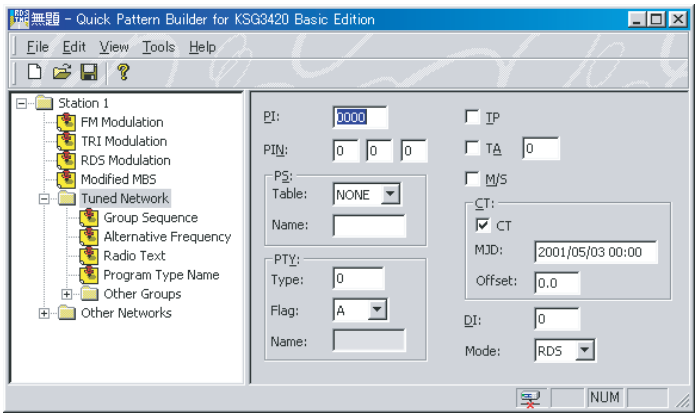
Part No. Z1-002-652, IB003413
Aug. 2005

User's Manual

KSG Series
Application Software (SD001)

Quick Pattern Builder for KSG3420 Basic Edition Ver.2.0



KIKUSUI

Request for Owner's Registration

You must complete and send in the enclosed owner's registration card to receive news of software upgrades and technical support. Please read the Software License Agreement enclosed, complete the user registration card, and directly fax or mail it to us. If you do not return the user registration card, you can't receive the above service.

Use of This User's Manual

Please read through and understand this User's Manual before operating the product. After reading, always keep the manual nearby so that you may refer to it as needed. When moving the product to another location, be sure to bring the manual as well.
If you find any incorrectly arranged or missing pages in this manual, they will be replaced. If the manual it gets lost or soiled, a new copy can be provided for a fee. In either case, please contact Kikusui distributor/agent, and provide the "Kikusui Part No." given on the cover.
This manual has been prepared with the utmost care; however, if you have any questions, or note any errors or omissions, please contact Kikusui distributor/agent.

Contents

Preface

About This Manual

This user's manual describes the application software Kikusui Quick Pattern Builder for KSG3420 Basic Edition.

Applicable Product Version

This user's manual applies to version 2.0x of the application software. In addition, the firmware version of the KSG3420/3421 to be controlled must be 1.03 or later.

Overview

Kikusui Quick Pattern Builder for KSG3420 Basic Edition (QPB3420 Basic) is a dedicated program for remotely controlling the KSG3420/3421 via the RS-232C or GPIB interface. It also provides data management functions including loading and saving of setup data.

QPB3420 Basic enables you to remotely control the following items:

FM Stereo Modulator

- FM stereo mode
- FM stereo modulation ON/OFF and modulation level
- Pilot signal ON/OFF and level
- AF source switching and internal AF frequency
- Pre-emphasis

RDS/RBDS Data

- Tuned Network's PI, PTY, PS, etc.
- Other Network's PI, PTY, PS, etc.
- Group sequence
- Variant sequence
- Alternative frequency list (Method A only in EON)
- Radio text
- Mapped frequency list
- Program type name
- Modified MBS data
- TMC data

RDS Modulation

- RDS modulation ON/OFF and modulation level
- Phase difference with respect to the pilot signal
- Composite output level
- Error insertion parameter
- Clock/Data polarity
- Data source

TRI Modulator

- SK signal ON/OFF and level
- DK signal ON/OFF and level
- BK signal ON/OFF and level
- BK area frequency

Miscellaneous

- Storing and recalling of preset memory
- Setting of memory groups
- Memory auto scan ON/OFF
- Synchronization of setup data with the instrument

Data Management Function

- Opening of preexisting data files
- Saving of data files
- Creation of new data files

System Requirements

To use QPB3420 Basic, your computer must meet the following requirements:

- A personal computer with a Pentium/100MHz or faster microprocessor, with a hard disk drive and a CD-ROM drive.
- 32MB or more extended memory.
- 10MB or more free disk space.
- VGA-color or better video subsystem.
- Microsoft Windows 98/Me/NT4/2000/XP and a mouse.
- Microsoft Internet Explorer 4.01 or later.
- A National Instruments or an Agilent Technologies GPIB board installed (if you use GPIB).
- VISA Library (any one of NI-VISA (Ver.2.6 or later), Agilent VISA (Agilent IO Libraries K01.00 or later) , and KI-VISA (Ver.2.2.x or later)) installed.

Supported GPIB cards

The following list shows the National Instruments and Agilent Technologies GPIB adapter cards that are available on the applications. You can select one of these models corresponding to your PC expansion bus.

- AT-GPIB/TNT (National Instruments)
- PCMCIA-GPIB (National Instruments)
- 82350A (Agilent Technologies)

Chapter 1 Setup

Installation

To use QPB3420 Basic, you must first install the QPB3420 Basic and a VISA library on your personal computer.

This section explains the installation procedure of the QPB3420 Basic and a VISA library.

■ Installing the VISA Library

A VISA library is required to use the QPB3420 Basic.

The VISA library to be installed varies according to the used I/O interfaces. Not install different types of VISA library to the same system.

Table1-1 VISA library

I/O interface	VISA library
RS232C	KI-VISA (Ver.2.2.x or later)*1
GPIB by National Instruments	NI-VISA (Ver.2.6 or later)
GPIB by Agilent Technologies	Agilent VISA (Agilent IO Libraries K01.00 or later)

*1. KI-VISA is not required if NI-VISA or Agilent VISA is already installed.

KI-VISA is Kikusui's original VISA library that supports VXIplug&play VISA Specification 2.2. The newest version can be downloaded from Kikusui website (http://www.kikusui.co.jp).

■ Installing the QPB3420 Basic

To install QPB3420 Basic on your personal computer, start the setup program. Carry out the following steps to start the setup program.

1. On the taskbar, click the Start button, and then click Run.

   Fig. 1-1 dialog box appears.

2. Enter “D:\Setup.exe” in the Open box and click OK.

   The drive letter varies depending on the personal computer environment. Enter the appropriate drive letter for your personal computer.

The setup program consists of a series of dialog boxes. Follow the instructions that appear in the dialog boxes to install the program.

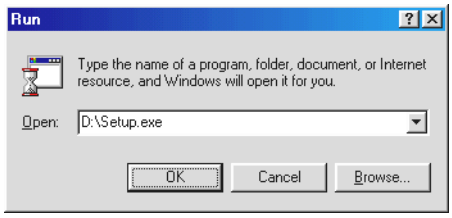


Fig.1-1 Specifying the setup program

■ Uninstalling the QPB3420 Basic

To remove QPB3420 Basic from your personal computer, execute Uninstall. When you uninstall the software, files and register keys that had been installed are removed from the system. However, only the files and registry keys that the installer copied or created are deleted. Other files and registry keys that are present even if the folder had been created by the installer are not deleted.

Carry out the following steps to remove the program.

1. In Control Panel, open Add/Remove Programs.
2. Choose Kikusui Quick Pattern Builder for KSG3420 Basic from the list of software and click Add/Remove.
3. If a message appears prompting you to restart your computer, do so.

Chapter 2 Using QPB3420 Basic

Except indicated otherwise, the operating procedure of QPB3420 Basic is basically the same as general Windows programs. For a description of the operating procedure of Windows, see the manual that came with the Windows package.

2.1 Starting QPB3420 Basic

If you have not yet installed QPB3420 Basic on your personal computer, install it first. For the installation procedure, see page 5, “Installation”.

On the taskbar, click the Start button, and then choose Programs | Kikusui QPB3420 Basic | Quick Pattern Builder for KSG3420 Basic. QPB3420 Basic starts.

2.2 Setting the Communication Port

QPB3420 Basic has two modes: Online mode that immediately applies the setting changes to the KSG3420/3421 and Offline mode that only changes the data file.

To use Online mode, you must first set the communication port that is to be used to communicate with the instrument to be remotely controlled.

Set the communication port using the Instruments dialog box. Open this dialog box by clicking Instruments from the Tools menu.

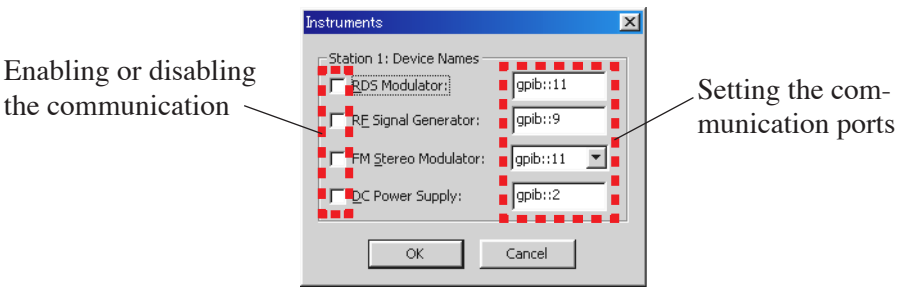


Fig.2-1 Instruments dialog box

The settings in the dialog box are saved if you click OK and close the dialog box. If you click Cancel, the settings return to the previous values.

You must specify either the RDS Modulator (KSG3421) or the RF Signal Generator (KSG4310) for the FM Stereo Modulator.

NOTE

- If you change the communication port while QPB3420 Basic is running, power cycle the KSG3420/3421 and then restart QPB3420 Basic.

Communication port in the GPIB interface

Set the communication ports as follows.

`GPIBn::devname`

n: Interface name of the GPIB board
(If n is omitted, it is assumed to be GPIB0.)

devname: Device name of the instrument to be controlled

Fig. 2-1 shows the default setting of QPB3420. In addition, the GPIB addresses of the KSG3420/3421 and KSG4310 at factory shipment have been set to 11 and 9 respectively.

Therefore, if you use the KSG3420/3421 and KSG4310 of which addresses are setting at factory shipment and the GPIB board of which interface name is GPIB0, you can use QPB3420 in default setting.

Communication port in the RS-232C interface

For the serial port of your PC, set the communication port as shown in Table 2-1.

Table2-1

PC's serial port	Communication port
COM1	ASRL1
COM2	ASRL2

Setting examples

If the Instrument to Be Controlled Is KSG3420 Only

As shown in Fig. 2-2, select only the RDS Modulator check box.

Note that if the other check boxes are selected, the communication bus may be locked until the communication times out.

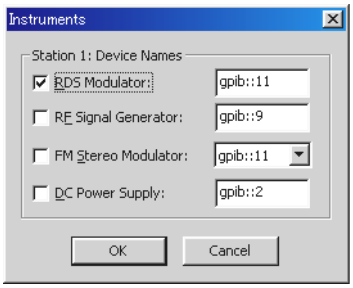


Fig. 2-2

If the Instrument to Be Controlled Is KSG3421 Only

As shown in Fig. 2-3, select the RDS Modulator and FM Stereo Modulator check boxes.

In this case, the communication port for the FM Stereo Modulator must be set to match the communication port for the RDS Modulator. If it is not, select the same port from the drop-down list.

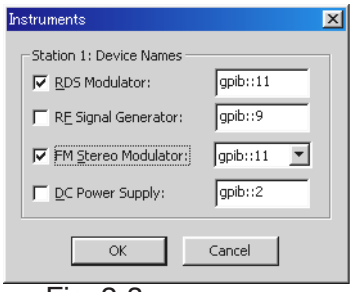


Fig. 2-3

If the Instruments to Be Controlled are KSG3420 and KSG4310

As shown in Fig. 2-4, select the RDS Modulator, FM Stereo Modulator, and RF Signal Generator check boxes.

In this case, the communication port for the FM Stereo Modulator must be set to match the communication port for the RF Signal Modulator. If it is not, select the same port from the drop-down list.

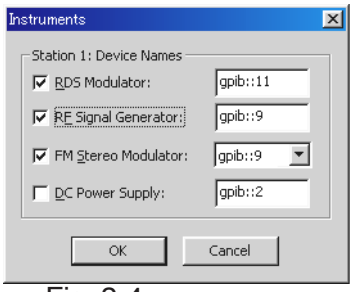


Fig. 2-4

If the Instruments to Be Controlled are KSG3421 and KSG4310

As shown in Fig. 2-5, select the RDS Modulator, FM Stereo Modulator, and RF Signal Generator check boxes.

In this combination, FM Stereo Modulators are present on both the KSG3421 and the KSG4310. Since only one can be used, the communication port of the instrument you wish to control must match the communication port for the FM Stereo Modulator. If it is not, select the same port from the drop-down list.

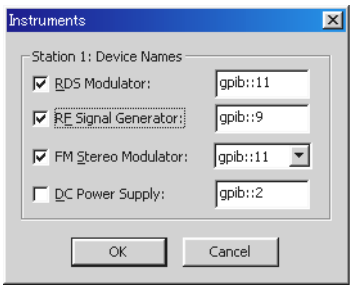


Fig. 2-5

If a DC Power Supply Is Present

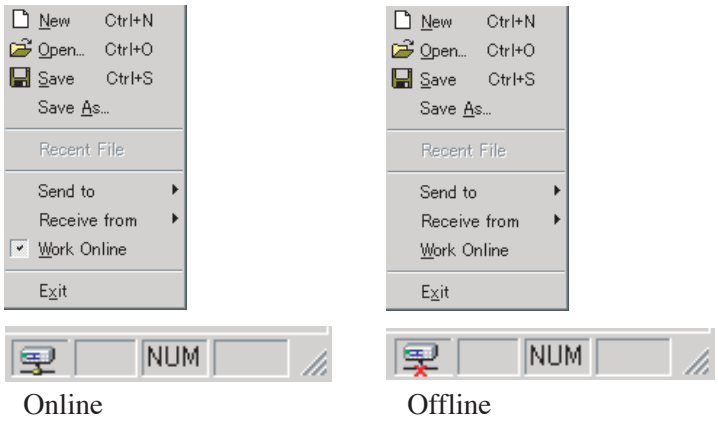
You can use QPB3420 Basic to turn ON/OFF the output of a Kikusui DC power supply. Select the DC Power Supply check box if you wish to remotely control the DC power supply. The output is turned ON/OFF using the Options dialog box. See the section on the Option dialog box for details.

2.3 Switching between Online/Offline Mode

QPB3420 Basic has two modes: Online mode that immediately applies the setting changes to the KSG3420/3421 and Offline mode that only changes the data file.

To change the mode, click Work Online from the File menu. Online mode is indicated by a check mark to the left of Work Online.

If the status bar is shown, the icon in the left most pane indicates the current mode.



Online Offline

Fig. 2-6 Online mode and Offline mode

NOTE

- If you wish to switch to Online mode to control the KSG3420/3421 after editing data in Offline mode, save the file you edited and synchronize the instrument and the setup data. For details, see section 2.7, “Synchronizing Setup Data and the Instruments”.
- If communications fail when switching between Offline mode and Online mode, power cycle the KSG3420/3421 and then restart QPB3420 Basic.

2.4 Options

The Options dialog box can be used to remotely control a part of the functions of the RF signal generator and the DC power supply (power supply controller). Open this dialog box by clicking Options from the Tools menu.

The communication method with each instrument depends on the setting specified in the Instruments dialog box. You cannot operate instruments that are not selected (check box not selected) in the Instruments dialog box.

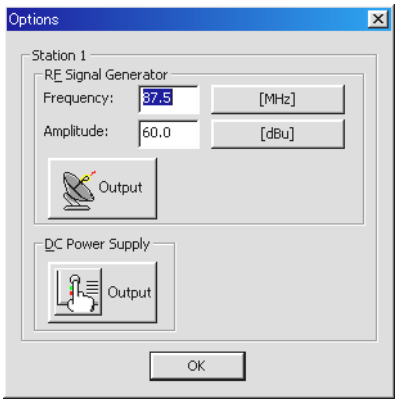


Fig. 2-7 Options dialog box

RF Signal Generator

The Options dialog box can be used to switch the RF frequency, RF level, and ON/OFF of the RF output of a Kikusui RF signal generator.

Frequency

Enter the frequency of the RF signal generator in units of MHz. Press MHz to actually set the generator. For the frequency range setting, see the manual of the RF signal generator.

Amplitude

Enter the amplitude of the RF signal generator in units of dBμ. Press dBu to actually set the generator. For the frequency range setting, see the manual of the RF signal generator.

Output button (RF Signal Generator)

Press Output to turn ON/OFF the RF signal generator. The output is ON when the button is pressed in.

DC Power Supply (Power supply controller)

The Options dialog box can be used to turn ON/OFF the output of a Kikusui DC power supply.

Output button (DC power supply)

Press Output to turn ON/OFF the DC power supply. The output is ON when the button is pressed in.

2.5 Preset Memories

The Memory Manage dialog box can be used to operate the preset memory of the KSG3420/3421. Open this dialog box by clicking Memory Manage from the Edit menu.

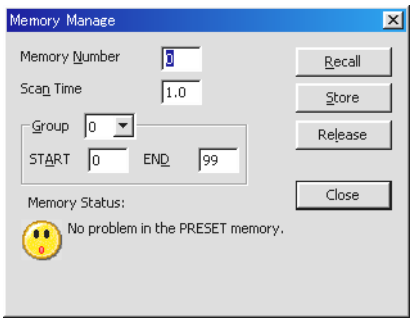


Fig. 2-8 Memory Manage dialog

Memory Number

To recall, store, or release a KSG3420/3421 preset memory, you must specify the preset memory number. Enter the preset memory number in Memory Number and press Recall, Store, or Release.

Scan Time

Indicates the time until the address indicated in Memory Number is recalled. The selectable range is 0.0 s to 10.0 s. Specify 0.0 to pass (no recall) and 10.0 to stop (recall stop).

Recall

Recalls the preset memory specified by Memory Number. The preset memory corresponding to the memory number can be recalled only if the preset memory had been stored previously.

Store

Stores to the preset memory specified by Memory Number.

Release

Releases the preset memory specified by Memory Number. The preset memory corresponding to the memory number can be released only if the preset memory had been stored previously.

Memory Status

Displays a report about the recall, store, or release operation.

Group

Select a KSG3420/3421 memory group.

START

Specifies the start address of the selected memory group in terms of the preset memory number in the range of 0 to END.

END

Specifies the end address of the selected memory group in terms of the preset memory number in the range of START + 1 to 99.

2.6 Managing Data Files

QPB3420 Basic manages the setup data of instruments in a single file in QPML data format. This allows easy unified management of data free of complicated operations. The QPML file format is Kikusui's original format that expands on XML (eXtensible Markup Language). The file is a text file.

■ Creating a New Data File

Click New from the File menu. If unsaved data is present, a message prompting you to save the data appears. Select Yes, No, or Cancel. If you select Yes, a new data file is created after saving the unsaved data file. If you select No, a new data file is created without saving the unsaved data file. If you select Cancel, the unsaved data file is not saved, and a new data file is not created.

■ Opening a Preexisting Data File

To open a preexisting data file, click Open from the File menu.

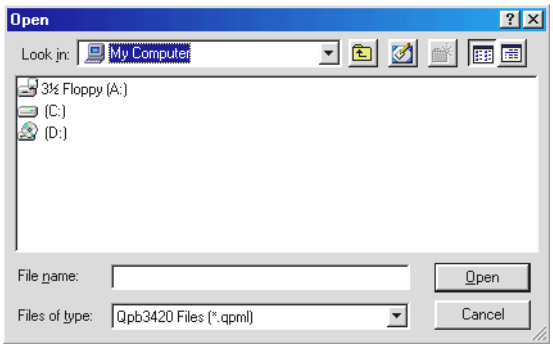


Fig. 2-9 Specifying a file name

A dialog box like the one shown in Fig. 2-9. Specify a file name and click Open.

QPB3420 Basic can load the data that has been created using the KSG3400S Support Software. To load such data, choose KSG3400S Files from the Files of type drop-down list, and then specify the file name. (QPB3420 Basic cannot save to the KSG3400S Files format. Save to the QPML format.)

■ Saving the Data File

To save the data file, click Save or Save as from the File menu. Choose Save to overwrite the file. Choose Save as to save the data to a specified file name. If the file name starts with "Untitled," the Save as dialog box may appear even if you click Save.

2.7 Synchronizing Setup Data and the Instruments

QPB3420 Basic provides a function for synchronizing the instruments and setup data only in Online mode. If QPB3420 Basic is in Offline mode, first switch to Online mode.

Two methods are available for synchronization: Send to that changes the instruments' settings to match the setup data of QPB3420 Basic and Receive from that changes the setup data of QPB3420 basic to the instruments' settings. Each method also has Batch all synchronization and partial synchronization.

2.8 Project Pane and Properties Pane

QPB3420 Basic organizes setup items in easy-to-understand groups. Consequently, all operations are unified and simple.

The groups are shown in a tree structure in the Project Pane on the left. By clicking an arbitrary group in the tree, the setup items corresponding to the group are displayed in the Properties Pane on the right.

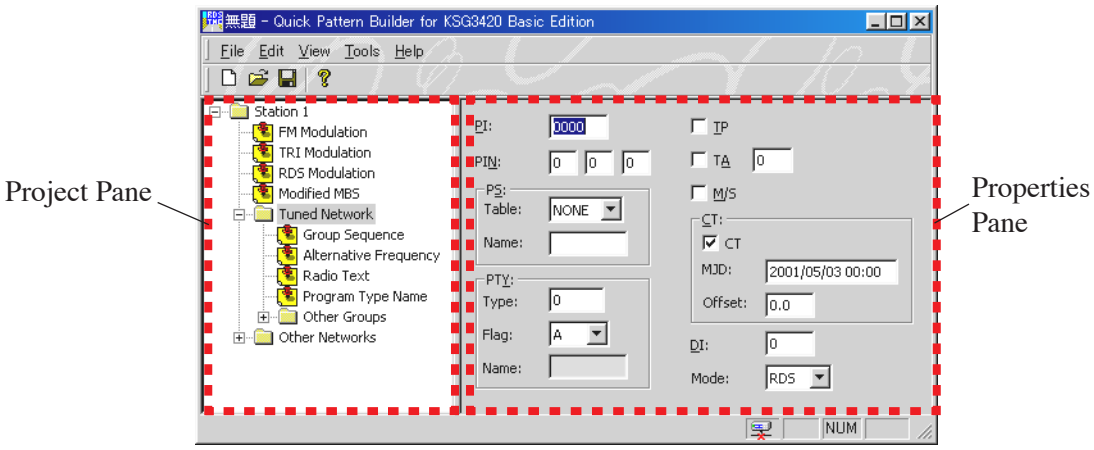


Fig. 2-10 Project Pane and Properties Pane

Properties Pane

The Properties Pane that appears varies depending on the tree item selected in the Project Pane. Properties Pane contains several items that behave differently from general Windows elements.

Edit Box

On the edit box, you can use the Enter key to confirm an entry. At this point, the settings are immediately applied to the instruments that are controlled if QPB3420 Basic is in Online mode.

List and Grid Controls

Simply carrying out the Add, Insert, or Delete command on list controls and grid controls do not update the instruments. To apply the changes, click Send from the

shortcut menu.

Items that need to be sent

- Group Sequence
- Alternative Frequency
- Other Groups
- Variant Sequence
- AF Method A
- Mapped Frequency

Station 1/Other Groups/Other Networks

Fig. 2-11 shows the Properties Pane when Station 1, Other Groups, or Other Networks is selected. This Properties Pane does not contain any setup items.

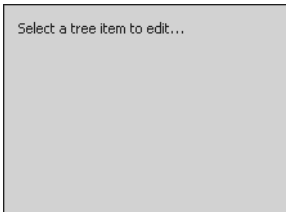


Fig. 2-11 Properties Pane for Station 1, Other Groups, or Other Networks

2.8.1 FM Modulation

Fig. 2-12 shows the Properties Pane when FM Modulation is selected. This pane is used to change the FM Stereo Modulator settings.

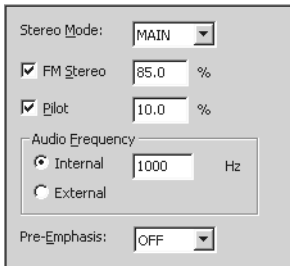


Fig. 2-12 Properties Pane for FM Modulation

Stereo Mode

Sets the FM stereo mode. Select one of the following modes:

- MONO
- MAIN
- LEFT
- RIGHT
- SUB
- EXT L/R

FM Stereo

Turns FM stereo modulation ON/OFF and sets the modulation level.

Use the check box to turn ON/OFF FM stereo modulation. Use the edit box on the right of the label to change the modulation level. The selectable range of modulation levels is 0.0 % to 125.0 % or 0.0 % to 12.5 %. The modulation level depends on the Stereo Mode, Audio Frequency (Source), and Pre-Emphasis. Table 2-2 shows the dependency.

Table 2-2

Stereo Mode	Pre-Emphasis	Audio Frequency (Source)	Minimum	Maximum
MONO MAIN LEFT RIGHT SUB	OFF	Independence	0.0 %	125.0 %
	25 μs 50 μs 75 μs (Other than OFF)	Internal	0.0 %	12.5 %
		External	0.0 %	125.0 %
EXT L/R	Independence	Independence	0.0 %	125.0 %

In addition, note the dependency shown in Table 2-3.

Table 2-3

Stereo Mode	KSG3421	KSG4310
MONO	100.0 %=75.0 kHz	
Other than MONO	100.0 %=67.5 kHz	

Pilot

Turns FM Pilot signal ON/OFF and sets the level.

Use the check box to turn ON/OFF the pilot signal. Use the edit box on the right of the label to change the level. The selectable range of levels is 0.0 % to 15.0 %.

Audio Frequency

Sets the AF source and the internal AF frequency.

Use the option buttons to select the AF source. Use the edit box on the right to change the internal AF frequency. The selectable range of internal AF frequencies depends on the FM Stereo Modulator as shown in Table 2-4.

Table 2-4

	KSG3421	KSG4310
Audio Frequency (Source)	20 Hz-20.0 kHz 10-Hz resolution	50 Hz-15.0 kHz 50-Hz resolution

Pre-Emphasis

Sets the Pre-Emphasis. Select a value from the drop-down list.

- OFF
- 25 μs
- 50 μs
- 75 μs

Use caution because the setting affects other parameters. For more details, see the section FM Stereo.

2.8.2 TRI Modulation

Fig. 2-13 shows the Properties Pane when TRI Modulation is selected. This pane is used to change the TRI modulator settings.

Fig. 2-13 TRI Modulation Properties Pane

SK

Use the check box to turn ON/OFF the SK signal. Use the edit box on the right to change the level. The selectable range is 0.0 % to 10.0 % in 0.1-% resolution.

DK

Use the check box to turn ON/OFF the DK signal. Use the edit box on the right to change the level. The selectable range is 0 % to 40 % in 1-% resolution.

BK

Use the check box to turn ON/OFF the BK signal. Use the edit box on the right to change the level. The selectable range is 0 % to 80 % in 1-% resolution.

Area

Choose the area frequency of the BK signal from the drop-down list. Select a frequency from the choices shown below. A through F indicate the following frequencies.

- A: 23.75 Hz
- B: 23.75 Hz
- C: 23.75 Hz
- D: 39.58 Hz
- E: 45.67 Hz
- F: 53.98 Hz

2.8.3 RDS Modulation

Fig. 2-14 shows the Properties Pane when RDS Modulation is selected. This pane is used to change the RDS modulator settings.

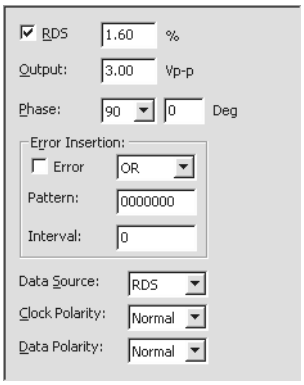


Fig. 2-14 RDS Modulation Properties Pane

RDS

Use the check box to turn ON/OFF the RDS modulation. Use the edit box on the right to change the modulation level. The selectable range of modulation levels is 0.00 % to 10.00 % in 0.01-% resolution.

Output

Set the output reference level of the composite signal using the edit box. The selectable range is 1.50 Vp-p to 10.00 Vp-p in 0.01-Vp-p resolution.

Phase

Sets the phase difference with respect to the FM pilot signal. Use the drop-down list to switch between 0˚ and 90˚. Then, use the edit box to vary the phase by ±10˚ (in units of 1˚) with respect to 0˚ or 90˚.

Error Insertion

Error

Use the check box to turn ON/OFF error insertion. Then, choose the error insertion logic from the list box. Choose the error insertion logic from the following:

- OR
- AND
- XOR (exclusive OR)

Pattern

Sets the pattern that is inserted based on the error insertion logic in hexadecimal notation. Pattern consists of 26 bits. The lower 10-bits are inserted in Check word + Offset; Upper 16 bits are inserted in Information word. The selectable range is 0000000 (h) to FFFF3FF (h). The resolution is 1 (h). However, the actual pattern is the value that results by masking the entered pattern using FFFF3FF (h).

Interval

Sets the interval of blocks to insert the error. The selectable range is 0 to 255. The resolution is 1. A value of 0 signifies that there are no block intervals. Thus, errors are inserted in all blocks.

Data Source

Choose the data to be used for RDS modulation from the drop-down list. The choices are shown below.

- ALL0
- ALL1
- RDS
- PN9
- EXT

Clock Polarity

Choose the polarity to be used for RDS clock from the drop-down list. The choices are shown below.

- Inverse
- Normal

Data Polarity

Choose the polarity to be used for RDS data from the drop-down list. The choices are shown below.

- Inverse
- Normal

2.8.4 Modified MBS

Fig. 2-15 shows the Properties Pane when Modified MBS is selected. This pane is used to change the settings of the Modified MBS that is transmitted as the group type MBS (OFFSET=E).

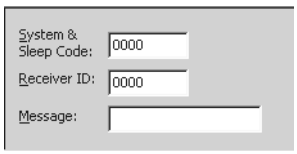


Fig. 2-15 Modified MBS Properties Pane

System & Sleep Code

Change the system & sleep code using the edit box. The selectable range is 0000 (h) to FFFF (h). The resolution is 1 (h).

Receiver ID

Change the receiver ID using the edit box. The selectable range is 0000 (h) to FFFF (h). The resolution is 1 (h).

Message

Enter the message consisting of 12 characters in the edit box.

2.8.5 Tuned Network

Fig. 2-16 shows the Properties Pane when Tuned Network is selected. This pane is used to change the basic functions of RDS such as PI, PTY, and other parameters.

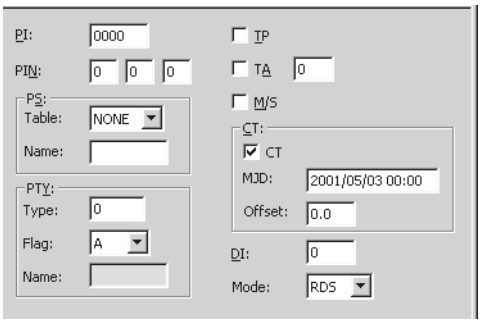


Fig. 2-16 Tuned Network Properties Pane

PI

Sets the PI code in hexadecimal notation. The selectable range is 0000 (h) to FFFF (h). The resolution is 1 (h).

PIN

PIN is aligned in the following order from the left: date, hour, and minute. The selectable range of each is shown below.

	Date	Hour	Minute
Minimum:	0	0	0
Maximum:	31	31	63
Resolution:	1	1	1

PS

Table

Choose a PS code table (character repertory) from the drop-down list. The four choices are shown below.

- N: No table specification
- 0: G0
- 1: G1
- 2: G2

Name

Enter the PS name in the edit box using eight characters.

PTY

Type

Set PTY using the edit box. The selectable range is 0 to 31. The resolution is 1.

Flag

Switch PTY flag A and B using the drop-down list.

Name

Indicates PTY, Flag, and PTY Name dependent on the RDS/RBDS mode. The value cannot be changed.

TP

Use the check box to turn ON/OFF TP.

TA

Use the check box to turn ON/OFF TA. Use the edit box to set the burst count of type-15B groups according to the TA switch. The selectable range is 0 to 9.

M/S

Use the check box to turn ON/OFF M/S.

CT

CT

Use the check box to turn ON/OFF the CT burst function.

MJD

Sets MJD using date/time format. The selectable ranges are shown below.

Year	/ Month /	Day	Hour	: Minute
1900-2100	01-12	01-31	00-23	00-59

However, the date must be between 1900/03/01 and 2100/02/28.

Offset

Sets the local time offset. The selectable range is -15.5 to 15.5. The resolution is 0.5.

DI

Use the edit box to set the decoder ID and the dynamic PTY indicator. The selectable range is 0 to 15. The resolution is 1.

The lower 3 bits are assigned to the decoder ID; the highest bit is assigned to the dynamic PTY indicator. Table 2-5 shows the relationship between the DI value, decoder ID, and dynamic PTY indicator.

Table 2-5

DI	Decoder ID	Dynamic PTY indicator
0 to 7	0 to 7	Off
8 to 15	0 to 7	On

Mode

Switches the RDS/RBDS mode.

2.8.6 Group Sequence

Fig. 2-17 shows the Properties Pane when Group Sequence is selected. This pane is used to change the group sequence settings.

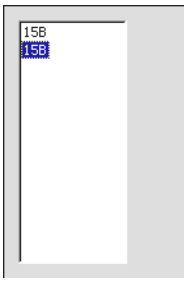


Fig. 2-17 Group Sequence Properties Pane

Adding, Inserting, and Deleting Groups

Right-click the mouse on the list control to open a shortcut menu. Use Add Item, Insert Item, and Delete Item commands to add, insert, and delete groups, respectively.

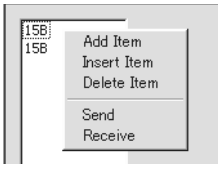


Fig. 2-18 Shortcut menu

Add Item and Insert Item adds or inserts type-15B groups.

Simply adding, inserting, or deleting groups does not update the instruments. Transmit the data to update the instruments.

Changing Group Types

Double-click the added or inserted item to change it. After double-clicking an item, enter an arbitrary group type.

Table 2-6 shows the group types that you can enter.

Table 2-6

Type	Value
Version A	0A-15A
Version B	0B-15B
Offset E (=0)	MBS
User-defined	UD1/UD2

Sending/Receiving Sequences (Synchronization)

The Send and Receive commands in the shortcut menu sends or receives the sequence, respectively, when in Online mode.

2.8.7 Alternative Frequency

Fig. 2-19 shows the Properties Pane when Alternative Frequency is selected. This pane is used to change the alternative frequency list settings.

Fig. 2-19 Alternative Frequency Properties Pane

Method

Switch the method using the drop-down list.

Adding, Inserting, and Deleting AFs

Right-click the mouse on the list control to open a shortcut menu. Use Add Item, Insert Item, and Delete Item commands to add, insert, and delete AFs, respectively.

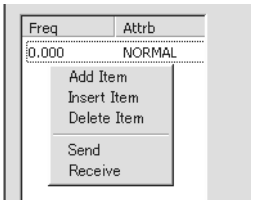


Fig. 2-20 Shortcut menu

Add Item and Insert Item adds or inserts 0.000.

The value 0.000 signifies Filler Code for the alternative frequency.

Simply adding, inserting, or deleting groups does not update the instruments. Transmit the data to update the instruments.

Changing the Frequency (Freq)

Double-click the added or inserted item to change it. After double-clicking an item, enter an arbitrary frequency. Table 2-7 shows the values that you can enter.

Table 2-7

Band	Minimum	Maximum	Resolution
VHF	87.500 MHz	107.975 MHz	0.025 MHz
MF	531 kHz	1602 kHz	9 kHz
LF	153 kHz	279 kHz	9 kHz

Changing the Attributes (Attrb)

When a frequency is added or inserted, the attribute is set to NORMAL. Change the attribute by choosing a value from the drop-down list.

- NORNAL
- TUNED
- ADJREG

Sending and Receiving AFs (Synchronization)

The Send and Receive commands in the shortcut menu sends or receives AF, respectively, when in Online mode.

2.8.8 Radio Text

Fig. 2-21 shows the Properties Pane when Radio Text is selected. This pane is used to change the radio text settings.

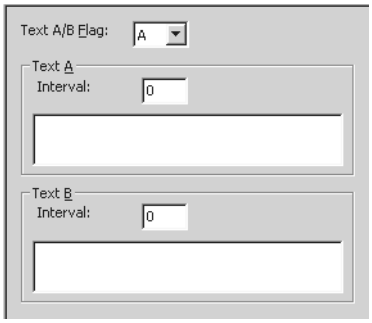


Fig. 2-21 Radio Text Properties Pane

Text A/B Flag

Switch the text flag using the drop-down list.

Changing the Text and Interval

Radio text can be set individually to flag A and flag B. The Text A group box is for flag A; the Text B group box is for flag B.

Enter the radio text in the large edit boxes. Set the interval in the Interval box.

Receiving Text

Right-click the mouse on the radio text edit box to open a shortcut menu.

Use the Receive command to receive radio text from the instrument.

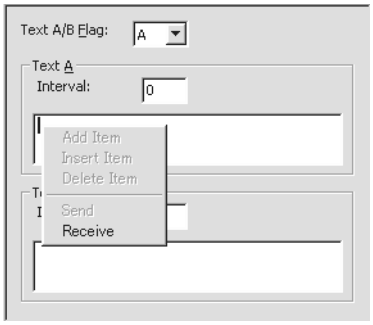


Fig. 2-22 Shortcut menu

2.8.9 Program Type Name

Fig. 2-23 shows the Properties Pane when Program Type Name is selected. This pane is used to change the program type name.

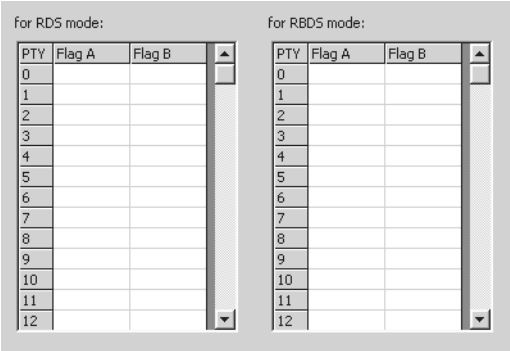


Fig. 2-23 Program Type Name Properties Pane

Setting the PTY Name

You can set a PTY name individually for RDS and RBDS modes. You can also set a different PTY name for Flag A and Flag B.

To set the names, double-click on each cell and enter an arbitrary character string.

Press the Enter (Return) key to confirm the entry. (If the PTY name that you entered is less than eight characters, spaces (20 (h)) are appended at the end.)

2.8.10 Other Groups

Other Groups contain a list of group types that KSG3420/3421 handles as other groups as shown in Fig. 2-24. You can enter encoded data in hexadecimal notation to each group type.

In addition, you can edit Traffic Message Channel (TMC) data using a dedicated dialog box.

You can only edit Other Groups in Online mode. Selecting a group type in Other Groups on the Project Pane causes the current contents of the selected group type to be sent to the instrument.

The editing procedure is common to all group types. Therefore, an example is given for group type 1A. The blocks to be edited are as shown in Table 2-8:

Since PI code is sent in the 1st block, only UD1/2 can be entered.

Since PI code is sent in version B of the 3rd block, only UD1/2 can be entered.

Since the KSG3420/3421 automatically calculates and adds the check word and offset word, only UD1/2 can be entered.

Since the KSG3420/3421 calculates and adds the check word for UD1, enter only the offset for C+O.

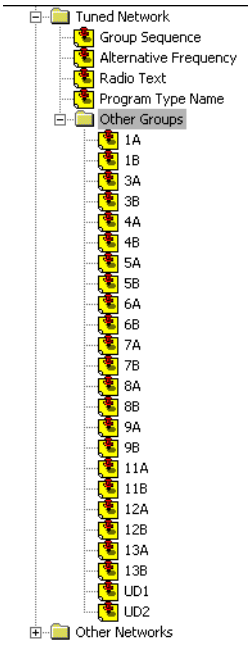


Fig. 2-24 Group types

Table2-8

	1st		2nd		3rd		4th	
	Info	C+O	Info	C+O	Info	C+O	Info	C+O
1A			✓		✓			
1B			✓					
3A			✓		✓		✓	
3B			✓				✓	
4A			✓					
4B			✓				✓	
5A			✓		✓		✓	
5B			✓				✓	
6A			✓		✓		✓	
6B			✓				✓	
7A			✓		✓		✓	
7B			✓				✓	
8A			✓		✓		✓	
8B			✓				✓	
9A			✓		✓		✓	
9B			✓				✓	
11A			✓		✓		✓	
11B			✓				✓	
12A			✓		✓		✓	
12B			✓				✓	
13A			✓		✓		✓	
13B			✓				✓	
UD1	3	3	✓	✓	✓	✓	✓	✓
UD2	3	3	✓	✓	✓	✓	✓	✓

Editing Group Types

Fig. 2-24 shows the Properties Pane when 1A of Other Groups is selected. This pane is used to change the group type 1A.

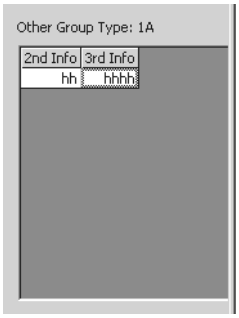


Fig. 2-24 Group Type 1A Properties Pane

Adding, Inserting, and Deleting Groups

Right-click the mouse on the grid control to open a shortcut menu as shown in Fig. 2-25 (the Edit TMC command in the menu is appear only for 1A, 3A, 5A, and 8A). Select Add Item, Insert Item, or Delete Item from the menu.

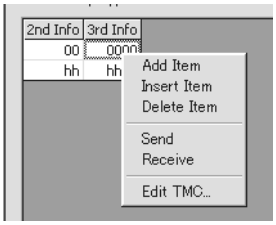


Fig. 2-25 Shortcut menu

Add Item adds a group to the end.

Insert Item inserts a group before the line containing the active cell.

Delete Item deletes the line containing the active cell.

Editing Groups

Move the cursor to the desired cell and enter a value in hexadecimal notation. Confirm the value after entry by activating another cell using arrow keys or the mouse.

At this point, the high and low limits of the value are checked. If the value is outside the range, an error message appears. In this case, reenter a value within the range.

Synchronization (Transmission/Reception)

Simply editing group data does not send the data to the KSG3420/3421. Choose Send or Receive from the shortcut menu.

The Send command sends the edited contents to the KSG3420/3420, while the Receive command receives the data from the KSG3420/3421 and updates the QPB3420 Basic data.

Editing TMCs

TMC (Traffic Message Channel) data is edited in 1A, 3A, 5A, and 8A of Other Groups. The setup item varies depending on the group type.

The value of each content is the value in the line containing the active cell on the grid control.

When you edit the content and click OK or Apply, the edited content is reflected in the line containing the active cell on the grid control. (The OK button closes the dialog box.)

System Message

System Message is edited using 1A. Choose Edit TMC from the shortcut menu to open a dialog box as shown in Fig. 2-26.

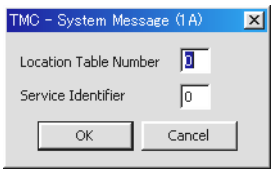


Fig. 2-26 TMC-System Message dialog

Location Table Number

Enter the value in the edit box. The selectable range is 0 to 63. The resolution is 1.

Service Identifier

Enter the value in the edit box. The selectable range is 0 to 63. The resolution is 1.

System Information

System Information is edited using 3A. Choose Edit TMC from the shortcut menu to open a dialog box as shown in Fig. 2-27.

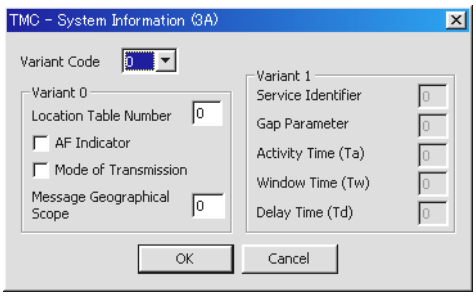


Fig. 2-27 TMC-System Information dialog

Variant Code

Choose 0 or 1 from the drop-down list. If 0 is selected, the Variant 0 group box become editable; if 1 is selected, the Variant 1 group box become editable.

Variant 0

Location Table Number

Enter the value in the edit box. The selectable range is 0 to 63. The resolution is 1.

AF Indicator

Select or clear the check box.

Mode of Transmission

Select or clear the check box.

Message Geographical Scope

Enter the value in the edit box (hexadecimal). The selectable range is 0 to F (h). The resolution is 1.

Variant 1

Service Identifier

Enter the value in the edit box. The selectable range is 0 to 3. The resolution is 1.

Gap Parameter

Enter the value in the edit box. The selectable range is 0 to 63. The resolution is 1.

Activity Time

Enter the value in the edit box. The selectable range is 0 to 3. The resolution is 1.

Window Time

Enter the value in the edit box. The selectable range is 0 to 3. The resolution is 1.

Delay Time

Enter the value in the edit box. The selectable range is 0 to 3. The resolution is 1.

ALERT Plus Network Layer Information

ALERT Plus Network Layer Information is edited using 5A or 8A. Here, explanation is given for setting ALERT Plus Network Layer Information using 8A. First, click the Network Layer Information tab to select the Network Layer Information page.

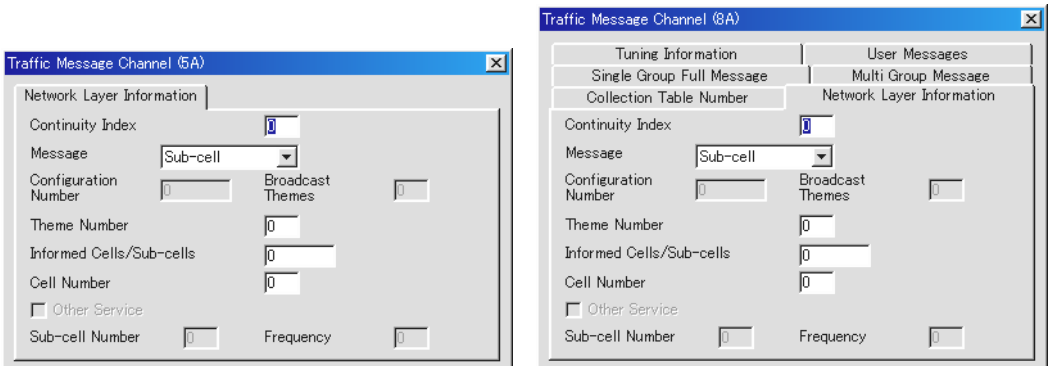


Fig. 2-28 TMC-Network Layer Information page

Continuity Index

Enter the value in the edit box. The selectable range is 0 to 3. The resolution is 1.

Message

Select a message from the drop-down list. The items to be edited varies depending on the selected message. Continuity Index is always editable.

Table 2-9 shows the messages and the items to be edited.

Table 2-9

Message	Contents to Be Edited	Range
Theme	Configuration Number	0-8191
	Broadcast Themes	0-255
Cell	Theme Number	0-7
	Informed Cells/Sub-cells	0-65535
Sub-cell	Theme Number	0-7
	Informed Cells/Sub-cells	0-65535
	Cell Number	0-15
Frequencies	Theme Number	0-7
	Cell Number	0-15
	Other Service	Checked or Unchecked
	Cell Number	0-15
	Frequency	0-255

Tuning Information

Tuning Information is edited using 8A. First, click the Tuning Information tab to select the Tuning Information page.

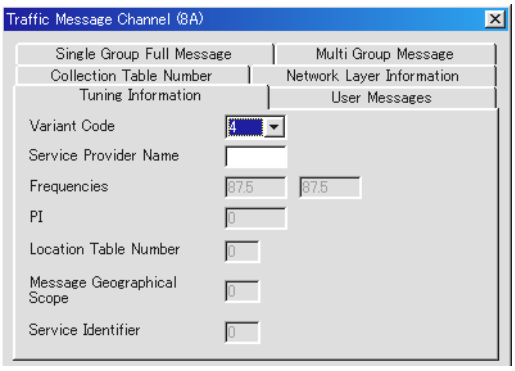


Fig. 2-29 TMC-Tuning Information page

Variant Code

Choose a value between 4 and 9 from the drop-down list.

Table 2-10 shows the contents to be edited depending on Variant Code.

Table2-10

Variant Code	Contents to Be Edited	Range
4	Service Provider Name (characters 1 to 4)	
5	Service Provider Name (characters 5 to 8)	
6	Frequencies (AF of ON)	87.5-108.0
	Frequencies (AF of ON)	
	PI (AFI=0)	0(h)-FFFF(h)
7	Frequencies (Tuning Freq.)	87.5-108.0
	Frequencies (Mapped Freq.)	
	PI (AFI=0)	0(h)-FFFF(h)
8	PI (AFI=1)	0(h)-FFFF(h)
9	PI (AFI=1)	0(h)-FFFF(h)
	Location Table Number	0-15
	Message Geographical Scope	0-15
	Service Identifier	0-63

User Messages

User Messages are edited using 8A. First, click the User Messages tab to select the User Messages page.

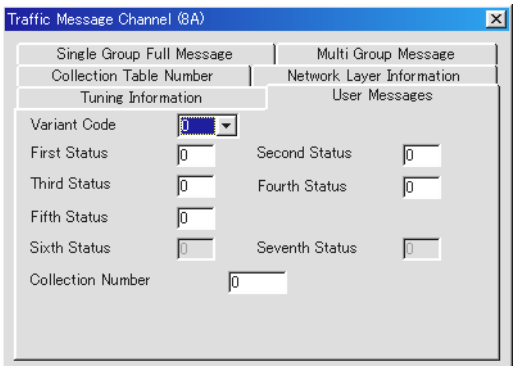


Fig. 2-30 TMC-User Messages page

Variant Code

Choose 0 or 1 from the drop-down list.

If Variant Code is 0, Sixth/Seventh Status cannot be edited. In addition, the high limit of the contents vary depending on Variant Code. See Table 2-11 for the high limits.

Table 2-11

Variant Code	Contents to Be Edited	Range
0	First-Fifth Status	0-15
	Collection Number	0-4095
1	First-Seventh Status	0-7
	Collection Number	0-2047

Single Group Full Message

Single Group Full Message is edited using 8A. First, click the Single Group Full Message tab to select the Single Group Full Message page.

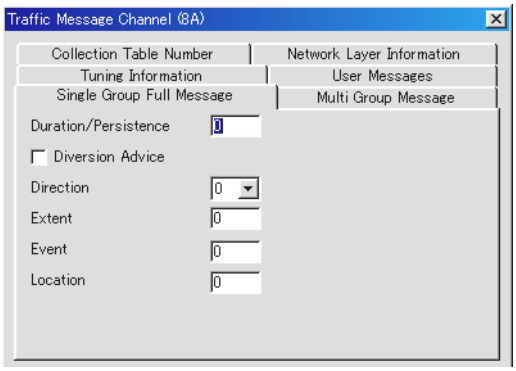


Fig. 2-31 TMC-Single Group Full Message page

Duration/Persistence

Enter an integer in the range of 0 to 7 using decimal notation in the edit box.

Diversion Advice

Select or clear the check box.

Direction

Choose 0 or 1 from the drop-down list.

Extent

Enter an integer in the range of 0 to 7 using decimal notation in the edit box.

Event

Enter an integer in the range of 0 to 2047 using decimal notation in the edit box.

Location

Enter an integer in the range of 0 to 65535 using decimal notation in the edit box.

Multi Group Message

Multi Group Message is edited using 8A. First, click the Multi Group Message tab to select the Multi Group Message page.

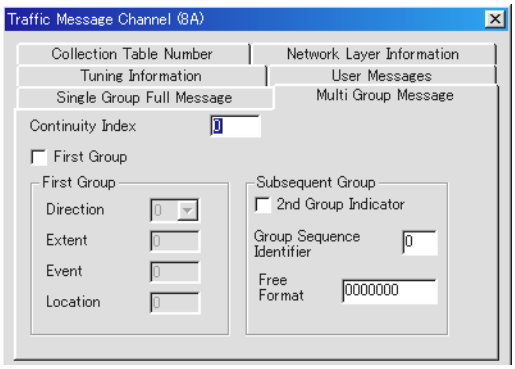


Fig. 2-32 TMC-Multi Group Message page

Continuity Index

Enter an integer in the range of 0 to 7 using decimal notation in the edit box.

First Group

Select or clear the check box. If you select the check box, the contents in the First Group group box become editable. Otherwise, the contents in the Subsequent Group group box become editable.

Direction

Choose 0 or 1 from the drop-down list.

Extent

Enter an integer in the range of 0 to 7 using decimal notation in the edit box.

Event

Enter an integer in the range of 0 to 2047 using decimal notation in the edit box.

Location

Enter an integer in the range of 0 to 65535 using decimal notation in the edit box.

Subsequent Group

2nd Group Indicator

Select or clear the check box.

Group Sequence Identifier

Enter an integer in the range of 0 to 3 using decimal notation in the edit box.

Free Format

Enter an integer in the range of 0 (h) to FFFFFFF (h) using hexadecimal notation in the edit box.

ALERT Plus Collection Table Number

ALERT Plus Collection Table Number is edited using 8A. First, click the Collection Table Number tab to select the Collection Table Number page.

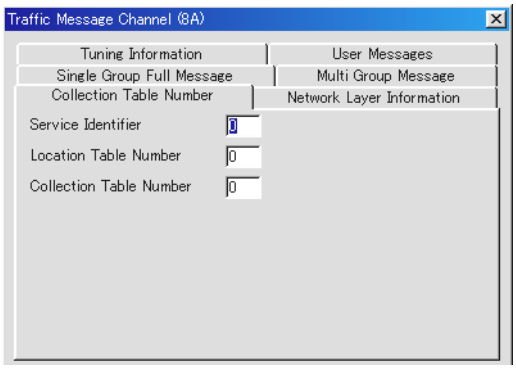


Fig. 2-33 TMC-Collection Table Number page

Service Identifier

Enter an integer in the range of 0 to 63 using decimal notation in the edit box.

Location Table Number

Enter an integer in the range of 0 to 15 using decimal notation in the edit box.

Collection Table Number

Enter an integer in the range of 0 to 63 using decimal notation in the edit box.

2.8.11 Other Networks

Editing Other Networks

You can add, insert, or delete EON xx to Other Networks. Each EON xx contains Variant Sequence, AF with Method A, and Mapped Frequency.

Right-click on Other Networks to open a shortcut menu as shown in Fig. 2-34.

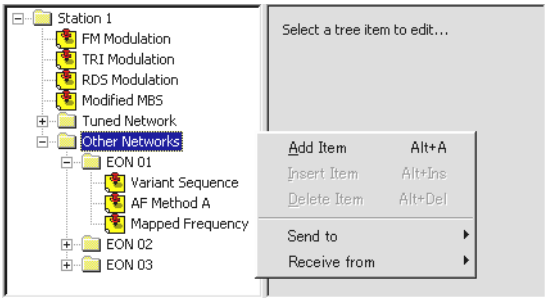


Fig. 2-34 Shortcut menu

If Other Networks is selected, Add Item is valid while Insert Item and Delete Item are invalid. On the contrary, if EON xx under Other Networks is selected, Add Item is invalid while Insert Item and Delete Item are valid.

Adding, Inserting, and Deleting Other Networks

Add Item (Alt+A) adds EON xx to the end of EON xx items under Other Networks. Up to 99 EON xx items can be added or inserted. You can also use the Edit menu to add, insert, or delete Other Networks.

Insert Item inserts EON xx immediately before the selected EON xx. Up to 99 EON xx items can be added or inserted.

Delete Item deletes the selected EON xx.

Editing Other Networks

Fig. 2-35 shows the Properties Pane when you select EON xx for editing.

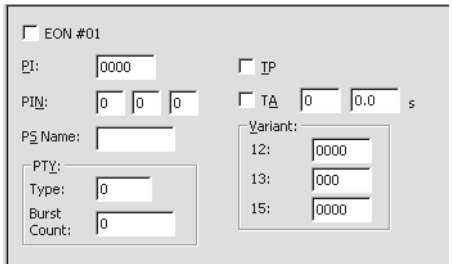


Fig. 2-35 EON #01 Properties Pane

EON #xx

If Group Sequence contains 14A, select whether to send EON data using the check box.

PI

Enter a positive integer in the range of 0 (h) to FFFF (h) using hexadecimal notation.

PIN

The value represents the date, hour, and minute from the left. Enter a positive integer in decimal notation for each value. The selectable range of each is shown below.

	Date	Hour	Minute
Minimum:	0	0	0
Maximum:	31	31	63
Resolution:	1	1	1

You can enter a value exceeding the limit of hour and minute, which are 23 and 59, respectively. This is because the value depends on the bit length that is allocated by the RDS/RBDS standard.

PS Name

Enter eight ASCII characters.

Type

Enter a positive integer in the range of 0 (h) to FFFF (h) using hexadecimal notation.

Burst Count

Enter a positive integer in the range of 0 to 9 using decimal notation.

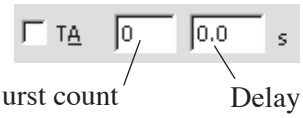
If PTY of EON is changed, the KSG3420/3421 sends 14A (Variant 13) the specified number of times in burst mode independent of Group Sequence.

TP

Choose the TP ID of EON using the check box.

TA

Choose the TA ID of EON using the check box.



For burst count, enter a positive integer in the range of 0 to 9 using decimal notation. For delay time, enter a decimal number in the range of 0.0 to 9.9. The resolution is 0.1.

Variant 12, 13, 15

See Table 2-12 for the selectable ranges.

Table 2-12

Variant Code	Minimum	Maximum	Resolution
12	0(h)	FFFF(h)	1(h)
13	0(h)	7FE(h)	2(h)
14	0(h)	FFFF(h)	1(h)

Editing Variant Sequences

Adding, Inserting, and Deleting Variant Sequences

Select Variant Sequence. The Properties Pane shows a list control. Right-click the mouse on the list control to open a shortcut menu.

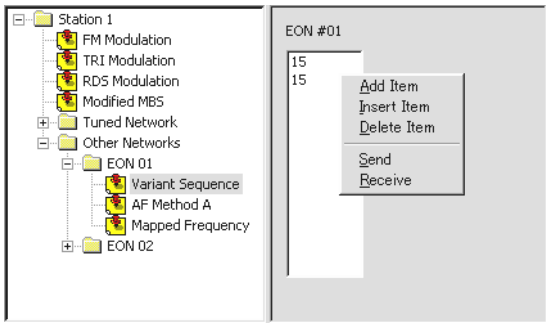


Fig. 2-36 Shortcut menu

Add Item adds an item to the end of the list of items.

Insert Item inserts an item immediately before the selected item.

Delete Item deletes the selected item.

Editing Variant Sequences

Select the item you wish to edit and press the F2 key. An edit box appears above the item. Enter a positive integer in the range of 0 to 15 in decimal notation. Press the Enter key to clear the edit box and confirm the new value.

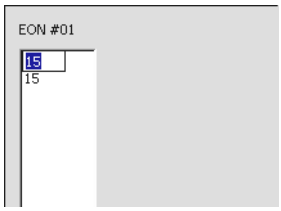


Fig. 2-37 Edit box

Sending and Receiving Variant Sequences

Simply editing Variant Sequence does not update the KSG3420/3421. The Send command in the shortcut menu sends the edited contents to the KSG3420/3421. The Receive command receives the contents from the KSG3420/3421 and updates the QPB3420 Basic data.

Editing AF Method A Items

Adding, Inserting, and Deleting AF Method A Items

Select AF Method A. The Properties Pane shows a list control. Right-click the mouse on the list control to open a shortcut menu.

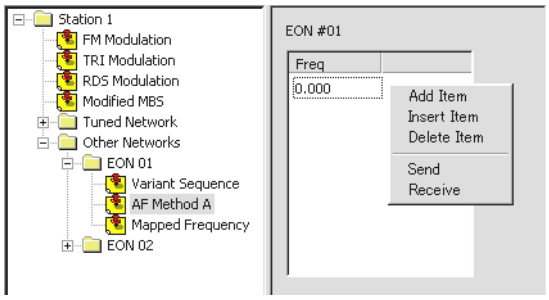


Fig. 2-38 Shortcut menu

Add Item adds an item to the end of the list of items.

Insert Item inserts an item immediately before the selected item.

Delete Item deletes the selected item.

Editing AF Method A Items

Select the item you wish to edit and press the F2 key. An edit box appears above the item. Enter the alternative frequency. See Table 2-13 for the selectable ranges. Press the Enter key to clear the edit box and confirm the new value.

The value 0.000 signifies Filler Code for the alternative frequency.

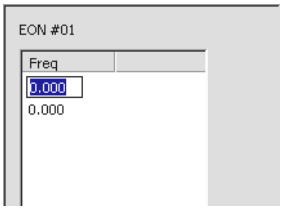


Fig. 2-39 Edit box

Table 2-13

Bands	Minimum	Maximum	Resolution
VHF	87.500 MHz	107.975 MHz	0.025 MHz
MF	531 kHz	1602 kHz	9 kHz
LF	153 kHz	279 kHz	9 kHz

Sending and Receiving AF Method A Items

Simply editing AF Method A does not update the KSG3420/3421. The Send command in the shortcut menu sends the edited contents to the KSG3420/3421. The Receive command receives the contents from the KSG3420/3421 and updates the QPB3420 Basic data.

Editing Mapped Frequency Items

Adding, Inserting, and Deleting Mapped Frequency Items

Select Mapped Frequency. The Properties Pane shows a list control. Right-click the mouse on the list control to open a shortcut menu.

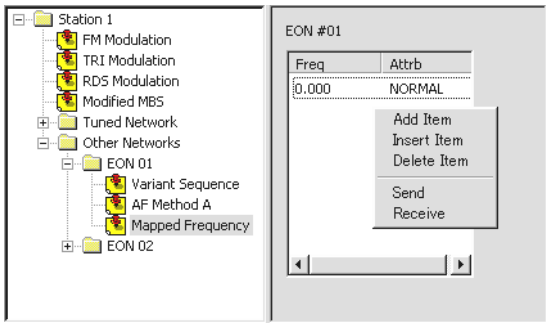


Fig. 2-40 Shortcut menu

Add Item adds an item to the end of the list of items.

Insert Item inserts an item immediately before the selected item.

Delete Item deletes the selected item.

Editing Mapped Frequency Items

Select the item you wish to edit and press the F2 key. An edit box appears above the item. Enter the alternative frequency. See Table 2-14 for the selectable ranges. Press the Enter key to clear the edit box and confirm the new value.

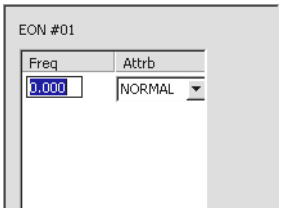


Fig. 2-41

Table 2-14

Bands	Minimum	Maximum	Resolution
VHF	87.5 MHz	107.9 MHz	0.1 MHz
MF	531 kHz	1602 kHz	9 kHz
LF	153 kHz	279 kHz	9 kHz

Changing the Attributes (Attrb)

When a frequency is added or inserted, the attribute is set to NORMAL. Change the attribute by choosing a value from the drop-down list.

- NORNAL
- TUNED

Sending and Receiving Mapped Frequency Items.

Simply editing Mapped Frequency does not update the KSG3420/3421. The Send command in the shortcut menu sends the edited contents to the KSG3420/3421. The Receive command receives the contents from the KSG3420/3421 and updates the QPB3420 Basic data.

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