-210ABP2 | • | • | • | • | 2 | KNB-66LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 136-174MHz |
| **NX-410 & NX-411 Series Portables A&B Division 1 Rating** | | | | | | | | | | |
| NX-410ABP2 | • | • | • | • | 2 | KNB-66LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 806-870MHz |
| NX-411ABP2 | • | • | • | • | 2 | KNB-66LC | Li-Ion | 1,880mAh | NEXEDGE & Analog | 896-941MHz |
| **TK-5220 & TK-5320 Series Portables A&B Division 1 Rating** | | | | | | | | | | |
| TK-5220ABP | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | P25 & Analog | 136-174MHz |
| TK-5220ABP2 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | P25 & Analog | 136-174MHz |
| TK-5320ABP2 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | P25 & Analog | 403-470MHz |
| TK-5320ABP4 | • | • | • | • | 2 | KNB-61LC | Li-Ion | 1,880mAh | P25 & Analog | 403-470MHz |
| **NON-INCENDIVE PORTABLES: CLASS I, DIVISION 2, GROUPS A&B RATING** | | | | | | | | | | |
| **NX-200 & NX-300 Series Portables** | | | | | | | | | | |
| NX-200ISP | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | NEXEDGE & Analog | 136-174MHz |
| NX-200ISP2 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | NEXEDGE & Analog | 136-174MHz |
| NX-300ISP2 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | NEXEDGE & Analog | 403-470MHz |
| NX-300ISP4 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | NEXEDGE & Analog | 403-470MHz |
| **NX-210 Series Portables** | | | | | | | | | | |
| NX-210ISP2** | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | NEXEDGE & Analog | 136-174MHz |
| **NX-410 & NX-411 Series Portables** | | | | | | | | | | |
| NX-410ISP2** | - | • | • | • | 3 | KNB-41NC | NiMH | 2,500mAh | NEXEDGE & Analog | 806-870MHz |
| NX-411ISP2** | - | • | • | • | 3 | KNB-41NC | NiMH | 2,500mAh | NEXEDGE & Analog | 896-941MHz |
| **TK-2180 & TK-3180 Series Portables** | | | | | | | | | | |
| TK-2180ISP | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | Analog | 136-174MHz |
| TK-2180ISP2 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | Analog | 136-174MHz |
| TK-3180ISP2 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | Analog | 403-470MHz |
| TK-3180ISP4 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | Analog | 403-470MHz |
| **TK-5210 & TK-5310 Series Portables** | | | | | | | | | | |
| TK-5210ISP | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 136-174MHz |
| TK-5210ISP2 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 136-174MHz |
| TK-5210ISP3 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 136-174MHz |
| TK-5310ISP4 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 403-470MHz |
| TK-5310ISP5 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 403-470MHz |
| TK-5310ISP6 | - | • | • | • | 5 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 403-470MHz |
| **TK-5220 & TK-5320 Series Portables** | | | | | | | | | | |
| TK-5220ISP | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | P25 & Analog | 136-174MHz |
| TK-5220ISP2 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | P25 & Analog | 136-174MHz |
| TK-5320ISP2 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | P25 & Analog | 403-470MHz |
| TK-5320ISP4 | - | • | • | • | 5 | KNB-50NC | NiMH | 2,000mAh | P25 & Analog | 403-470MHz |
| **TK-5410 Series Portables** | | | | | | | | | | |
| TK-5410ISP2 | - | • | • | • | 3 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 763-869MHz |
| TK-5410ISP3 | - | • | • | • | 3 | KNB-41NC | NiMH | 2,500mAh | P25 & Analog | 763-869MHz |

## Batteries

| | KNB-41NC** Ni-MH Battery 2500 mAh (I.S.) | KNB-50NC** Ni-MH Battery 2000 mAh (I.S.) | KNB-61LC* Li-ion Battery 1880 mAh (I.S.) | KNB-66LC* Li-ion Battery 1880 mAh (I.S.) |
|---|---|---|---|---|
| |  |  |  |  |
| **TK-2180/3180** | ● | – | – | – |
| **TK-5210/5310/5410** | ● | – | – | – |
| **NX-200/300, TK-5220/5320** | – | ● | ● | – |
| **NX-210/410/411** | ● | – | – | ● |

*CSA Radio Class I, Division 1, Groups A&B Certification. **CSA Radio Class I, Division 2, Groups A&B Certification.

Approved by CSA as Intrinsically Safe (I.S.) for use in Class I, II & III, Division 1, Groups A, B, C, D, E, F & G and are also approved for Non-Incendive (N.I.) use in Class I, Division 2, Groups A, B, C & D hazardous locations (exception: KMC-47GPS is approved for Class I, II, III, Division 1, Groups C, D, E, F & G). Radios as listed above are approved at -30°C, ** except NX-210/410/411 ISP portables which are approved for -20°C. ABP refers to Intrinsically Safe (I.S.) Class I, Division 1, Groups A&B and ISP refers to Intrinsically Safe (I.S.) Class I, Division 1, Groups C, D, E, F & G and Non-Incendive (N.I.) Class II, Division 2, Groups A, B, C & D.

With the exception of the ABP, ABP2 & ABP4 models above all other portables require a leather case to be used in A & B Division 2 environments. When I.S. and N.I. portables are used with a KMC-47GPS the approval rating is reduced to Class I, II, III, Division 1, Groups C, D, E, F & G.

Using an Intrinsically Safe battery on a radio does not constitute an Intrinsically Safe (I.S.) radio. All Kenwood I.S. radios must be certified at Kenwood by inspection, logging & proper labeling. The appropriate I.S. labor code must be specified (L994) on all I.S. radio orders and the proper model I.S. battery must be used with the radio. Kenwood I.S. batteries can be purchased separately for existing Kenwood certified I.S. radios. Kenwood I.S. radios are approved with Peltor™ 3M™ Communication I.S. Headsets, for additional information please visit your local Authorized Dealer or visit www.csa.ca. Intentionally or inadvertently representing a Kenwood radio as I.S. without proper Kenwood certification can result in serious safety and/or legal liability issues for your company.

## Audio Accessories

| | KEP-1* 3.5mm Earphone Kit | KHS-11BL* 2-Wire Palm Mic. with Earphone | KHS-12BL* 3-Wire Mini Lapel Mic. with Earphone | KHS-14* Lightweight Single Muff Headset | KHS-15-BH/OH* Over-the-Head Heavy Duty Headset | V4-10388* Behind-the-Head w/Earcup PTT | KMC-47GPS** GPS Speaker Microphone | KMC-41* IP-55 Speaker Microphone | KMC-42W* IP-67 Speaker Microphone |
|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |
| **TK-2180/3180** | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **TK-5210/5310/5410** | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **NX-200/300, TK-5220/5320** | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| **NX-210/410/411** | ● | ● | ● | ● | ● | ● | ● | ● | ● |

*CSA Radio Class I, Division 1, Groups A&B Certification. **CSA Radio Class I, Division 1, Groups C&D Certification.

## Applicable MIL-STD & IP

| MIL Standard | MIL 810C Methods/Procedures | MIL 810D Methods/Procedures | MIL 810E Methods/Procedures | MIL 810F Methods/Procedures | MIL 810G Methods/Procedures |
|---|---|---|---|---|---|
| **Low Pressure** | 500.1/Procedure I | 500.2/Procedure I, II | 500.3/Procedure I, II | 500.4/Procedure I, II | 500.5/Procedure I, II |
| **High Temperature** | 501.1/Procedure I, II | 501.2/Procedure I, II | 501.3/Procedure I, II | 501.4/Procedure I, II | 501.5/Procedure I, II |
| **Low Temperature** | 502.1/Procedure I | 502.2/Procedure I, II | 502.3/Procedure I, II | 502.4/Procedure I, II | 502.5/Procedure I, II |
| **Temperature Shock** | 503.1/Procedure I | 503.2/Procedure I | 503.3/Procedure I | 503.4/Procedure I, II | 503.5/Procedure I |
| **Solar Radiation** | 505.1/Procedure I | 505.2/Procedure I | 505.3/Procedure I | 505.4/Procedure I | 505.5/Procedure I |
| **Rain** | 506.1/Procedure I, II | 506.2/Procedure I, II | 506.3/Procedure I, II | 506.4/Procedure I, III | 506.5/Procedure I, III |
| **Humidity** | 507.1/Procedure I, II | 507.2/Procedure II, III | 507.3/Procedure II, III | 507.4 | 507.5/Procedure II |
| **Salt Fog** | 509.1/Procedure I | 509.2/Procedure I | 509.3/Procedure I | 509.4 | 509.5 |
| **Dust** | 510.1/Procedure I | 510.2/Procedure I | 510.3/Procedure I | 510.4/Procedure I, III | 510.5/Procedure I |
| **Vibration** | 514.2/Procedure VIII, X | 514.3/Procedure I | 514.4/Procedure I | 514.5/Procedure I | 514.6/Procedure I |
| **Shock** | 516.2/Procedure I, II, V | 516.3/Procedure I, IV | 516.4/Procedure I, IV | 516.5/Procedure I, IV | 516.6/Procedure I, IV |

## Ingress Protection

| | FIRST NUMBER | SECOND NUMBER |
|---|---|---|
| | **Protection against solid bodies** | **Protection against liquid** |
| 0 | No protection | No protection |
| 1 | Objects greater than 50 mm | Vertically dripping water |
| 2 | Objects greater than 12 mm | 75° to 90° dripping water |
| 3 | Objects greater than 2,5 mm | Sprayed water |
| 4 | Objects greater than 1 mm | Splashed water |
| 5 | Dust-protected | Water jets |
| 6 | Dust-tight | Powerful water jets |
| 7 | | Temporary immersion |
| 8 | | Continuous immersion |

Specifications are subject to change without notice, due to advancements in technology.



KENWOOD

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For up-to-date information on Kenwood Intrinsically Safe & Non-Incendive Product offerings, scan the QR code.

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Professional Systems Business Group
JVC KENWOOD Corporation

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