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

- 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
- Colour Cases Option Available on 6 Front PF Key Models Only.
- 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

NX-210/410/411

- 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 & 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
Class I Division 1 Groups A & B

TK-5220/5320

- 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

- 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

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
- AES & DES Encryption Module
- VGS-1 Option / Easy Option Port
- IP67 Immersion Option

TK-5410

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
- Dual 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
- IP67 Immersion Option

Limitations:
- 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
- IP67 Immersion Option
<table>
<thead>
<tr>
<th>Model Type</th>
<th>A &amp; B Division 1</th>
<th>A &amp; B Division 2*</th>
<th>C &amp; D Division 1</th>
<th>E, F &amp; G Division 1</th>
<th>RF Power Watts</th>
<th>Battery Chemistry</th>
<th>Capacity</th>
<th>Modes</th>
<th>Band</th>
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<td><strong>NX-200 &amp; NX-300 Series Portables</strong></td>
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**Intrinsically Safe Portables:**

- **Class I, Division 1, Groups A & B**
- **Class I, Division 1, Groups C, D, E, F & G**

**Non-Incendive Portables:**

- **Class I, Division 2, Groups A&B**

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**Batteries**

<table>
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<tr>
<th>Model</th>
<th>A &amp; B Division 1</th>
<th>A &amp; B Division 2*</th>
<th>C &amp; D Division 1</th>
<th>E, F &amp; G Division 1</th>
<th>RF Power Watts</th>
<th>Battery Chemistry</th>
<th>Capacity</th>
<th>Modes</th>
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**Audio Accessories**

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<th>A &amp; B Division 2*</th>
<th>C &amp; D Division 1</th>
<th>E, F &amp; G Division 1</th>
<th>RF Power Watts</th>
<th>Battery Chemistry</th>
<th>Capacity</th>
<th>Modes</th>
<th>Band</th>
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**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 hazardous locations.

- **TK-5220/5320**
- **NX-200**
- **NX-410**

- **TK-5210/5310/5410**
- **TK-5220/5320**
- **NX-200**

- **TK-2180/3180**
- **TK-5210/5310/5410**
- **TK-5220/5320**
- **NX-200**

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*CSA Radio Class 1, Division 1, Groups A&B Certification. **CSA Radio Class 1, Division 2, Groups A&B Certification.
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<tr>
<th>Ingress Protection</th>
<th>FIRST NUMBER</th>
<th>SECOND NUMBER</th>
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<tbody>
<tr>
<td>Protection against solid bodies</td>
<td>Protection against liquid</td>
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<tr>
<td>0</td>
<td>No protection</td>
<td>No protection</td>
</tr>
<tr>
<td>1</td>
<td>Objects greater than 50 mm</td>
<td>Vertically dripping water</td>
</tr>
<tr>
<td>2</td>
<td>Objects greater than 12 mm</td>
<td>75° to 90° dripping water</td>
</tr>
<tr>
<td>3</td>
<td>Objects greater than 2,5 mm</td>
<td>Sprayed water</td>
</tr>
<tr>
<td>4</td>
<td>Objects greater than 1 mm</td>
<td>Splashed water</td>
</tr>
<tr>
<td>5</td>
<td>Dust-protected</td>
<td>Water jets</td>
</tr>
<tr>
<td>6</td>
<td>Dust-tight</td>
<td>Powerful water jets</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Temporary immersion</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Continuous immersion</td>
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Specifications are subject to change without notice, due to advancements in technology.

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