

NEXEDGE Type-D Trunking System

JVCKENWOOD Corporation



1. Type-D Trunking Overview



NEXEDGE Type-D Trunking System

New affordable NEXEDGE Single Site Trunking System now available.





KENWOOD







Type-D Enhanced file





Key Sales Points

<u>Minimum Investment</u>

Type-D Single Site Trunking can be built by purchasing only Repeater Trunking Feature (KPG-10DTR) without any changes to hardware.

No Control Cannel

Type-D migration is possible for a current analog LTR user.

*Note that only 6.25kHz is compatible with Type-D CAI. 12.5kHz is not defined.

<u>Security</u>

ESN Validation for security feature is available.



How to built Type-D Single Site Trunking





2. Version up Schedule & Comparison List

2. Version up Schedule



Release KTI-5 Network Box. FPU Setting, Firmware Update, Log via Web. NX-x20 handle some Data.

May 2015



2. Version up Schedule

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Release Multi Site up to 15 Sites. KTI-3 will be needed per CH. Site Cont. and Multi-Site Cont. will be necessary



2. Comparison List

Function	LTR	Type-D	IOP	Type-C	
Unit ID	Required FleetSync	1-2000	~	1-65519	IOP
Group ID	1-250	1-2000	~	1-65519	Interoperability for ICOM
Number of Unit ID	Required FleetSync	2000x30=60000	~	3000	
Number of Group ID	250x20=5000	2000x30=60000	~	3000	
Transmission Trunked Mode	~	V	~	 ✓ 	Over-the-Air Alias
Message Trunked Mode	n/a	n/a		✓	Alias will not display for late entry
Individual Call	Required FleetSync	V	~	✓	because it sent beginning of
Group Call	\checkmark	~	~	\checkmark	transmission
All Group Call	v	V	~	v	
Broadcast Call	n/a	Available Mar 2016		v	Number of Croup
Emergency Call	Required FleetSync	V	~	v	
Paging Call	Required FleetSync	V	~	 ✓ 	LTR and Type-D can be used same
Caller ID (PTT ID)	Required FleetSync	V	~	v	Group ID for each Home Repeaters.
Control Channel (FCC License)	decentralized (FB6)	decentralized (FB6)	~	Centralized (FB8)	Number of Group ID
Registration	n/a	n/a		✓	× Number of Repeater
ESN Validation	n/a	V		✓	
Remote Group Add	n/a	Available Mar 2016		✓	Noto1
Number of Channels (Repeater)	Up to 20 Channels	Up to 30 Channels	~	Up to 30 Channels	
Priority Monitor (Fixed ID)	2	2	~	4	Following functions are not
Late Entry	\checkmark	v	~	 ✓ 	Interoperable even if Conventional
Failsoft Mode (2nd Home)	n/a	(Available Mar 2016)	~	v	 Short Message
Telephone Interconnect	 ✓ 	n/a		v	Long Message
System Key File Security	n/a	n/a		v	
6.25kHz Channels	n/a	V	~	v	• GPS Data
12.5kHz Channels	~	Not defined in Type-D		v	Other Data
Over-the-Air Alias	n/a	✓ (w/o Late Entry)		v	Over-the-Air Alias
Over-the-Air Programming	n/a	Available Mar 2016		v	_
Status Messaging	Required FleetSync	V	~	v	Noto2:
Short & Long Data Messages	Required FleetSync	Available Mar 2016		v	
Remote Stun/Kill	Required FleetSync	Supported from Apr 2015	~	v	Functions with "available Mar 2016"
Transparent Mode	Required FleetSync	Available Mar 2016		v	may change schedule
Scrambler	(Option)	🖌 (NXDN)	~	🖌 (NXDN)	
AES/DES Encryption	n/a	Not defined in Type-D		 Image: A start of the start of	
GPS Data	Required FleetSync	Supported from Apr 2015		v	
Serial Data Interface	✓	Supported from Apr 2015		✓	
ESN Validation	n/a	Supported from Dec 2014		v	



3. Type-D Configuration



Mode = Type-D Trunking

Product Information							
Model Name	NXR-810: E						
Frequency	400-470 MHz 🔻						
Mode	Type-D Trunking 👻						
- Enhanced Feature	es						
Voting Rep	peater						
ок	Cancel Help						



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3. Repeater ID Setting

Set the Repeater ID

1.Select "Program" > "Individual Settings".

2.Set "Repeater ID".

3. Confirm that the repeater is currently connected to a PC, and then click the "Write" button.

rite" button.		
	<u>R</u> ead <u>W</u> rite	<u>C</u> a

Individual Settings

Repeater ID

Note: Each repeater must have different Repeater ID.

4. Connect next repeater and set different "Repeater ID" then click the "Upgrade"(Must be set Repeater ID one by one Connection).





3. Basic Setting (KPG-129D Ver3.xx)

Product Information

- 1.Select "Model" > "Product Information".
- 2.Set "Model Name", "Frequency" and "Mode Type-D Trunking". And click OK.

Channel Setting

Select "Edit" > "Chanel Information".
 Set "RX/TX frequencies", "CH Type NXDN".



14 15 16

Product Informat	ion	×
Madal Nama		
Frequency	NXR-810: E	<u> </u>
Mode	Type-D Trunking	
Enhanced Featur	es	
Voting Rep	peater	
ок	Cancel	Help

Channel Edit

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Help

Close



3. Basic Setting

Master Repeater

- 1.Select "Edit" > "NXDN" > "Type-D Trunking".
- 2.Set Primary Master Repeater" and "Secondary Master Repeater".

NXDN General Data Unit ID List Group ID List Type-D Trunking NXDN ESN List Area Code 0 Area	
NXDN ESN Validation Manufacturer Limitation 1 6 7 8 Close	 Note : •NXR-710/810 has Trunking Controller capability. •Must be required Master Repeater for sending synchronized Data via N-SYNC cable. •In case of Primary Master Repeater is failed, Secondary Master Repeater take over. If both Primary and Secondary are failed, Type-D Trunking System doesn't work.



3. Basic Setting

User List 1. Select "Edit" > > "(2. Click "Channel Edi 3. Set "User List".	Chanel Information t".	".	Ch Ch 1 2 3 4 5 6 7	RX Frequency 455.100000 455.200000 455.000000 455.400000	TX Frequency 450.100000 450.200000 450.300000 450.400000	el – 4] Ch Type NXDN NXDN NXDN NXDN	TX Mode	QT/DQT Dec 	QT/DQT Enc / 	RAN Dec	RAN Enc	Ch Name 4 1 2 3 4			
Channel Edit Channel Receive Frequency [MHz] Transmit Frequency [MHz] Transmit Frequency [MHz] Channel Type Transmit Mode QT/DQT Decode QT/DQT Decode QT/DQT Encode QT/DQT Encode RAN Decode RAN Decode RAN Decode RAN Encode Channel Name Transmit Power Channel Spacing (Analog) Channel Spacing (NXDN) Encode Tone (Multiple) Operation Mode Multiple Encode/Decode Table User List Optional Signaling (NXDN) Selcall on PTT (NXDN) ID List Number (NXDN) ID List Number (NXDN) Vype-D Trunking Cross-busy Input Trigger	1 455.100000 450.100000 NXDN NXDN NONE Very Narrow Very Narrow Very Narrow Primary Repeat None None None None None None None None Status None Status None I External	Beat Shift QT Reverse Burs Scan Add Compander CW ID Scrambler Setting Voice Scrambler Encryption Setting Conventional IP N Voting Repeater Sitt IP	e Numb	a la	Site List			Channel Edit	List e-prog ed. List e-prog ed. nly pre access	Sele be a ramr ramr -prog	ctic access med (med l gram	on: sed. Group Jnit ID med G	IDs Ds ca	can be n be o and Ur	nit IDs
			Q	lose	<u>H</u> elp										



Total

Valid

Yes

Yes

Yes Yes

Yes

Help

Close

Delete

5/1000

3. Basic Setting

Pre-Programmed Group ID and Unit ID

- 1. Select "Edit" > "User List " > "Group ID List".
- 2. Set "Group ID" and "Home Channel".
- 3. Select "Edit" > "User List" > "Group ID List".
- 4. Set "Unit ID" and "Home Channel"

Home Chanel:

- NXR-710/810 Type-D Trunking System have Home Channel like LTR system.
- Up to 30 repeaters and up to 30 home channels for Type-D Trunking System can be set.
- If Home Channel's repeater is dead, Type-D Trunking system still working with rest of repeaters. But radios programed dead Home Channel cannot access to the repeater.

User List				🖉 Uşer	List
Group ID Lis	t Unit ID List			Group	ID List Unit ID List
Home Cha	nnel 1	Total	2/1000	Home	e Channel 1
- Group ID	Add/ Delete Group ID			Unit	ID Add/ Delete
	Add Delete				Add
No.	Group ID	Valid		N	o. Unit ID
1	1000	Yes		1	1001
2	2000	Yes		2	2 1002
3				3	3 1003
4					1004
5					5 1005
6				6	6
7				7	7
8				8	3
9				9	9
10				1	0
11				1	1
12			I	1	2
				/	
	<u>c</u>	lose	Help		

Note:

- Not required Home Chanel Repeater# equals Master Repeater# Home Chanel is used for handshaking radios.
- Listed Group ID and Unit ID can be access to NXR-710/810 Type-D Trunking System. Group ID: 0000(All) or 1 to 2000 Unit ID: 1 to 2000



3. Basic Setting

ESN Validation

- 1.Select "Edit" > "NXDN" > "Type-D Trunking".
- 2. Check "NXDN ESN Validation".
- 3.Select "Edit" > "NXDN" > "NXDN ESN List".
- 4. Set radio's "Unit ID" and "NXDN ESN".

Note:

NXR-710/810 Type-D Trunking system does not have radio registration function like Type-C Trunking System has. For avoiding unauthorized radio access, use NXDN ESN Validation.

Radio's NXDN ESN (Electronic Serial Number) is unique ID written by factory and cannot not be duplicated.

2 NXDN	
General Data Unit ID List Group ID List Type-D Trunking NXDN ESN List	General Data Unit ID List Group ID List Type-D Trunking NXDN ESN List
Area Code 0 - Primary Master Repeater 1 - Secondary Master Repeater 2 - Idle Message Transmit Interval Time [s] 10 - Disconnect Message Counter 2 - Type-D Trunking Cross-busy	Home Channel Total 5/12000 Unit ID Add Delete Add Delete 1 1001 010000FF2421 2 1002 FF001212002 3 3 1003 91122201455A 4 1004 125AD0DE1111 5 1005 BB145454AEDF
Manufacturer Limitation 1 68 2 3 4 5 6 7 8	10 10 11 12 13 14 15

3. Data Write



All repeaters have same FPU data to write

- 1.Select "Program" > "Write Data to Repeater".
- 2.Set "Channel Connected".
- 3. Click "Write" to write Data to Repeater.
- 4. Connect next repeater then update firmware.





3. Faster Data Write



After set up Type-D Trunking, now you can change FPU data and Firmware much faster

N-SYNC Cables		<
	🧟 Write Data to the Repeater 🛛 🛛 🛛	
	Time Adjustment Consecutive Write Ovvn Settings Overwrite Channel ALL	
	, Block 0 / 597	
	Configure the Repeater ID (Individual Settings). If FPU data is written to the repeater without configuring the Repeater ID, the repeater displays the Repeater ID error "E9". <u>Write</u> <u>Qancel</u> <u>Help</u>	

FPU Data

- 1. Confirm N-SYNC connected each repeater.
- 2. Connect PC to one repeater.
 - 3. Select "Program" > "Write Data to repeater".
 - 4. Set "Channel Connected".
 - 5. Click "Write". Then All repeater received FPU data via N-SYNC cable.

Firmware

- 1. Execute FPRO.exe and write firmware instead of set repeater as Firmware Programming Mode.
- 2. Connect PC to one repeater and write the firmware.
- 3. All repeater received firmware via N-SYNC cable.
- 4. TX LED lights when completed. You must confirm all repeaters TX LEDs.
- 5. If could not write the firmware, repeater RX LED blinks and displayed **dE** (Data Error), you must write firmware to each repeaters after Data Error.

	Product Information
N-SYSNC Connected Repeater FPU Data and Firmware Write	
requirement	Model Name NXR-810: K
requirement	Frequency 450-520 MHz
1. All repeaters have been already written Firmware Version 3.00 or later	Mode Type-D Trunking
All repeaters have been already written Type-D Mode FPU data.	Voting Repeater
	<u>Q</u> K <u>C</u> ancel <u>H</u> elp

After set up Type-D Trunking, now you can change FPU data and Firmware much faster



FPU Data

- 1. Confirm N-SYNC connected each repeater.
- 2. Connect PC to one repeater.
- 3. Select "Program" > "Write Data to repeater".
- 4. Set "Channel" = ALL.
- 5. Click "Write" . Then All repeater received FPU data via N-SYNC cable.

Firmware

- 1. Execute FPRO.exe and write firmware instead of set repeater as Firmware Programming Mode.
- 2. Connect PC to one repeater and write the firmware.
- 3. All repeater received firmware via N-SYNC cable.
- 4. TX LED lights when completed. You must confirm all repeaters TX LEDs.
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Type-D Trunking FPU data and Firmware update through a KTI-5





4. KTI-5

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4. KTI-5 Hardware 1

- N-SYNC (4P4C Modular for Repeater Connection)
- LAN (RJ45 for 10BASE-T/100BASE-TX Ethernet)
- Internal Clock (Lithium-Ion battery backup)
- Status LED (7 Colors)



Input Voltage	DC 13.6V (10.8V to 15.6V)
Current Drain	MAX 1.6 A
Temperature Range	-30°C to +60°C
Dimensions (W x H x D) (Exclude projections)	139 x 32 x 105mm
Weight	570g

4. KTI-5 Hardware 2





Supplied Accessory

ITEM	P/N	Qty
N SYNC Cable (1m)	E30-7717-XX	1
Cushion	G1D-0077-XX	2
Cushion	G13-2339-XX	4
Instruction Manual	B5A-0555-XX	1

Attach the KTI-5 to the Repeater Accessory Cabinet using the supplied cushion. There are two methods of attaching the KTI-5:

- 1. Attach 4 cushions (G13-2339) on the 4 base corners of the KTI-5, and place it into the Accessory Cabinet.
- 2. Attach the cushion (G1D-0077) to the base of the KTI-5, and attach it to the Accessory Cabinet.

IP Network

4. KTI-5 Initial Setup

KTI-5 is provided as HARDWARE and becomes functional product when SOFTWARE is installed (loaded).



 Login	
User Name	
Password	
Login	

KTI-5	Edit -	Maintenance -	
User Information ≜ Login UserName :admin ▲ LastUsed Bv:admin		Maintenance > System > Firmware Update	
m Last Used On : 04/03/2015 1:50:32 pm ∰		Current Firmware	
		System Version	
System	~	Checksum	
Firmware Update			
IP Configuration		New Firmware	
		File Name	KTI-5M_FIRM_SH01_RELxa.bin Browse
		System Version	
		Checksum	
		Update	

4. Remote FPU Data Write/Read (with KTI-5)



After set up Type-D Trunking with KTI-5, now you can change FPU data by KPG-129D remotely



FPU Data Write

- 1. Connect PC to KTI-5 (if connect direct, cross cable is require)
- 2. Set PC IP Address (because normally your PC sets DHCP)
- 3. Execute KPG-129D (must be Ver3.10 or later)
- 4. Select "Setup" > "Communication Port".
- 5. Set "LAN" and confirm IP address as "Direct".
- 6. Connect PC to KTI-5 and .
- 7. Select "Program" > "Write Data to repeater".
- 8. Set "IP Address" for KTI-5 and "Channel" = ALL
- 9. Click "Write". Then All repeater received FPU data via KTI-5.

🕑 Communicat	ion Port		— ×-	🕑 Write Data to the Repeater 🔤
G LAN	IP Address Dir	rect	•	PAddress 192. 168 . 0 . 1
С сом				V Own Settings Overwrite
COM1	С сомб	C COM11	C COM16	Channel ALL
C COM2	C COM7	C COM12	C COM17	
С сомз	C COM8	C COM13	C COM18	
C COM4	C COM9	C COM14	C COM19	Configure the Repeater ID (Individual Settings).
C COM5	C COM18	C COM15	C COM20	Repeater ID, the repeater displays the Repeater ID error "E9".
ОК	Cancel		Help	Write Cancel Help

S Read Data from the Repeater	×
IP Address 992. 168 . 0 . 1	
Channel 1	•
	_
Read Cancel Help	

FPU Data Read

- 1. Select "Program" > "Read Data from the Repeater".
- 2. Set "IP Address" for KTI-5 and Select "Channel" for derided Repeater Channel (Repeater ID# must equal Ch#))
- 3. Click "Read". (All repeater have same FPU Data)

4. Remote FPU Data Write/Read (with KTI-5)



Repeater & KTI-5 Information

- 1. Select "Tools" > "Repeater Information".
- 2. Set "IP Address" for KTI-5 and Select "Channel" for derided Repeater Channel (Repeater ID# is equal Ch#)
- 3. Click "Read".

🕑 Repeater Informat	tion
IP Ad	Idress 192. 168 . 0 . 1
Ch	annel 1
Read	Cancel Help
• Repeater Information	
Model Name and Market Code	NXR-710:K
Frequency	136-174 MHz
Serial Number	21C00017
NXDN ESN	6820S0000017
Firmware Version	1.46.03
Checksum	9A30
Option Settings	Option Name
	NXDN Type-D Trunking
-KTI-5	
Serial Number	25000040
Firmware Version	113.04
Firmware Checksum	7740
Boot Version	B100.00
Boot Checksum	710
MAC Address	00:00:45:55:55:07
Inco Address	out of the second se
	Close Help Print

Data Password

- Select "Edit" > "Optional Features" > "Common Page 1" > Data Password"
- 2. Input Password then Click OK

🕑 Data Password	×
Read Authorization Password	
Overwrite Password Confirmation	
Network Password Confirmation	
OK Cancel	Help

Note:

Password are stored in Repeater.

When select "Channel" = ALL at "Write Data to repeater" window., same password are written to all repeater.

Not recommended to set different password for each repeater.

Write Data to the Repeate	er 💽 💌
	IP Address 392. 168 . 0 . 1
Time Adjustment Consecutive Write Own Settings Overwrite	
	Channel ALL
Configure the Repeater If FPU data is written to Repeater ID, the repeat	ID (Individual Settings). the repeater without configuring the er displays the Repeater ID error "E9".
Write Cano	Help

4. Remote Firmware Write (with KTI-5)



After set up Type-D Trunking with KTI-5, it can write the Firmware remotely



Firmware (Software Option)

- 1. Connect PC to KTI-5 (if connect direct, cross cable is require)
- 2. Set PC IP Address (because normally you PC sets DHCP)
- 3. Execute Internet Explorer (Ver 9 to 11 recommended)
- 4. Input KTI-5 IP Address (http://192.168.0.1)
- 5. Log in to KTI-5 (User Name = admin, Password = none)
- 6. Go to "Maintenance" > "System" > "Firmware Update"
- 7. Click "Browse" to read KPG-1006DNA firmware (*.bin file)
- 8. Click "Update" to write the KPG-1006DNA.
- 9. After uploaded , Login windows with Update succeeded message appeared. And then Login and see the result (See Next Slide)

Login	
User Name	
Password	
Login	

4. Remote Firmware Write (with KTI-5)

Update succeeded.		Login User Name		-> Log suc	gin Widows with "Update cceeded" message
	5.0	Password Login			
User Information	Edit *	Maintenance > Administration +			
Last Used By:admin ∰Last Used On :05/05/2001 12:40:18 am		Current Firmware System Version		→ кр	G-1006DNA firmware Version.
.og		Checksum			
System					
Remote Control		New Firmware			
Firmware Update		File Name	Browse		
		System Version			
Time Settings		Checksum			
Setting					
		Result		> Ead	ch Repeater firmware update result
		Repeater1		Suc	cess: Update Succeeded
		Repeater2		Not	Connected : Repeater is not connected
		Repeater3		SKI	p: Update skipped (because firmware)
		Repeater4		Fail	: Check Sun Error
		Repeater5			(Need to write firmware again)
		Repeater6			
		Repeater7			

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