

Application Note

KPT-110SDK 2.60

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Revision History

Version	Date of issue	Note
1.00	29-Sep-2017	First edition
1.10	30-Mar-2018	Supported for Extended Short Data Message

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1 Outline

The KPT-110SDK Software Development Kit for KENWOOD NEXEDGE facilitates development of Microsoft Windows applications (for Dispatch, AVL, Messaging, Gateway etc.) that communicate with NEXEDGE systems using the IP network protocol.

Use of the KPT-110SDK effectively reduces the amount of code required in writing the IP protocol for NEXEDGE, thus making development easier and less time consuming, helping to significantly decrease time-to-market.

Also reference the sample application and help file, develop your new solution.

2 New Features

KPT-110SDK Version 2.60 supports the Extended short Message function. Short Data Message with NX-3000/5000 NXDN mode has been expanded up to 314 characters. The radio can send more than 100 and receive 314 characters message to show on the display and store.

KPT-110SDK Version 2.60 can also send and receive

Note:

On NXDN Trunking system (type-C), less 100 characters Short Message will be transferred on CCH and over 100 characters message will be on TCH.

3 Contents

The KPT-110SDK package (To install require **License ID**) includes the following items:

- Class Library
- Sample Projects ZIP File^{*1}
- Install Manual
- Help File

^{*1} This file is the compressed file that contains sample application projects.

4 Software Development Environment

OS ^{*2}	Windows 7 SP1 (32-bit/ 64-bit) Windows 8.1 (32-bit/ 64-bit) Windows 10 (32-bit/ 64-bit)	
Required software	Microsoft Visual Studio 2010 Professional SP1 ^{*3} , Microsoft Visual Studio Professional 2012/ 2013/2015 ^{*3} .NET Framework 4.5.2/ 4.6.x ^{*4}	
Recommended Machine Specifications	CPU	1 GHz or faster 32-bit (x86) or 64-bit (x64) processor with 2 or more cores
	MEMORY	At least 2 GB RAM (32-bit) or 4 GB RAM (64-bit)
	Sound Card	DirectX compatible sound card with an on-board sound controller installed
	Microphone	A microphone with a frequency range of 300 Hz to 3400 Hz

*2 The OSs supported by the operating environment for KPT-110SDK change in accordance with those supported by .NET Framework 4.x.

*3 Visual Studio 2010 Professional or Visual Studio Professional 2012/ 2013/ 2015 is required in order to use all the functions of this software.

*4 This software must be separately obtained and installed from Microsoft.

Note:

To enable voice communication, DVSI's USB-3000 Standard Version (USB-3000) is required. USB-3000 is a DVSI's AMBE+2 vocoder designed to be connected to a PC via the USB port. USB-3000 can be purchased separately.

5 Sample application

5.1 Building Sample Applications

KPT-110SDK includes Several sample program source code for study purpose, enclosed Install Manual (PDF) describe application building procedure.

- Conventional
 - SimpleDataClient.exe (data communications function)
 - SimpleVoiceClient.exe (voice communications function)
- Trunking
 - SimpleDataClient.exe (data communications function)
 - SimpleLdmClient.exe (Long data communications function)
 - SimpleVoiceClient.exe (voice communications function)

Note:

The sample application is created in the project format for Visual Studio Express 2015 for Windows Desktop (Visual C#). The sample application uses Windows Forms.

5.1.1 SimpleDataClient (Conventional)

In KPT-110SDK Version 2.60, new Extended Short Data Message buttons have been added to the SimpleDataClient (Conventional) sample software.

The screenshot displays the SimpleDataClient(Conventional) application window. It features several configuration panels:

- System Information:** Channel Spacing (Narrow).
- Console Information:** Console ID (12345).
- Destination Information:** Destination ID Type (Individual), Destination ID (1).
- RAN Setting:** RAN Decode (empty), RAN Encode (0).
- IP Setting:** Normal Channel IP (0.0.0.0), Normal Channel Port (50600), Console IP (0.0.0.0), Console Port (50600).
- Encryption:** Type (NonEncryption), Key ID (0), Scramble Key Data (1), and Aes,Des KeyData(HEX) for 1-8byte, 9-16byte, 17-24byte, and 25-32byte ranges.
- GTC Setting:** IP Setting (Data Channel IP, Data Channel Port) and RAN Setting (RAN Decode, RAN Encode).
- Action:** A grid of buttons for various operations: Short Message [Sender], Short Message [Receiver], Status Message [Sender], Status Message [Receiver], Remote Control [Sender], Status Inquiry [Sender], Aux Status [Sender], GPS [Receiver], Long Message [Sender], Long Message [Receiver], ExShort Msg [Sender], and ExShort Msg [Receiver]. The last two buttons are highlighted with a red rectangle.

SimpleDataClient(Conventional)

5.1.2 SimpleDataClient (Trunking)

In KPT-110SDK Version 2.60, new Extended Short Data Message buttons have been added to the SimpleDataClient (Trunking) sample software.

The screenshot shows the SimpleDataClient (Trunking) application window. It features a light blue title bar and a main content area with several configuration panels. The 'System Information' panel includes dropdowns for 'Network Category' (Regional) and 'Channel Spacing' (VeryNarrow), and a numeric field for 'System Code' (1). The 'Console Information' panel has numeric fields for 'Connection Site No.' (1) and 'Console ID' (1). The 'Destination Information' panel includes a dropdown for 'Destination ID Type' (Individual) and a numeric field for 'Destination ID' (1). The 'IP Setting' panel contains fields for 'Connection Site IP' (0.0.0.0), 'Connection Site Port' (50600), 'Console IP' (0.0.0.0), and 'Console Port' (50600). The 'Encryption' panel has a checkbox for 'Encryption' (unchecked), a dropdown for 'Type' (NonEncryption), and numeric fields for 'Key ID' (0) and 'Scramble Key Data' (1). Below these are four rows of 'Aes,Des KeyData(HEX)' fields, each with a label indicating the key length (1-8byte, 9-16byte, 17-24byte, 25-32byte) and a text box containing zeros. The 'Action' panel at the bottom contains a grid of buttons: 'Short Message [Sender]', 'Short Message [Receiver]', 'Status Message [Sender]', 'Status Message [Receiver]', 'Remote Control [Sender]', 'Status Inquiry [Sender]', 'Aux Status [Sender]', 'Remote Regrouping [Sender]', 'GPS [Receiver]', 'ExShort Msg [Sender]', and 'ExShort Msg [Receiver]'. The last two buttons are highlighted with a red rectangle.

Section	Field/Label	Value
System Information	Network Category	Regional
	Channel Spacing	VeryNarrow
	System Code (1-1048575)	1
Console Information	Connection Site No. (1-4095)	1
	Console ID (1-60000)	1
Destination Information	Destination ID Type	Individual
	Destination ID (1-60000)	1
IP Setting	Connection Site IP (IPv4 Address)	0.0.0.0
	Connection Site Port (1-65535)	50600
	Console IP (IPv4 Address)	0.0.0.0
	Console Port (1-65535)	50600
Encryption	Encryption	☐
	Type	NonEncryption
	Key ID (0-63)	0
	Scramble Key Data (1-32767)	1
	Aes,Des KeyData(HEX) 1 - 8byte	0000000000000000
	Aes,Des KeyData(HEX) 9 - 16byte	0000000000000000
Aes,Des KeyData(HEX) 17 - 24byte	0000000000000000	
Aes,Des KeyData(HEX) 25 - 32byte	0000000000000000	
Action	Short Message [Sender]	Button
	Short Message [Receiver]	Button
	Status Message [Sender]	Button
	Status Message [Receiver]	Button
	Remote Control [Sender]	Button
	Status Inquiry [Sender]	Button
	Aux Status [Sender]	Button
	Remote Regrouping [Sender]	Button
	GPS [Receiver]	Button
	ExShort Msg [Sender]	Button (Highlighted)
	ExShort Msg [Receiver]	Button (Highlighted)

SimpleDataClient(Trunking)

6 Support function List

KPT-110SDK version 2.60 supports the following functions.

Function Name	Sub Function Name	Trunking	Conventional
Voice Call	Group Call (Broadcast)	Available	Available
	Group Call (Conference)	Available	Available
	Voice Call (Individual)	Available	Available
All Group Call	Voice Call (Broadcast)	Available	Available
	Voice Call (Conference)	Available	Available
Short Data Message	Short Data Call (Broadcast)	Available	Available
	Short Data Call (Conference)	Available	Available
	Short Data Call (Individual)	Available	Available
	Simultaneous Call (Broadcast)	Available	Available
	Simultaneous Call (Conference)	Available	Available
	Simultaneous Call (Individual)	Available	Available
Extended Short Data Message	Extended Short Data Call (Broadcast)	Available(*1)	Available(*1)
	Extended Short Data Call (Conference)	Available(*1)	Available(*1)
	Extended Short Data Call (Individual)	Available(*1)	Available(*1)
Long Data Message	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
Transparent Function	Short Data Call (Broadcast)	Available	-
	Short Data Call (Conference)	Available	-
	Short Data Call (Individual)	Available	-
	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
Transparent 2 Function	Short Data Call (Broadcast)	Available	-
	Short Data Call (Conference)	Available	-
	Short Data Call (Individual)	Available	-
	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
Status Message	Status Call (Broadcast)	Available	Available
	Status Call (Conference)	Available	Available
	Status Call (Individual)	Available	Available
	Simultaneous Call (Broadcast)	Available	Available
	Simultaneous Call (Conference)	Available	Available
	Simultaneous Call (Individual)	Available	Available

Function Name	Sub Function Name	Trunking	Conventional
Emergency Voice Call	Simultaneous Call (Broadcast)	Available	Available
	Simultaneous Call (Conference)	Available	Available
	Simultaneous Call (Individual)	Available	Available
Individual ACK Request	Voice Call (Individual)	-	Available
Status Request (Inquiry)	Status Inquiry Call	Available	Available
AUX Status Request (Inquiry)	Short Data Call (Individual)	Available	-
	Long Data Call (Individual)	Available	Available
GPS Data	Short Data Call (Broadcast)	Available	-
	Short Data Call (Conference)	Available	-
	Short Data Call (Individual)	Available	-
	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
	Simultaneous Call (Broadcast)	Available	Available
	Simultaneous Call (Conference)	Available	Available
	Simultaneous Call (Individual)	Available	Available
GPS Data Auto Report Request (Inquiry) [START/STOP]	Short Data Call (Broadcast)	Available	-
	Short Data Call (Conference)	Available	-
	Short Data Call (Individual)	Available	-
	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
GPS Data Single Polling Request (Inquiry)	Short Data Call (Individual)	Available	-
	Long Data Call (Individual)	Available	Available
GPS Data Multiple Polling Request (Inquiry)	Short Data Call (Broadcast)	Available	-
	Short Data Call (Conference)	Available	-
	Short Data Call (Individual)	Available	-
	Long Data Call (Broadcast)	Available	Available
	Long Data Call (Conference)	Available	Available
	Long Data Call (Individual)	Available	Available
GPS Data Query Request (Inquiry)	Short Data Call (Individual)	Available	-
	Long Data Call (Individual)	Available	Available
GPS Data Interval Request (Inquiry)	Short Data Call (Individual)	Available	-
	Long Data Call (Individual)	Available	Available
GPS Data Interval Update (Inquiry)	Short Data Call (Individual)	Available	-
	Long Data Call (Individual)	Available	Available
Remote Control Call	Remote Stun	Available	Available
	Remote Revival	Available	Available
	Remote Kill	Available	Available

Function Name	Sub Function Name	Trunking	Conventional
Remote Control Call + Voice Call (Individual)	Remote Monitor	Available	Available
Remote Regrouping [Regrouping / Regrouping Reset]	Short Data Call (Individual)	Available	-
Go To Channel	Long Data Call (Broadcast)	-	Available
	Long Data Call (Conference)	-	Available
	Long Data Call (Individual)	-	Available
Encryption	Scramble Encryption	Available	Available
	DES/AES	Available	Available
Mobility	Registration	Available	Available
	Group Registration	Available	Available
Talk Path	-	Available	-
GPS Report Channel	GPS Data on GPS Report Channel	Available(*2)	-
Codec conversion	AMBE+2 / G.711 Codec conversion	Available(*2)	-

*1 : Version 2.60 or Later (KPT-110SDK)

*2 : NEXEDGE Second Generation Trunking Only