

CTI Products

RadioPro™ IP Gateway
Installation Guide
for
Kenwood NEXEDGE Radios
NX-57xx/58xx



Document # S2-61905-828
For Version 8 Software

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Fonts used in this document:

Technical terms

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Hyperlinks to other documents or web pages

Warnings

Software menus, menu options, folders, pages, and parameters

Software parameter values

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1 OVERVIEW

This Manual will focus on configuring *Kenwood NEXEDGE NX-57xx/58xx Radios* with the RadioPro System.

Please Refer to the [RadioPro IP Gateway Installation Guide](#) for general installation information relevant for all radio system types.

1.1 System Planner Template

Use the System Planner Template on page 25 of this document in the planning phase of a project to record IP addresses, usernames, passwords, serial numbers, and device names.

1.2 Required Items

1.2.1 Radio Interface Cable

A radio interface cable must be ordered for each IP Gateway from the following table:

<i>Control Station Radio</i>	<i>Cable Part #</i>
Kenwood NEXEDGE NX-700/800/5700/5800	S2-61769
Kenwood NEXEDGE NX-720/820	S2-61890

Other cables are available to connect a dedicated data revert cable. Contact CTI for more information.

1.2.2 Control Station Radio

Each Control Station radio used for voice requires one IP Gateway. The control station radio connected to the IP Gateway **must at least have the minimum firmware version listed below**. Kenwood's FPU (Field Programming Unit) software will be needed to configure the control station radio.

<i>Control Station Radio</i>	<i>Minimum Version</i>	<i>Programming Software</i>
Kenwood NEXEDGE NX-5700/5800 (Preferred Radio)	2.31.00	KPG-D1N
Kenwood NEXEDGE NX-700/800 or NX-720/820	3.21.00	KPG-111DN

1.2.3 Radio Programming Cable

A radio programming cable is required to configure the Control Station radio.

Note: A programming cable connected to the front microphone connector on the Control Station radio may prevent communications to a RadioPro IP Gateway from the Rear Accessory Connector. **Therefore, when a cable is connected to the Rear Accessory Connector to connect a RadioPro IP Gateway or a PC (during programming), ensure that the programming cable has been disconnected from the front microphone connector.**

2. FEATURE AVAILABILITY

Kenwood NEXEDGE Systems

Depending on NEXEDGE System Type, some features may not be available. Use the following table to determine if a feature discussed in this document is available.

<i>System Type</i> <i>Feature</i>	<i>Analog</i>	<i>Analog w/ FleetSync</i>	<i>Digital NXDN</i>	<i>Digital NXDN w/ call ack.</i>	<i>NXDN & LTR Trunking</i>	<i>NXDN Trunking (MsgTrnkd)</i>
Voice Dispatch	✓	✓	✓	✓	✓	✓
Text Messaging	-	✓	✓	✓	✓	✓
GPS Mapping	-	✓	✓	✓	✓	✓
Status Updates	-	✓	✓	✓	✓	✓
Selective Calling	-	✓	✓	Not Currently Supported	✓	Not Currently Supported
Remote Monitor	-	✓	✓	✓	✓	✓
Remote Enable/Disable	-	✓	✓	✓	✓	✓

3. CONFIGURATION AND INSTALLATION

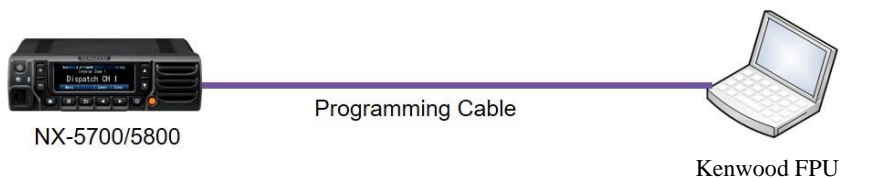
Use the steps in the following table to install a RadioPro System. Each step is discussed in detail starting on Page 6. Following installation of the IP Gateway in Step 5, at least one Client must be installed from Step 6.

Step #	Description	Kenwood NEXEDGE NX-57xx/58xx
3.1.1	Configure Control Station Radio(s) for Voice	page 6
3.1.2	Configure Control Station Radio(s) for Data	page 14
3.1.3	Configure Subscriber Radios for ARS, GPS, and TMS	page 15
3.2	Connect RadioPro IP Gateway to Control Station Radio	page 21
3.3	Configure RadioPro IP Gateway(s) using ICU.exe	page 22

Please Refer to the [RadioPro IP Gateway Installation Guide](#) for additional installation steps relevant for all radio system types.

3.1 Program the Control Station Radio

3.1.1 Configure the Voice Radio



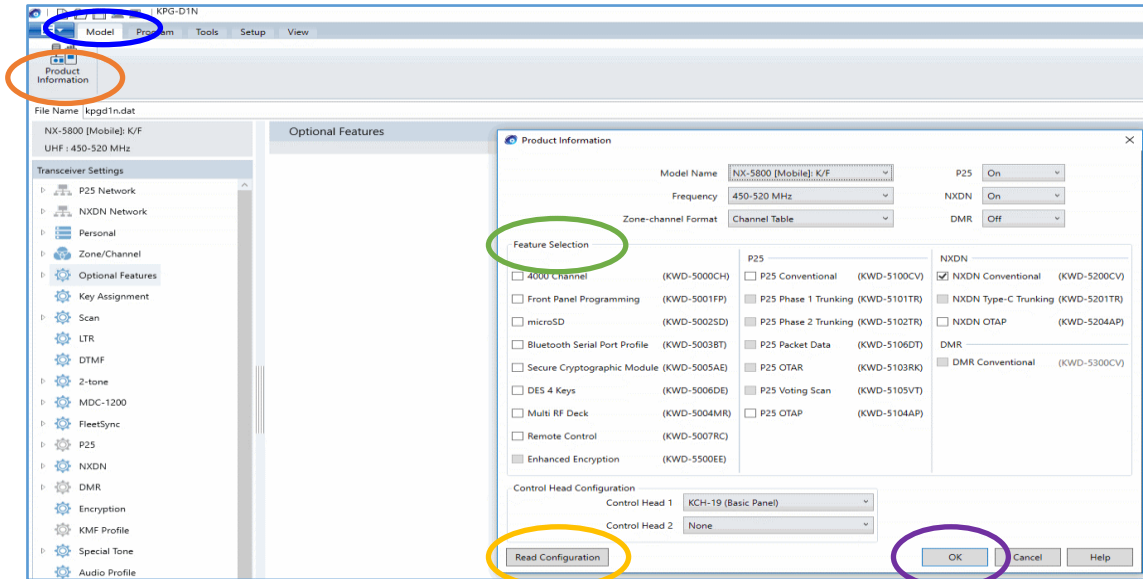
(For NX-700/800 radios see document # S2-61904.)

Radio models NX-5700/5800 can be used as a control station radio.

Use the KPG-D1N **FPU** (Kenwood's NEXEDGE 'Field Programming Utility' configuration software for NX-7x0/8x0 radios) to configure NEXEDGE radio parameters using the following steps.

1. **Connect and read the control station as any other radio**

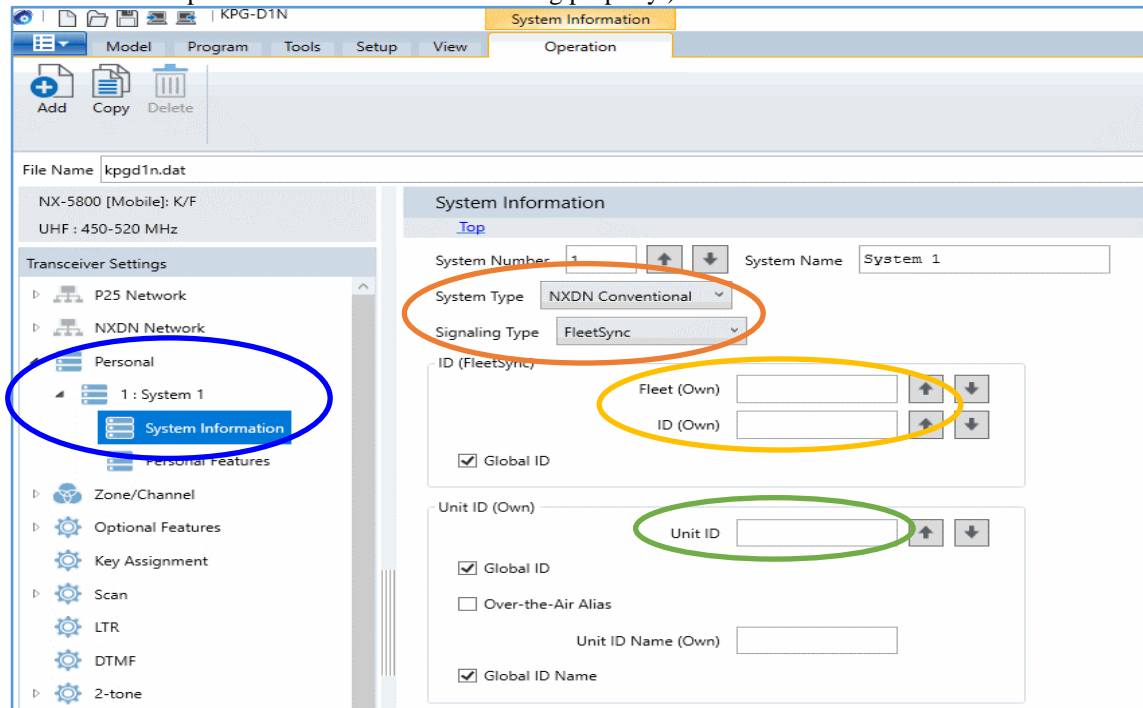
- a. Using a Kenwood programming cable, connect the NX-5700/5800 Control Station radio to a PC or Notebook that has the correct Kenwood FPU version (KPG-D1N in this case).
- b. Open the **KPG-D1N** FPU.
- c. Ensure that the correct COM port is selected.
- d. From the **Model** tab, choose the **Product Information** page, and then click the **Read Configuration** button as shown below.



- e. Enable **Feature Selections** that this radio is licensed for with a check mark in the appropriate boxes, and then click the **OK** button.

2. Configure NXDN and FleetSync System

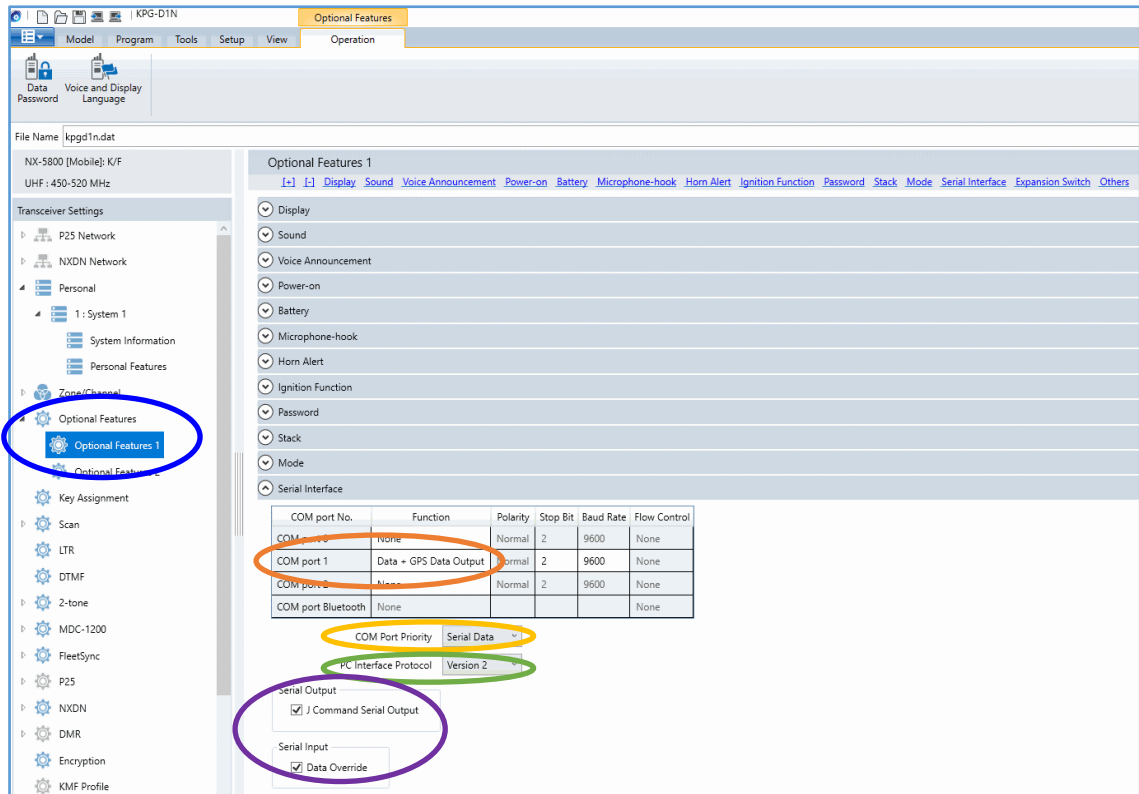
- a. Expand the **Personal** folder, expand the **System 1** folder under that, and then select **System Information**.
- b. In the System Information window, for System Type select **NXDN Conventional**, and for Signaling Type select **FleetSync**.
- c. In the **ID (FleetSync)** box, enter a value for **Fleet (Own)** and **ID (Own)**.
(Note: These parameters do not have to be used elsewhere, but they must have an assigned value even if the radio is being used in analog mode without FleetSync, or in digital mode with NXDN. Not entering an ID will prevent RadioPro from functioning properly.)



- d. In the **Unit ID** box, enter a value for **Unit ID**.
(Note: This parameter does not have to be used elsewhere, but it must have an assigned value even if the radio is being used in analog mode without FleetSync. Not entering an ID will prevent RadioPro from functioning properly.)

3. *Configure the Data Port*

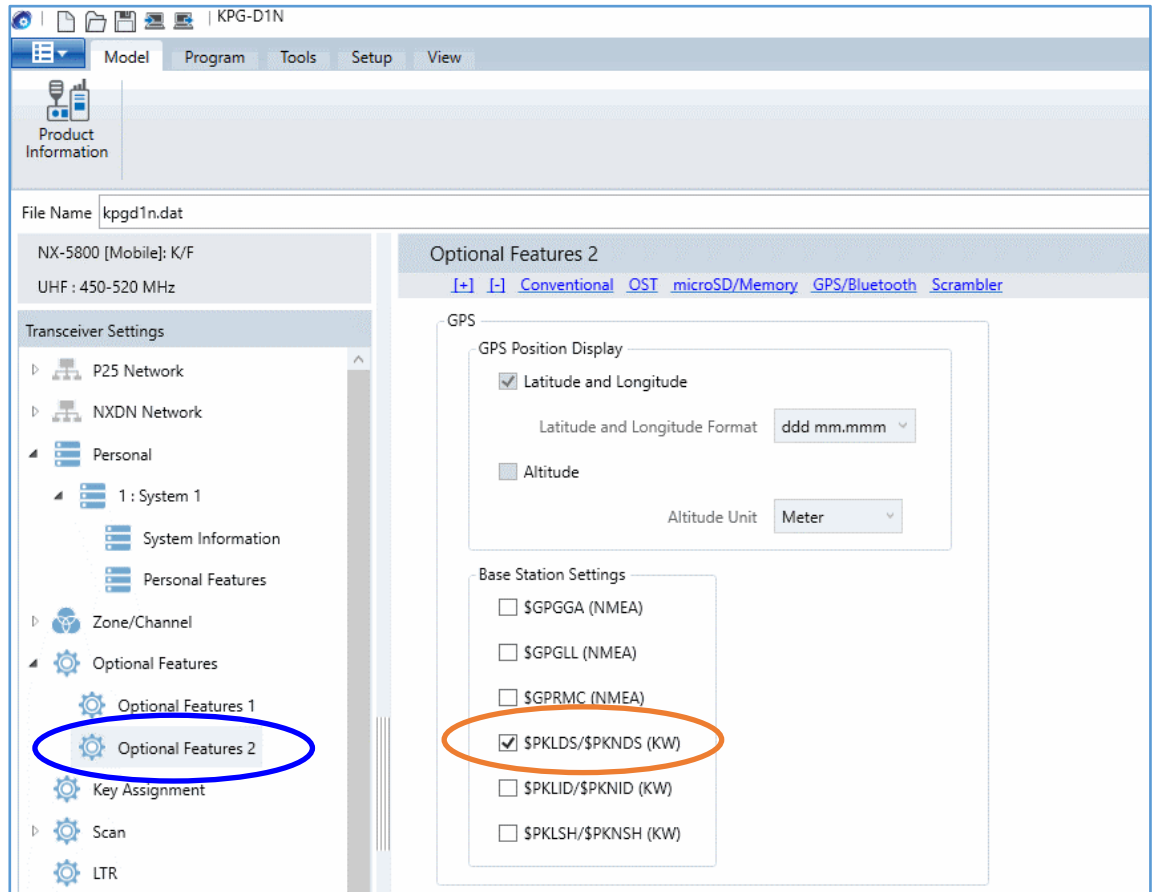
- a. Expand the **Option Features** folder, and then select **Optional Features 1**.
- b. In the **Optional Features 1** window, expand **Serial Interface**, and then under the **Function** column for **COM port 1**, select **Data + GPS Data Output**.
- c. For **COM Port Priority**, select **Serial Data**.
- d. For **PC Interface Protocol**, select **Version 2**.
- e. Enable all options for **Serial Output** and **Serial Input** with a check mark in the appropriate boxes.



4. Configure GPS Settings

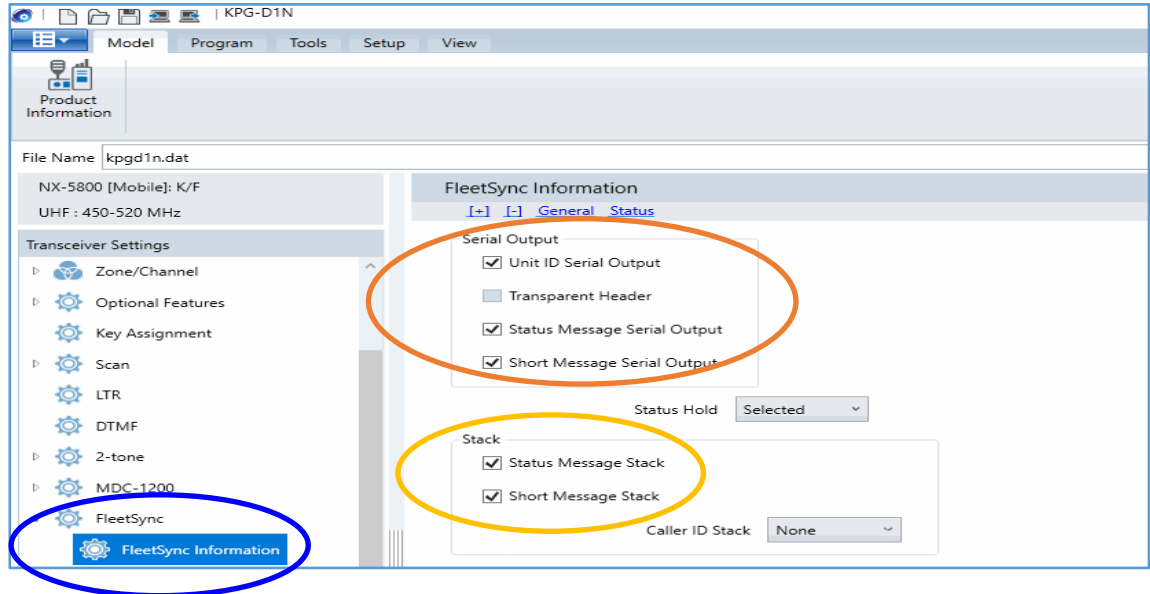
So that RadioPro can process GPS information from subscriber radios, the control station radio must know what data to send to the IP Gateway. Configure this as follows:

- Expand the **Optional Features** folder, then select **Optional Features 2**.
- In the **Base Station Settings** section of the **GPS** page, enable **\$PKLDS/\$PKNDS (KW)** with a check in the box.



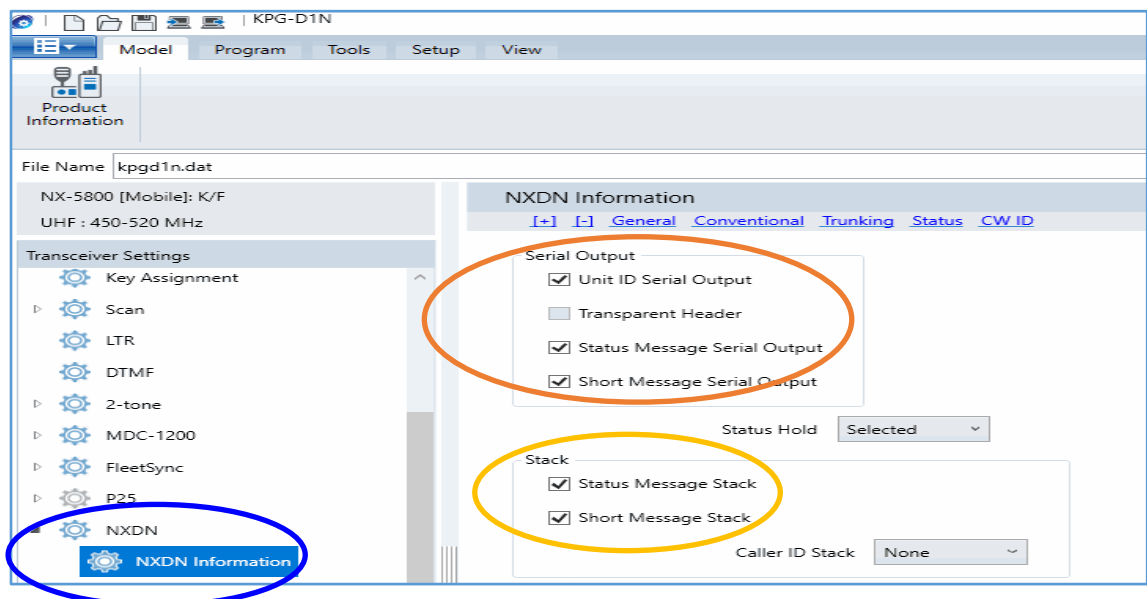
5. Configure FleetSync Settings

- Expand the **FleetSync** folder, then select **FleetSync Information**.
- Enable all options in the **Serial Output** section, except for **Transparent Header**.
- Enable all options in the **Stack** section.



6. Configure NXDN Settings

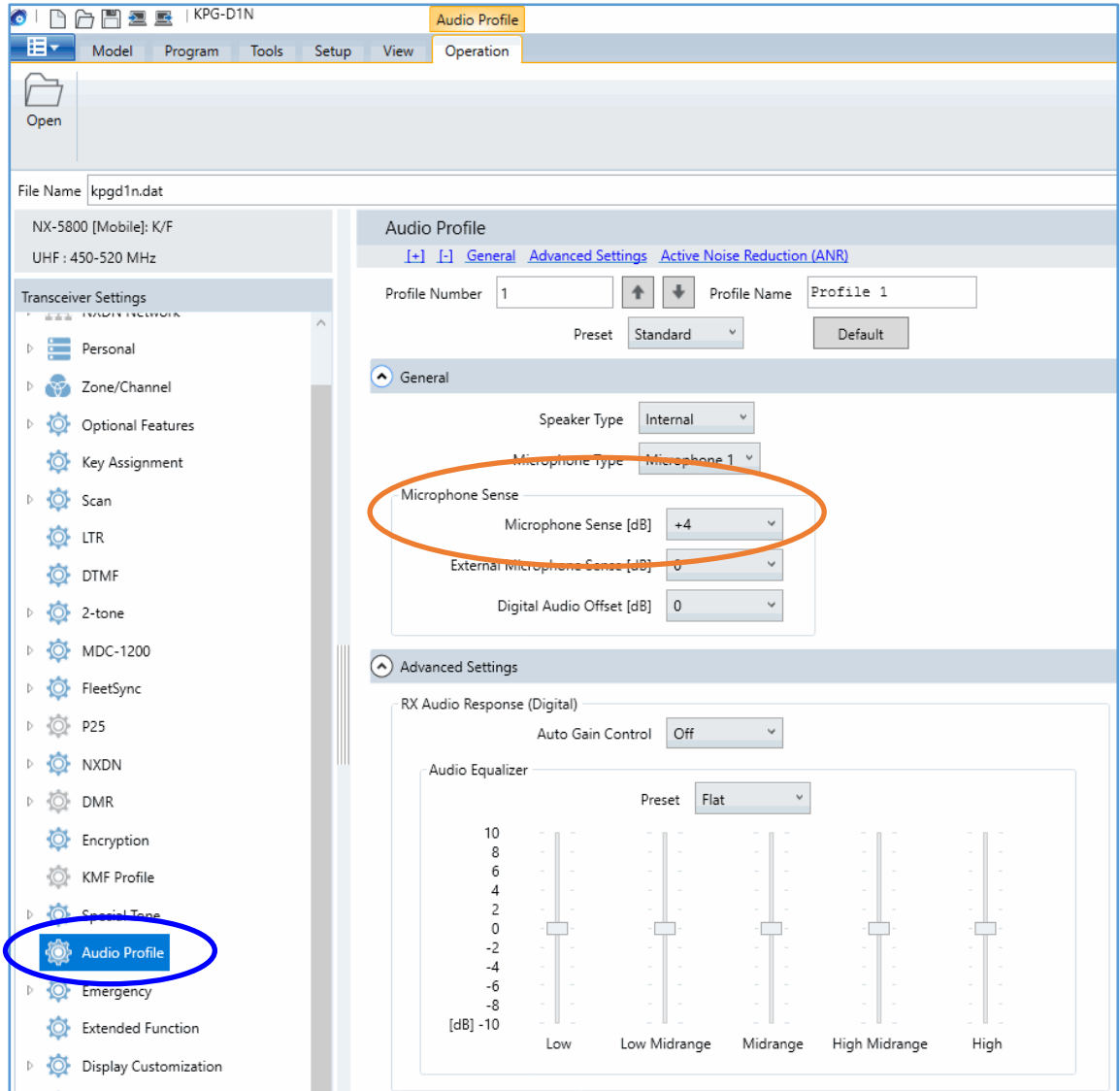
- Expand the **NXDN** folder, then select **NXDN Information**.
- Enable all options in the **Serial Output** section, except for **Transparent Header**.
- Enable all options in the **Stack** section.



7. Configure Sound Options

The steps in this section may be skipped if this radio is to be used for GPS only; ie, not used for voice communications.

- a. Select the **Audio Profile** folder.
- b. In the **General** section of the **Audio Profile** page, change **Microphone Sense** to **+4 dB** (High).



8. Configure Audio Routing Options

The steps in this section may be skipped if this radio is to be used for GPS only; ie, not used for voice communications.

- Select the **Extended Function** folder.
- Expand the **Modulation Line** tab.
- For **Mic PTT**, select **Connect** for both **Mic Line** and **MI2 Line**.

File Name: kpgd1n.dat
 NX-5800 (Mobile): K/F
 UHF : 450-520 MHz

Transceiver Settings

- Personal
- Zone/Channel
- Optional Features
- Key Assignment
- Scan
- LTR
- DTMF
- 2-tone
- MDC-1200
- FleetSync
- P25
- NXDN
- DMR
- Encryption
- KMF Profile
- Special Tone
- Audio Profile
- Emergency
- Extended Function**

Extended Function

- AUX
- Remote Zone-Channel
- Modulation Line**
- Mobile Function


	PTT	Mic Line	MI2 Line	DI Line	with QT/DQT	with STE
Mic PTT		Connect	Connect	Disconnect	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
External PTT (Voice)	Disconnect	Connect	Connect	Disconnect	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
External PTT (Data)	Disconnect	Disconnect	Connect	Connect	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data PTT	Disconnect	Disconnect	Connect	Connect	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

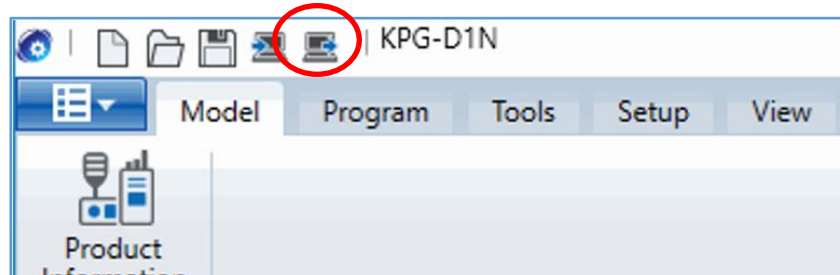
Modulation Line by Mic PTT

Control Head Mic Input (Control Head 1) Modular Jack

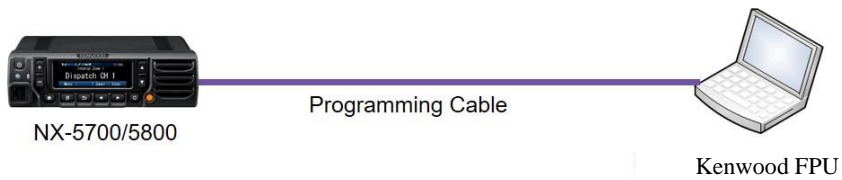
Mobile Function

9. Write New Configuration to Radio

- Click the  icon found in the main toolbar.



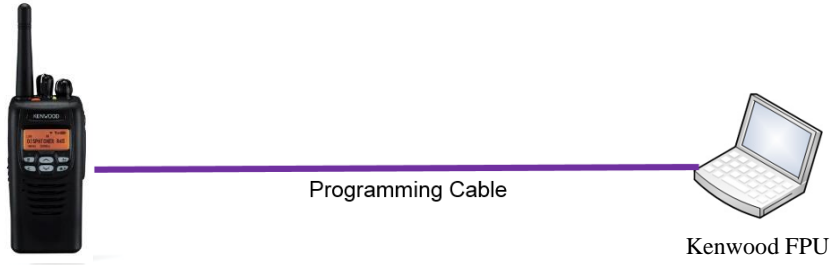
3.1.2 Configure the Data Revert Radio



If you are using a Data Revert radio, follow the same steps for configuring the radio as you would for the Voice Radio with the following exceptions:

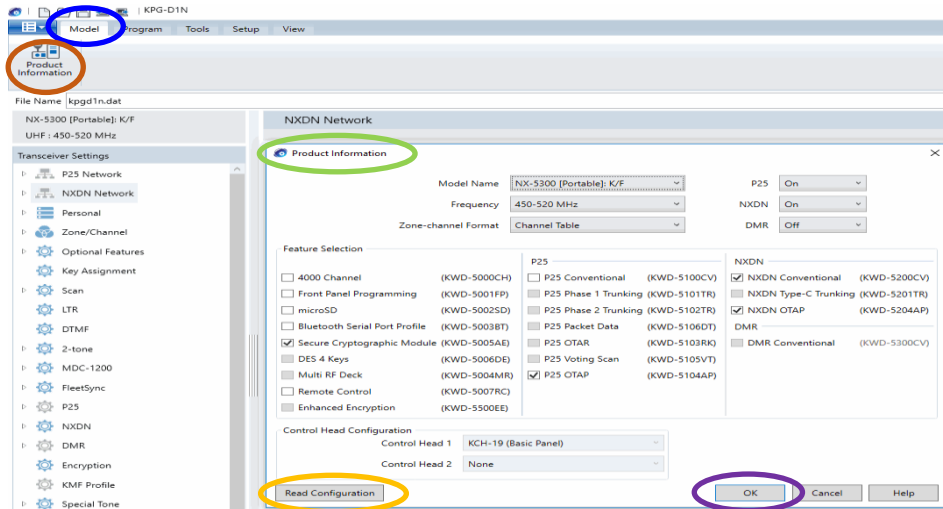
- Because the Data Revert Radio does not deal with audio, you may skip the steps for *Configure Sound Options* on page 12, as well as steps for *Configure Audio Routing Options* on page 13.
- **Be certain to follow steps described on page 10, Configure GPS Settings.**
- Because *Channel Steering* only affects the Voice Radio, program only the data channel into the radio.

3.1.3 Configure Subscriber Radios



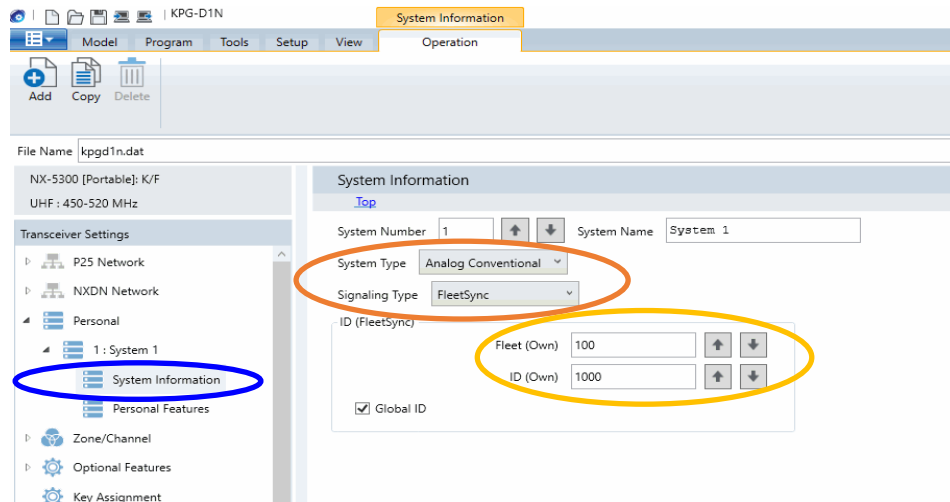
Use the **FPU**, (Kenwood's NEXEDGE 'Field Programming Utility' configuration software) to configure NEXEDGE radio parameters using the following steps.

1. **Configure the subscriber radio as any other radio.**
 - a. Using a Kenwood programming cable, connect the NX-5200/5300 Control Station radio to a PC or Notebook that has the correct Kenwood FPU version (KPG-D1N in this case).
 - b. Open the **KPG-D1N** FPU.
 - c. Ensure that the correct COM port is selected.
 - d. From the **Model** tab, choose the **Product Information** page, and then click the **Read Configuration** button as shown below.
 - e. Enable **Feature Selections** that this radio is licensed for with a check mark in the appropriate boxes, and then click the **OK** button.



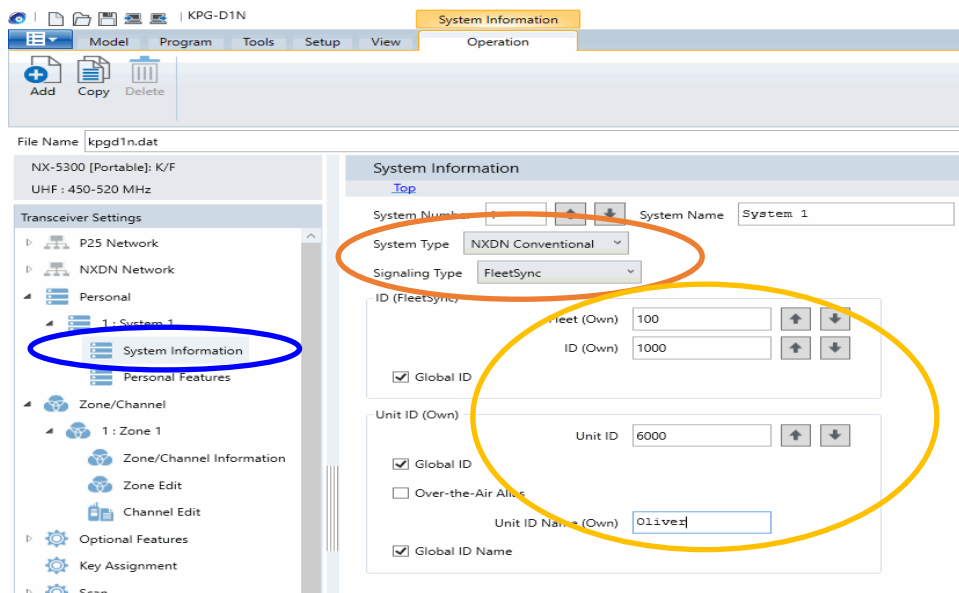
2. Configure ID settings for FleetSync.

- If using FleetSync, expand the **Personal** folder, expand the **System 1** folder under that, and then select **System Information**.
- In the System Information window, for **System Type** select Analog Conventional and for **Signaling Type** select FleetSync.
- Enter a value for **Fleet (Own)** and **ID (Own)**.



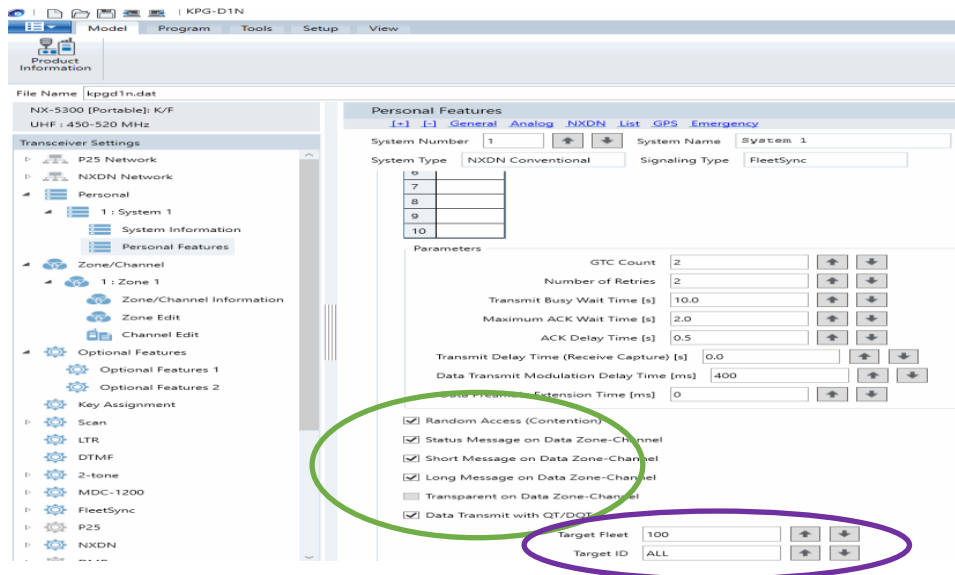
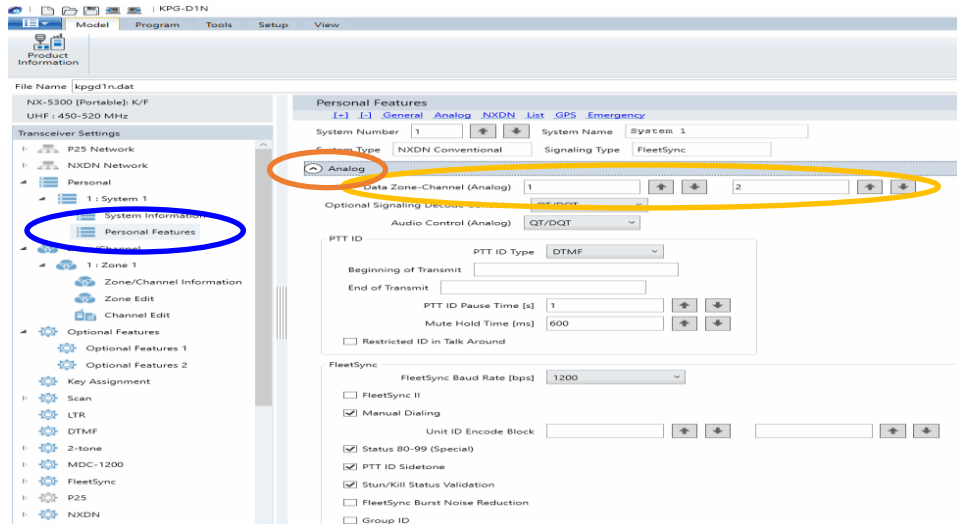
3. Or, Configure ID settings for NXDN.

- If using NXDN, expand the **Personal** folder, expand the **System 1** folder under that, and then select **System Information**.
- In the System Information window, for **System Type** select NXDN Conventional and for **Signaling Type** select FleetSync.
- Enter a value for **Fleet (Own)**, **ID (Own)**, **Unit ID** and **Unit ID Name (Own)**.

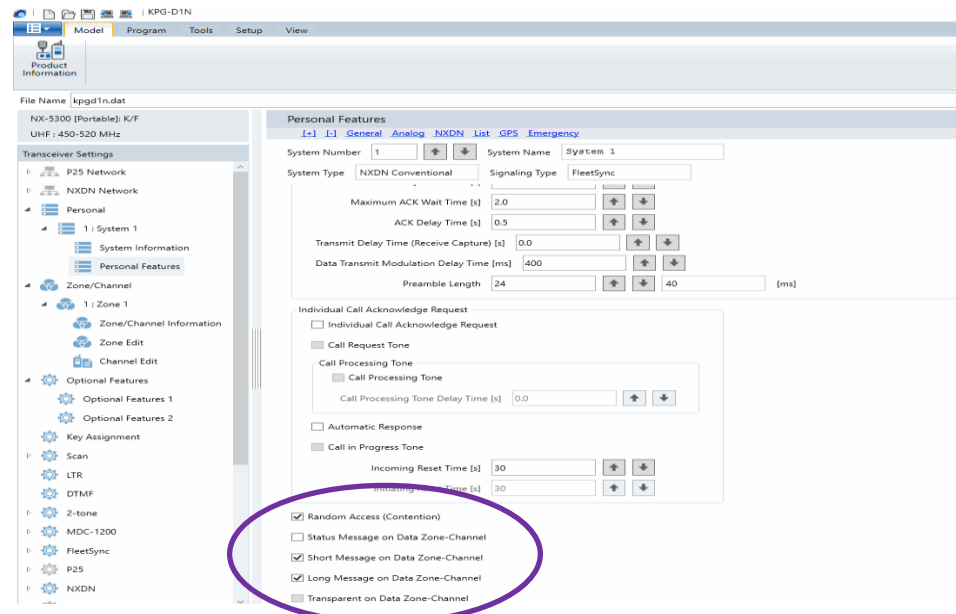
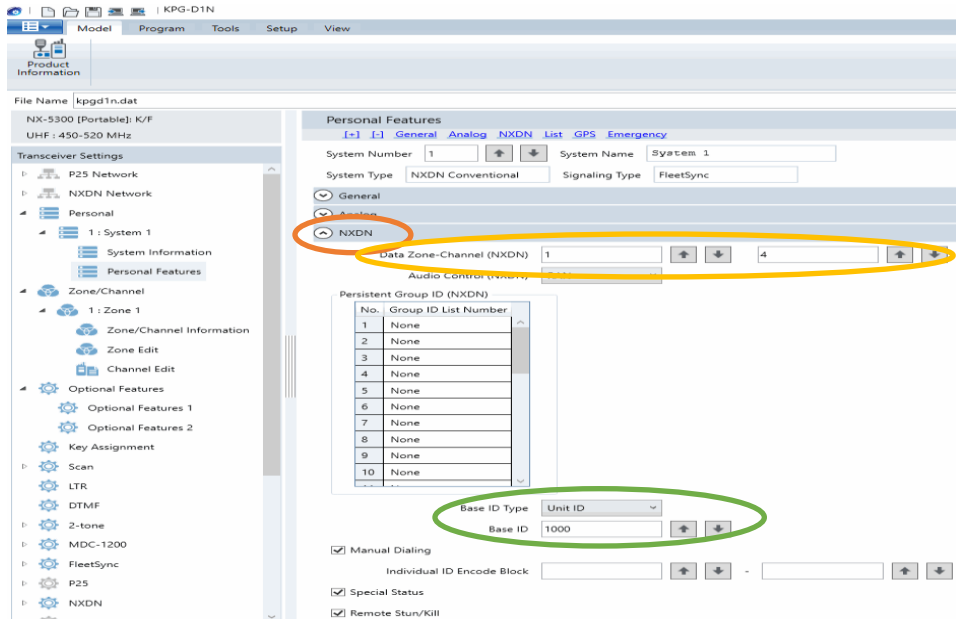


4. Configure Data settings & Target/Base ID settings.

- a. Expand the **Personal** folder, expand the **System 1** folder under that, and then select **Personal Features**.
- b. If using **FleetSync** on a conventional (non-trunked) system, use the **Analog** section to ensure that the correct data will be sent to the Data Channel:
 - i. Specify the channel to use for data by assigning the **Data Zone-Channel (Analog)** field as required for your system.
 - ii. **Enable the desired messages** to send across the Data Zone-Channel with a Check.
 - iii. Enter a value For **Target Fleet** and **Target ID**.
 Note: If the target does not include the Control Station(s), data will not appear in RadioPro.

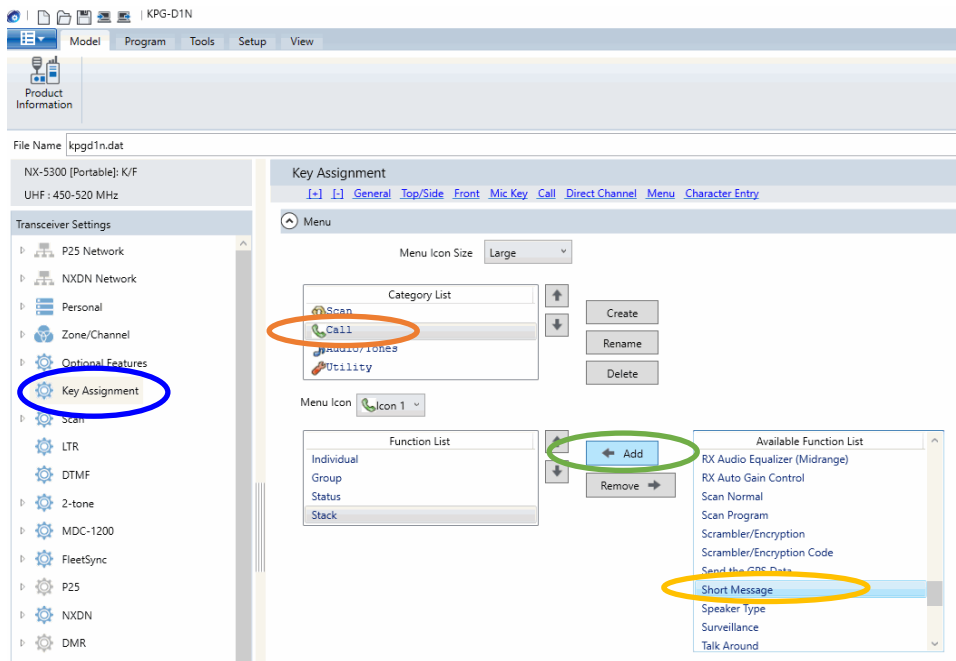


- c. If using NXDN on a conventional system, use the **NXDN** section to ensure that the correct data will be sent to the Data Channel:
 - i. Specify the channel to use for data by assigning the **Data Zone-Channel (NXDN)** field as required for your system.
 - ii. Enter a value for **Base ID Type** and **Base ID**.
 - iii. **Enable the desired messages** to send across the Data Zone-Channel with a Check.
 Note: If the Base ID does not include the Control Station(s), data will not be sent to RadioPro clients.



5. *Configure Text Message Settings.*

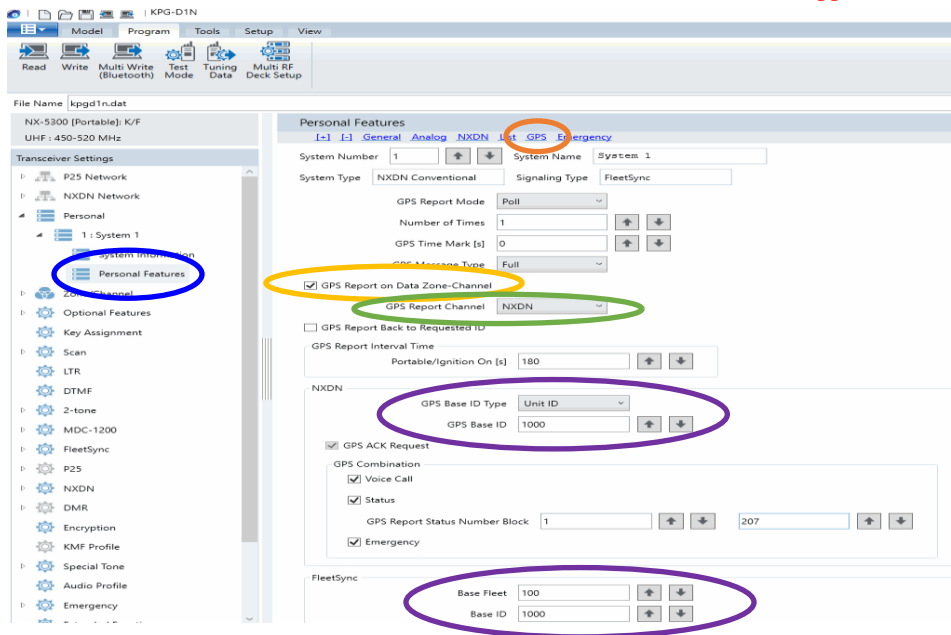
- a. Select the **Key Assignment** folder, in the **Menu** section choose **Call** in the **Category List**, select **Short Message** from the **Available Function List**, and then click the **Add** button.



6. Configure the GPS settings.

- a. If using GPS, configure the desired behavior for the radio by expanding the **Personal** folder, expand the **System 1** folder under that, and then select **Personal Features**.
- b. In the **GPS** section enable **GPS Report on Data Zone-Channel** with a check mark, and then select the correct channel to use in the **GPS Report Channel** box.
- c. Ensure the GPS Base ID Type includes the Control Station radio.
 - i. If using GPS with NXDN, in the **NXDN** section, enter a value for **GPS Base ID Type** and **GPS Base ID**.
 - ii. If using GPS with FleetSync, in the **FleetSync** section, enter a value for **Base Fleet** and **Base ID**.

Note: This is the ID the subscriber will respond to, which will be the ID of the data revert control station radio. If the Base ID does not include the Control Station(s), data will not appear in RadioPro.



3.2 Connect the Gateway to the Radio



Note: Before continuing, ensure that the programming cable has been disconnected from the front mic connector.

See Section [4.1 Appendix - Radio Interface Cables](#) on Page [23](#) for interface cable details.

Connect the IP Gateway to the Control Station voice radio using the following steps:

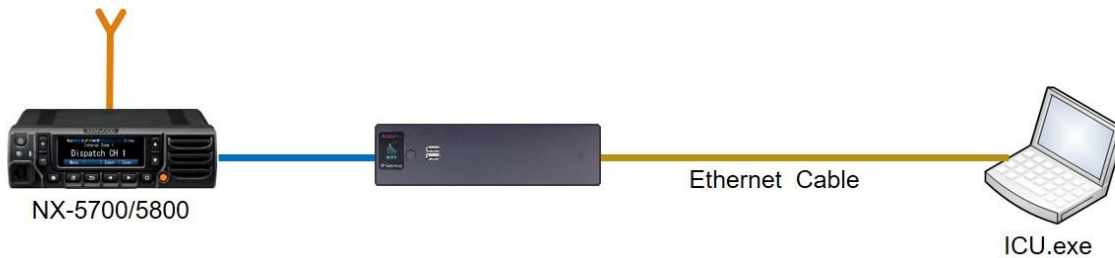
1. Connect the DB-25 side of cable S2-617691 to the DB-25 connector on the rear of the NEXEDGE NX-800 radio.
2. Connect the DE-9 male side of the cable to the DE-9 female connector on the rear of the IP Gateway.
3. Ensure that jack screws on both connectors are tightened to hold connectors in place.

Connect the IP Gateway to the Data Revert Control Station radio using the following steps:

1. Connect the DB-25 side of cable 89-10505 (DB25 Male to DE9 Female) to the DB-25 connector on the rear of the NEXEDGE NX-800 radio.
2. Connect the DE-9 female side of the cable to the DE-9 male connector on the rear of the IP Gateway.
3. Ensure that jack screws on both connectors are tightened to hold connectors in place.

Note: If the IP Gateway has not yet been configured with appropriate IP parameters, do NOT connect the IP Gateway to an IP network.

3.3 Configure the RadioPro IP Gateway



Note: Before continuing, ensure that Wi-Fi connection has been disabled in the PC or Laptop being used to configure the IP Gateway.

The RadioPro ICU (IP Configuration Utility) must be used to configure each RadioPro IP Gateway with the necessary parameters. Configuration of each RadioPro IP Gateway must be performed before connecting the IP Gateway to a local area network.

Configure RadioPro IP Gateway settings:

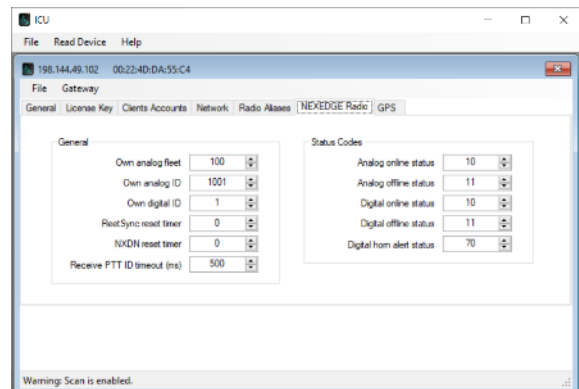
Please Refer to the [RadioPro IP Gateway Installation Guide](#) for information about how to connect to the IP Gateway and for settings that apply to all radio systems.

Configure NEXEDGE specific settings: (Once connected to the IP Gateway with the ICU Utility)

NEXEDGE Radio tab

Enter the appropriate radio ID values for the fields on this tab.

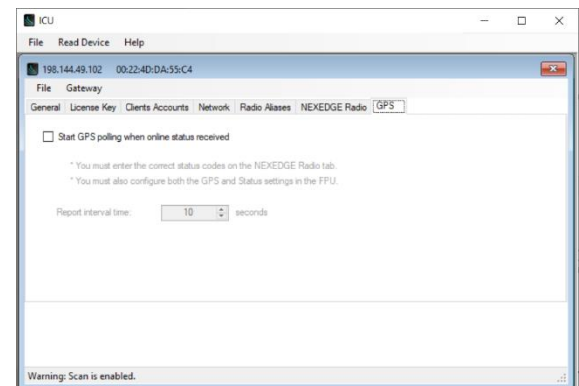
The **Receive PTT ID timeout (ms)** field is used to give the transmitting radio time to transmit its PTT ID before the default PTT ID is used.



GPS tab

If mapping locations of subscribers is required, place a check mark next to **Start GPS polling when online status received**. Leave this unchecked if GPS mapping is not needed, or if subscriber radios have been programmed to start GPS polling on their own.

Then choose a **Report interval time** to set the minimum time between successive GPS updates. Increasing this parameter will decrease the number of GPS updates, thereby allowing more channel bandwidth for voice conversations.



Refer to the [RadioPro IP Gateway Installation Guide](#) for instructions on how to connect the RadioPro IP Gateway to an IP Network, configure Port Forwarding, and installing RadioPro Clients.

4. APPENDIX

4.1 Appendix - Radio Interface Cables

Kenwood NEXEDGE NX-5700, NX-5800, NX-700, NX-800

Voice Radio

Interface Cable # S2-61769

<i>Signal Name</i>	<i>IP Gateway DE-9* Pin #</i>	<i>NXx00 Radio DB-25 Pin #</i>
Tx+ (Mic audio to radio) Transformer isolated, 600 ohms	4	6
Tx- (Mic audio to radio)	5	25
Rx+ (Speaker audio from radio) Transformer isolated, 600 ohms	8	17
Rx- (speaker audio from radio)	9	18
Tx Data (from radio)	1	3
Rx Data (to radio)	6	2
Digital Ground	3	7

* Interface cable requires DE-9 Male to connect to the IP Gateway female connector.

Data Radio

Interface Cable # 89-10505 (standard DE-9 to DB-25 serial cable)

<i>Signal Name</i>	<i>IP Gateway DE-9* Pin #</i>	<i>NXx00 Radio DB-25 Pin #</i>
Tx Data (from radio)	2	3
Rx Data (to radio)	3	2
Digital Ground	5	7

* Interface cable requires DE-9 Male to connect to the IP Gateway female connector.

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6. SYSTEM PLANNER TEMPLATE **PAGE 1 OF 2**

RadioPro IP Gateways

Parameters Common to all IP Gateways

ICU.exe Admin Password <small>for ICU.exe, default is "admin"</small>	Dispatch Client Password <small>for Dispatch client connections default is "user"</small>	NTP Server IP Address <small>Network Time Protocol</small>

Parameters Unique to each IP Gateway

GPS = GPS Data Revert.
Each IP Gateway supports 1
Voice & 1 GPS Data Radio.

	Name <small>IP Gateway name has max 2 lines, 24 chars per line</small>	Serial #	IP Address	Subnet Mask	Default Gateway
IP Gateway A	Example Gateway Name	1234	192.168.56.22	255.255.255.0	192.168.56.1
Voice Radio A0	Example Radio VR A0		192.168.10.1	255.255.255.0	
GPS Radio A1	Example Radio GPS A1		192.168.11.1	255.255.255.0	
IP Gateway B					
Voice Radio B0					
GPS Radio B1					
IP Gateway C					
Voice Radio C0					
GPS Radio C1					
IP Gateway D					
Voice Radio D0					
GPS Radio D1					
IP Gateway E					
Voice Radio D0					
GPS Radio D1					
IP Gateway F					
Voice Radio D0					
GPS Radio D1					
IP Gateway G					
Voice Radio D0					
GPS Radio D1					
IP Gateway H					
Voice Radio D0					
GPS Radio D1					
IP Gateway J					
Voice Radio E0					
GPS Radio E1					

If additional IP Gateways are needed, copy this page.

See next page for System Planner Template Page 2 of 2

SYSTEM PLANNER TEMPLATE	PAGE 2 OF 2
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RadioPro Dispatch Clients

See [RadioPro Dispatch Installation and Configuration Guide S2-61785](#) for more information.

Parameters Common to all Dispatch clients

<i>Administrator Password</i> <small>for Edit Mode</small>

Parameters Unique to each Dispatch client

<i>PC Name</i>	<i>IP Address</i>	<i>License #</i>	<i>Licensed IP Gateway Connections</i>

RadioPro Solo, Talk, and Mobile Clients

See [RadioPro Solo Client Installation Guide S2-61568](#), for more information.

Parameters Common to all Talk Clients

<i>Administrator Login Name</i> <small>Not Editable</small>	<i>Administrator Password</i> <small>default is "admin"</small>
admin	

<i>User Login Name</i> <small>default is "user"</small>	<i>User Password</i> <small>default is "user"</small>

If additional Solo, Talk, or Mobile client logins are needed, copy this page.