

LG 3219

RDS DATA EDITOR

INSTRUCTION MANUAL

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CHAPTER 1 GENERAL

1-1 INTRODUCTION

This instruction manual contains the following sections:

CHAPTER 1 GENERAL

Provides the general description of the software.

CHAPTER 2 INSTALLATION

Provides the installation requirements of the software. Be sure to read this section before using the software.

CHAPTER 3 OPERATION

Explains the operation procedures for each function of the software.

1-2 GENERAL

This software consists of the "RDS data editor soft" to create and edit RDS signal data and the "RDS loader soft" to download data created by the RDS data editor in the internal memory of the VP-8194D.

For further operation procedure of the software, see CHAPTER 3 OPERATION.

1-3 RDS SIGNAL

This software can create and edit RDS signals that are defined in CENELEC EN 50067 and broadcasted in European countries, and RBDS signals that are defined in NRSC / NAB and broadcasted in the United States.

Except for a little difference in usage because of different broadcasting areas, the RDS signals and RBDS signals are same in modulation method, transmission method, and data structure. Thus in the rest of this instruction manual, it is assumed that the RDS signals include the RBDS signals unless otherwise specified.

Listed below are the general specifications of RDS signals.

Table 1-1 Outline of RDS signals

Item	Specification
Sub carrier frequency	57 kHz
FM deviation	± 2 kHz
Modulation method	BPSK (Bi-Phase Shift Keying)
Coding method	Differential coding
Data rate	1 187.5 bps
Bandwidth	57 kHz ± 2.4 kHz (100% cosign roll-off)

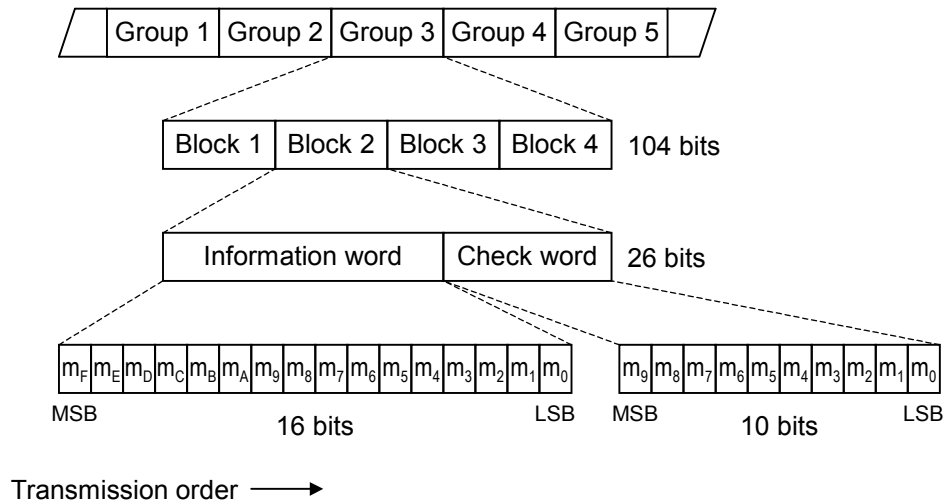


Figure 1-1 RDS data structure

1-4 RDS DATA EDITOR

The RDS data editor automatically creates RDS data from entered code data. The created RDS data can be downloaded in the internal memory of the VP-8194D via the RDS loader and used as its modulation output signals.

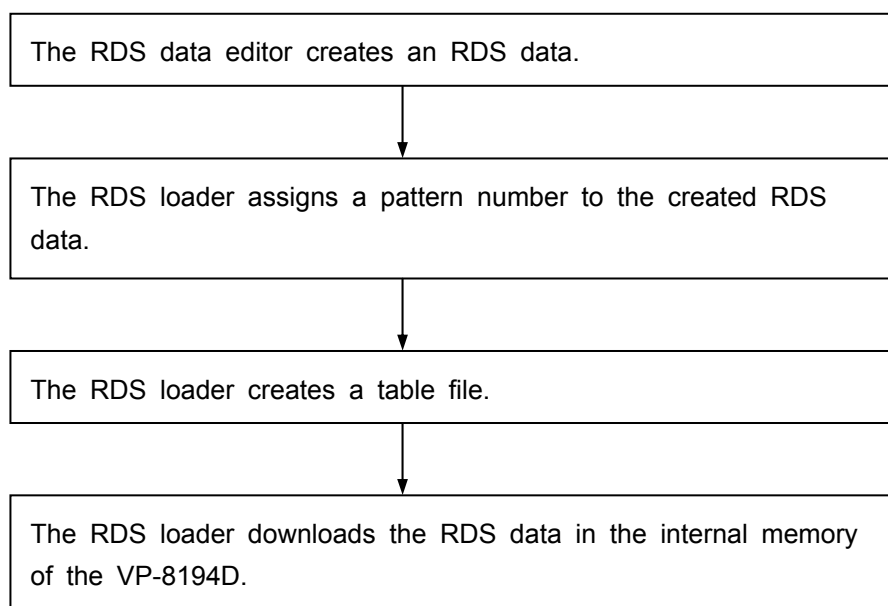
For further information on the operation procedure, see CHAPTER 3 OPERATION.

1-5 RDS LOADER

The RDS loader assigns pattern numbers to data created by the RDS data editor to download them in the internal memory of the VP-8194D.

For further information on the operation procedure, see CHAPTER 3 OPERATION.

1-6 FLOW OF DATA DOWNLOADING PROCEDURE



CHAPTER 2 INSTALLATION

2-1 INSTALLATION REQUIREMENTS

This software runs on Microsoft Windows for creating, editing, and downloading RDS signal data. Before operating the RDS data editor soft and the RDS loader, it is necessary to install required software in the hard disk of a personal computer. Following paragraphs describe the computer environment required to run the RDS data editor soft and the RDS loader, connection method between the VP-8194D and the personal computer, and installation method of the software in order.

2-1-1 Operational environment

The supplied editor is software that runs on Microsoft Windows. Therefore the editor can run on any personal computer providing environment where Microsoft Windows can be used. Listed below are environmental requirements, which personal computers must satisfy in order to run the editor.

Table 2-1 Operational environment

Item	Requirements
OS	Windows 98 / 2000 / XP
Personal computer	Must be able to run above OS. 100 % AT compatible machines are recommended.
Main memory	16 M bytes or more (Windows 95/98)* 32 M bytes or more (Windows NT4.0)*
CD drive	Applicable to CD-R reading.
Hard disk	Free spaces of 5 MB or more are needed at the time of installation.
Display	640 × 480 dots (VGA) is required. 800 × 600 dots is recommended.
Keyboard	Must be adaptable to above OS.
Serial port	One or more RS-232-C communication port must be able to be used.

* Windows 98, Windows 2000, and Windows XP are the registered trademarks of Microsoft Corp.

2-1-2 Connection

To download the table file created by the RDS loader in the internal memory of the VP-8194D, it is required to connect the VP-8194D with a personal computer via the RS-232-C interface.

Use the following cable for connection.

- D-sub 9 pin female, - D-sub 9 pin female, reverse connection cable

2-1-3 Installing the editor

- ① Run the personal computer.
- ② Insert the attached CD "RDS Data Editor" in the CD drive.
- ③ Select [Start] - [Run...].
- ④ Enter "<Drive name> : ¥setup" in the [Open :] box and select the <OK> button. Assuming that the CD is inserted in the CD drive D, enter "D:¥setup" and select the <OK> button.
- ⑤ The installation screen starts up.
- ⑥ Follow the instructions on the installation screen to install the program.

CHAPTER 3 OPERATION

3-1 GENERAL

This chapter describes the operation procedures for the "RDS data editor soft " and the "RDS loader" on a personal computer in the following order.

- 3-2 INSTALLATION
- 3-3 BASIC OPERATIONS OF THE RDS DATA EDITOR
- 3-4 CREATING RDS DATA
- 3-5 BASIC OPERATIONS OF THE RDS LOADER
- 3-6 CREATING THE RDS DATA TABLE
- 3-7 DOWNLOADING / UPLOADING RDS DATA

3-2 INSTALLATION

For the operational environment and connection of the personal computer when installing in the computer, see paragraph 2-1. Be sure to read the paragraph before starting installation.

Installation procedure is as follows:

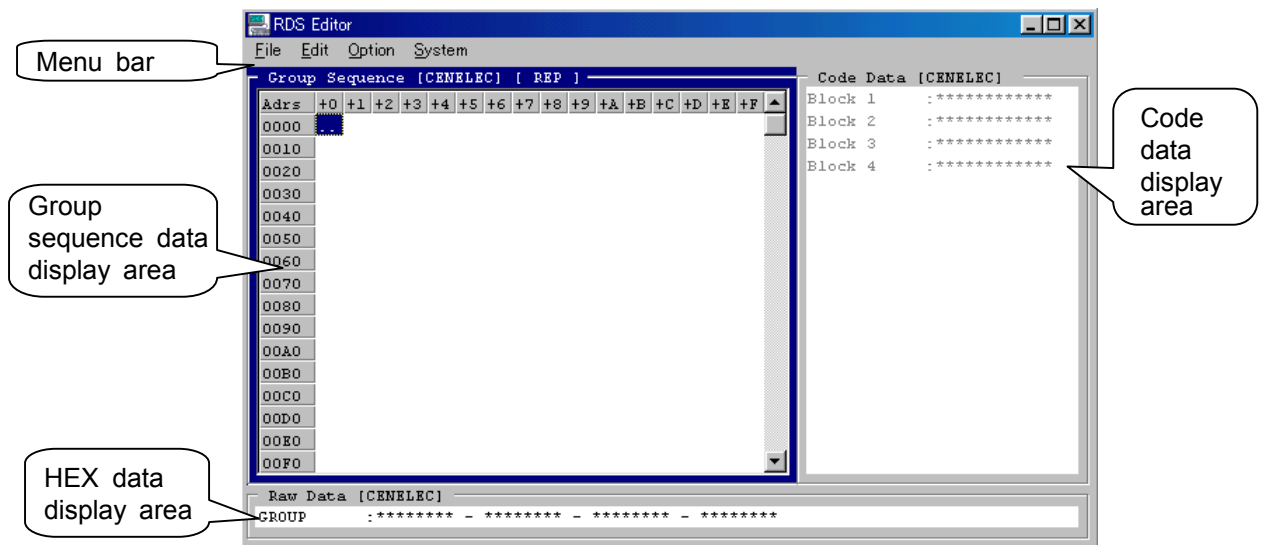
- ① Run the personal computer.
- ② Insert the attached CD "RDS Data Editor" in the CD drive.
- ③ Select [Start] - [Run...].
- ④ Enter "<Drive name> : ¥setup" in the [Open :] box and select the <OK> button. Assuming that the CD is inserted in the CD drive D, enter "D:¥setup" and select the <OK> button.
- ⑤ The installation screen starts up.
- ⑥ Follow the instructions on the installation screen to install the file.

3-3 BASIC OPERATIONS OF THE RDS DATA EDITOR

3-3-1 Starting and ending the RDS data editor

(1) Starting the RDS data editor

Double click the mouse button on the icon of the editor installed in paragraph 3-2, and the following initial screen of the editor appears.



- Menu bar

Displays required functions in the tree style.

- Group sequence data display area

Used to create a group sequence.

- Code data display area


Used to create a code data.

Required input items are displayed according to the group type pointed with the cursor on the group sequence display area.

- HEX data display area

Display contents on the code data display area are converted into hexadecimal data depending on specifications and displayed.

(2) Ending the RDS data editor

To end the RDS data editor, click the  button or select [File] - [Exit] on the menu bar.

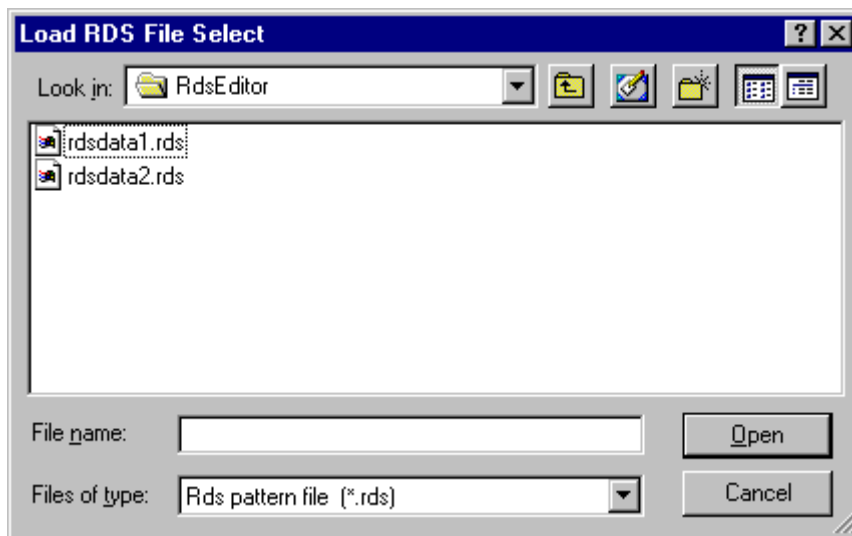
3-3-2 Creating new RDS data

Selecting [File] - [New] on the menu bar clears data on the group sequence data display area to invoke the initial screen shown in paragraph 3-3-1. New RDS data can be edited.

3-3-3 Opening existing file

Open an existing RDS data file. Procedure is as follows:

- ① Select [File] - [Open] on the menu bar to open the following dialogue.



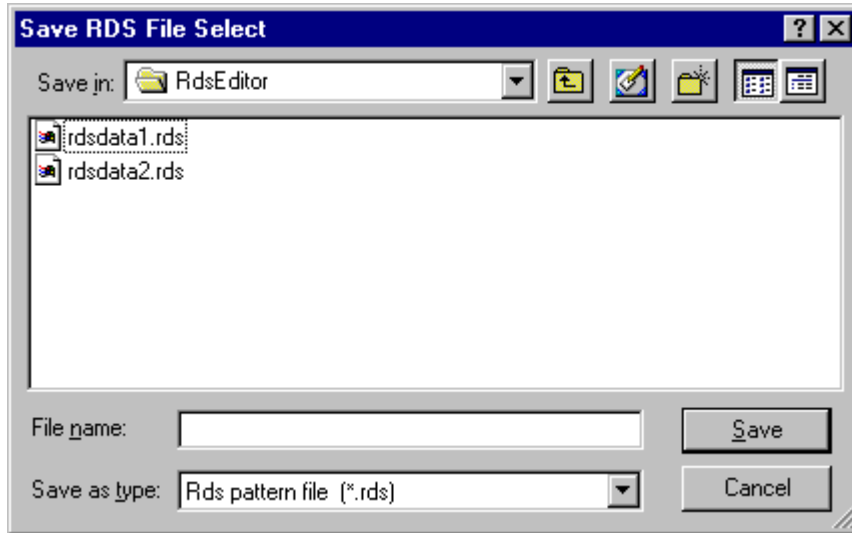
- ② Select a file to be opened and click the [Open] button to open the selected RDS data file.

3-3-4 Saving RDS data

(1) Saving under a new name

Save the presently opened RDS data file under a new file name. Procedure is as follows:

- ① Select [File] - [Save As...] on the menu bar to open the following dialogue.



- ② Enter a new file name in the [File name] box and click the [Save] button to save the RDS data file. The filename extension ".rds" is supplied.

(2) Overwriting

Overwrite the presently opened RDS data file and saved it.

Select [File] - [Save] on the menu bar to overwrite the file and save it.

■ NOTE

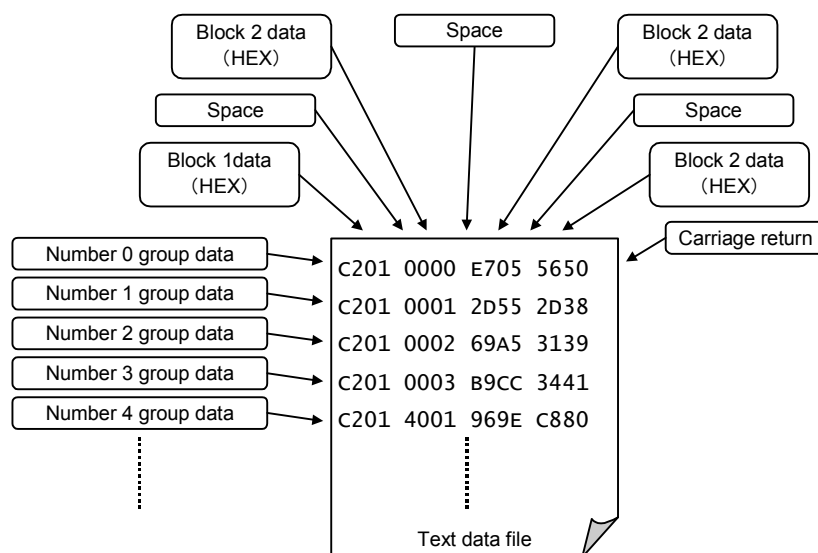
If you attempt to overwrite a newly created data having no file name, the dialogue shown in (1) above appears. Make sure to save the data under a new file name.

3-3-5 Importing text data file

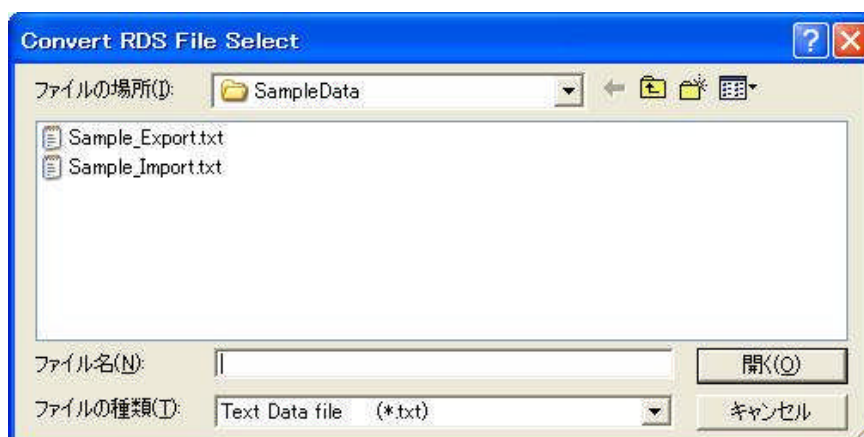
The RDS data editor can read an RDS data file described in text format to open it for editing on the editor.

Given below is the text data format that can be imported.

- One line corresponds to one-group data.
- Each line is composed of four-block data.
- For each block data, 16-bit Information Word (see Fig. 1-1 of the paragraph 1-3) is described in hexadecimal notation.
- Spaces are used to separate each block.
- Group data after Number 2048 group data in the file are ignored.



- ① Select [File]-[Import...] on the menu bar to open the file dialogue.



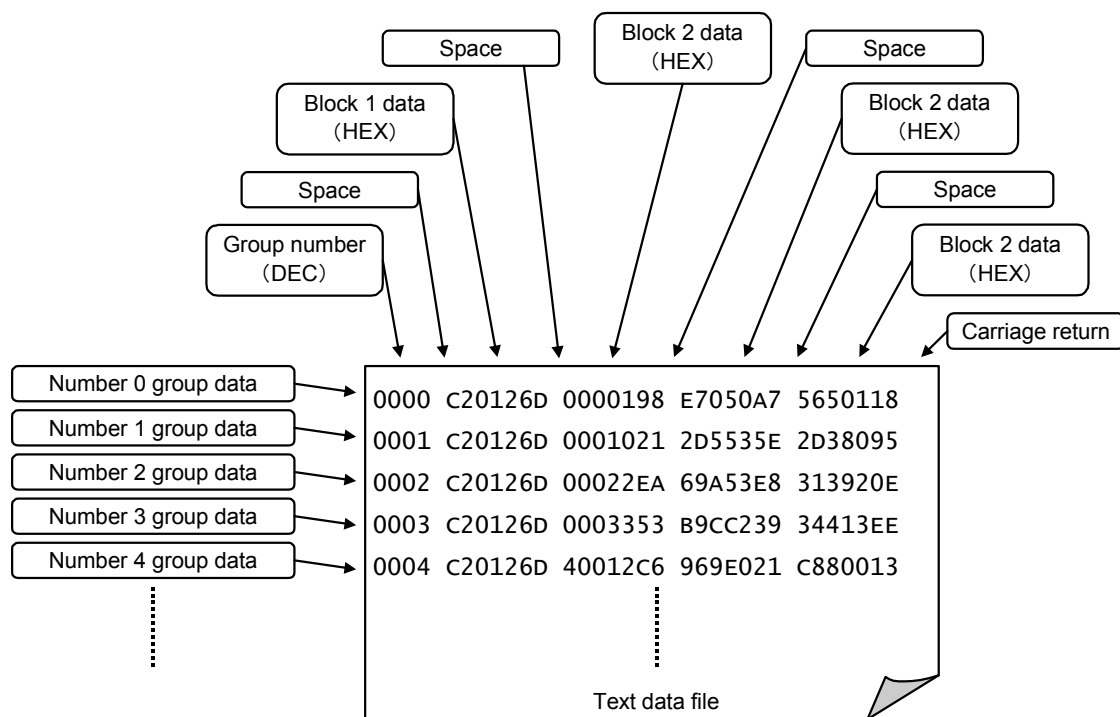
- ② Select a desired file and click the <Open> button to open the selected text data file on the RDS data editor.

3-3-6 Exporting text data file

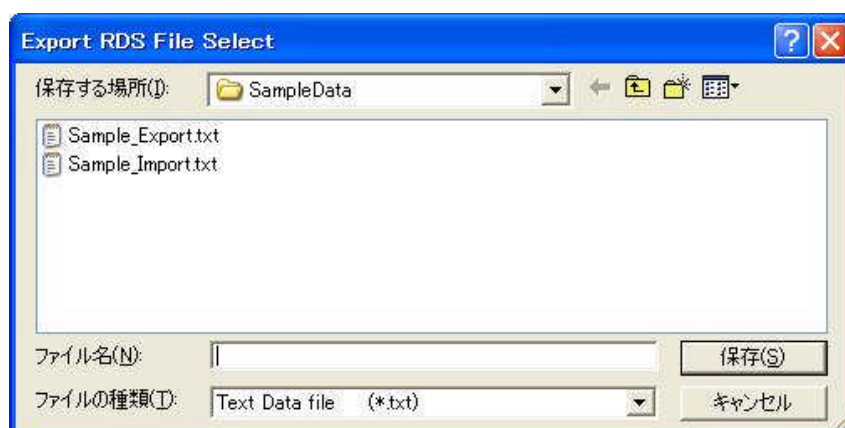
The RDS data editor can save edited RDS data as RDS data file in text format.

The export function can be used to save the edited data as text data in the following format.

- One line corresponds to one-group data.
- Each line is composed of group numbers and four-block data.
- For each block data, 16-bit Information Word and 10-bit Check Word (see Fig. 1-1 of the paragraph 1-3) are described in hexadecimal notation.
- Spaces are used to separate each block.
- Error data, burst data, and local time data are not saved.



- ① Select [File]-[Export...] on the menu bar to open the file dialogue.



- ② Input a desired file name in the [File name] box and click <Save> button to save the RDS data as a text data file. The extension of the file is ".txt".

3-4 CREATING RDS DATA

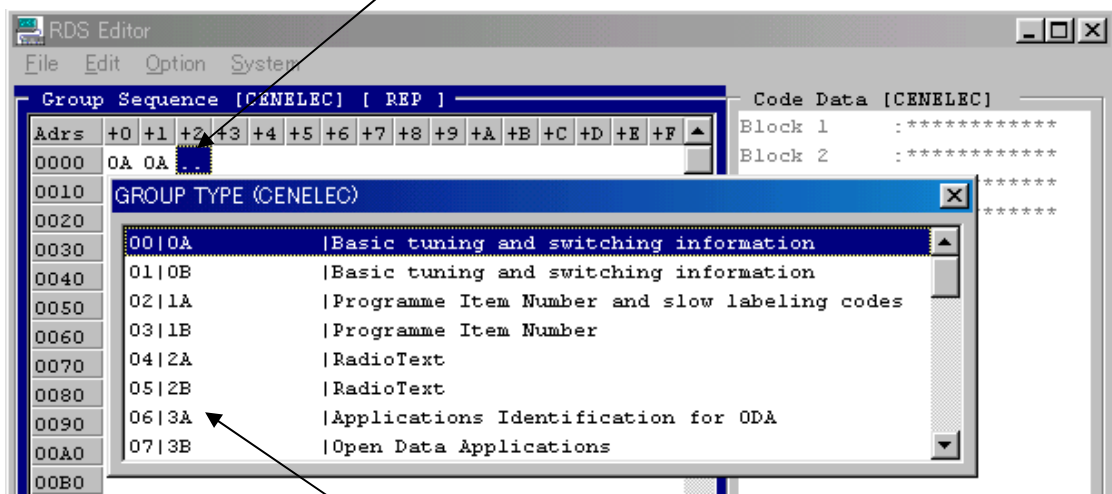
3-4-1 Inputting group sequence

Create a group sequence of an RDS data to be outputted. Up to 2048 groups can be inputted.

(1) Operation procedure

- ① Click the mouse on the group sequence data display area.
- ② Double click the mouse on the position where data is entered.
- ③ Select a group type.

Double click the mouse on the position where data is entered

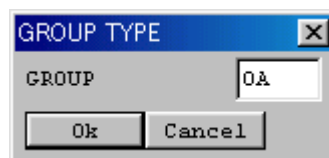


Select a group type

Instead of steps ② and ③ above, there is a way to enter a group type directly from the keyboard.

Example) To enter type "0A"

Enter "0" from the keyboard to open the setting dialogue. Then enter "A" → "return", and the type "0A" appears on the current cursor position.



It is possible to select whether the specified data is inserted or overwritten before inputting the data.

To switch modes, press the <Insert> key.

Currently selected mode is displayed above the frame of the group sequence data display area.

[REP] : Overwrite mode

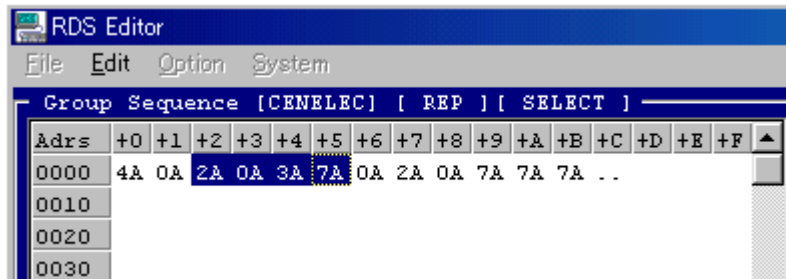
[INS] : Insertion mode

(2) Edit function

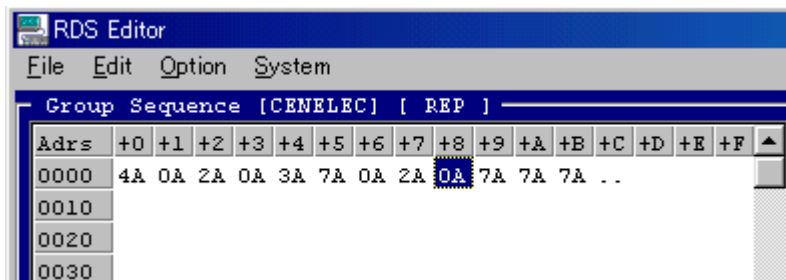
The following edit operations are available on the group sequence data display area.

(a) Copy

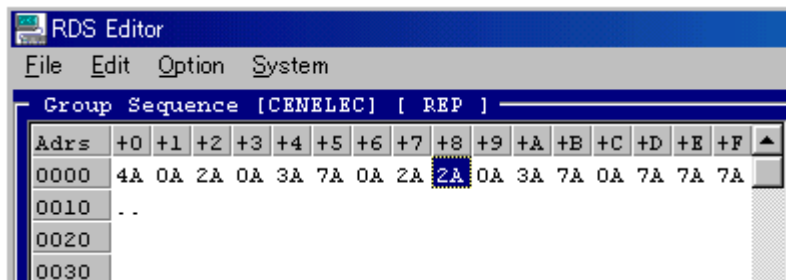
- ① Drag data to be copied with the mouse. [Select] appears above the frame of the group sequence data display area.



- ② Select [Edit] - [Copy] on the menu bar.
- ③ Move the cursor to a position to insert the data.

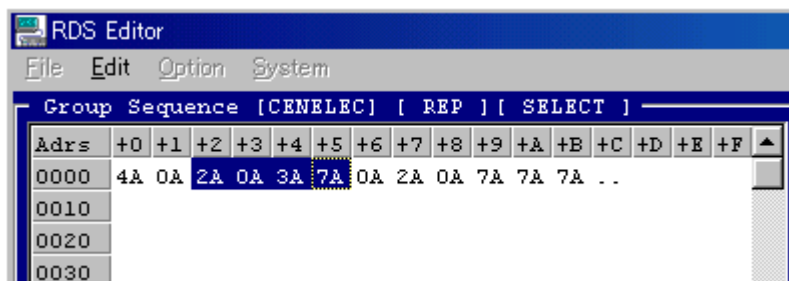


- ④ Select [Edit] - [Paste] on the menu bar to paste the copied data.

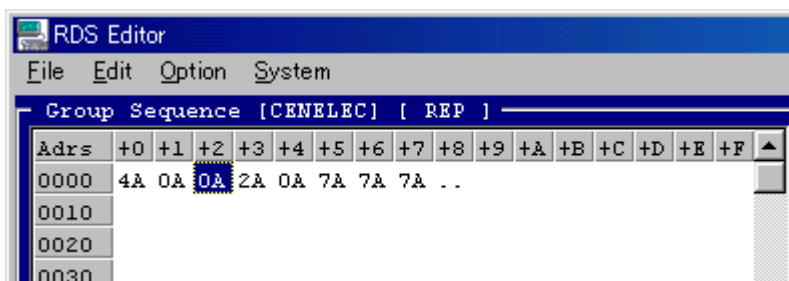


(b) Cut

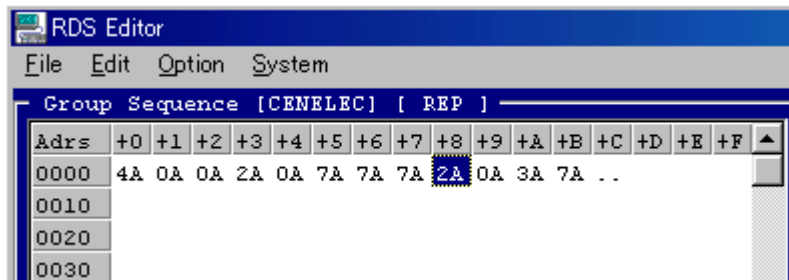
- ① Drag data to be cut with the mouse. [Select] appears above the frame of the group sequence data display area.



- ② Select [Edit] - [Cut] on the menu bar.



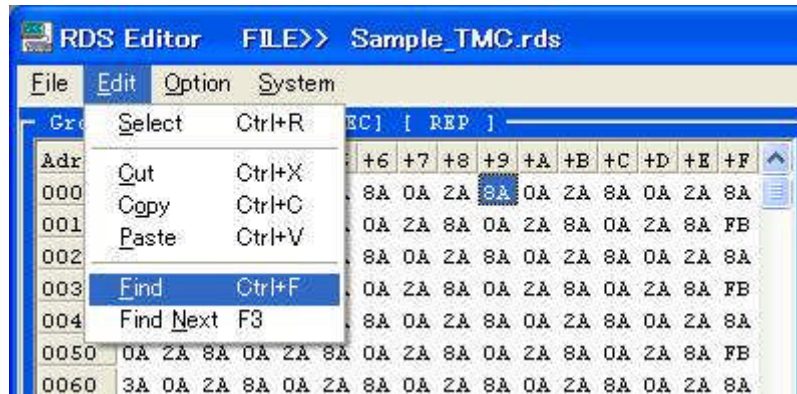
- ③ Specify a position to paste the data and select [Edit] - [Paste] on the menu bar to paste the deleted data.



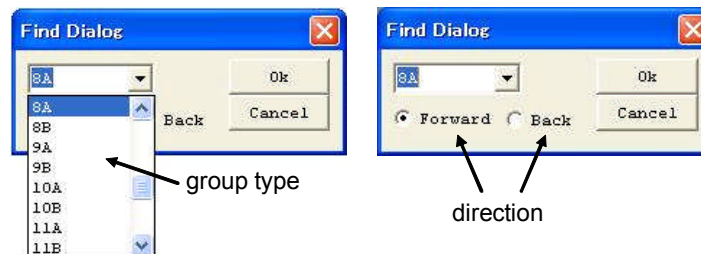
- ④ To delete one group, press the key to delete the group the cursor is sitting.

(c) Find group

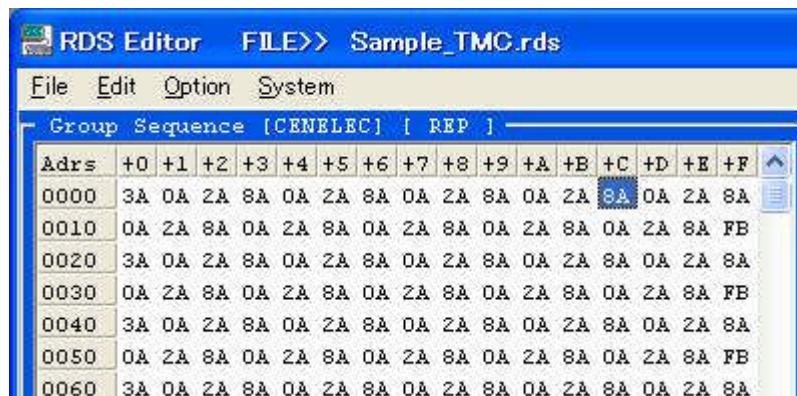
- ① Select [Edit]-[Find] on the menu bar to open the find dialogue.



- ② Set a group type to be found and the direction (Forward or Back).



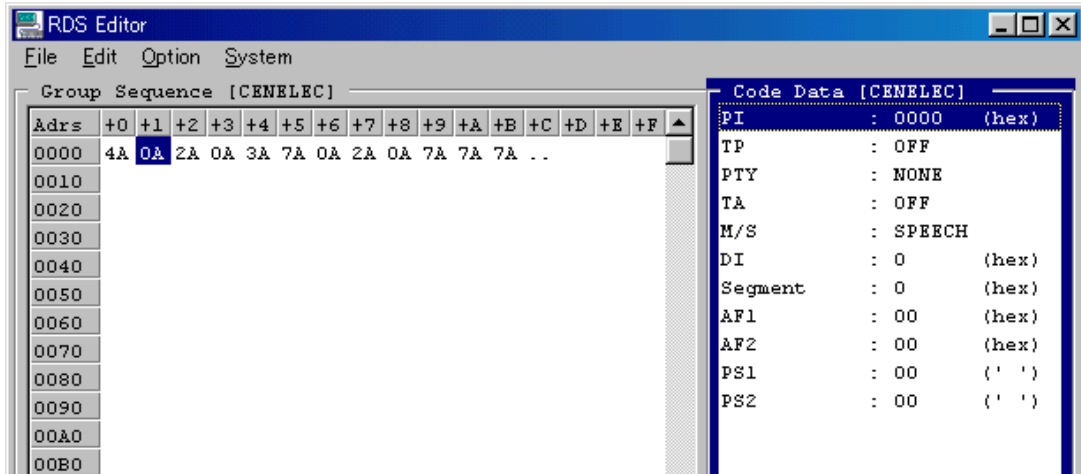
- ③ Click the <OK> button to perform finding. If the specified group type is founded, the cursor moves on it.
- ④ When continuing the next finding, press the <F3> key on the keyboard.



3-4-2 Inputting code data

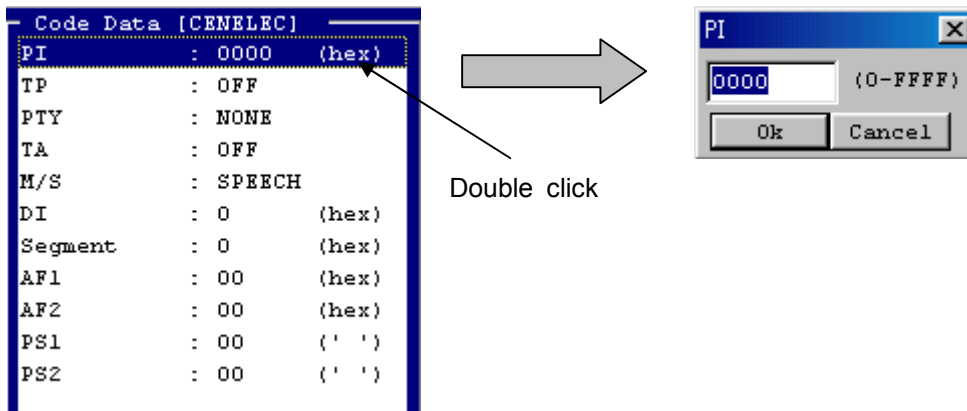
Create data for each group type.

- ① Click the mouse on the code data display area.



The content of "0A" is displayed

- ② Double click the mouse on the code to enter data, and the setting dialogue appears according to the code.



- ③ Select items or enter numerals depending on the data to be entered.

To change a group for data inputting without exiting the code data display area, press the cursor move key (← →).

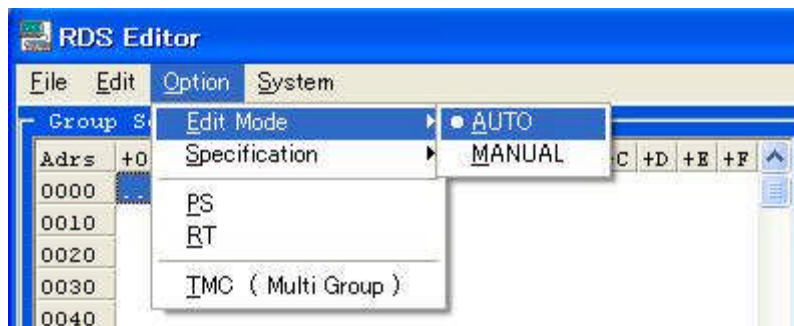
The cursor moves from the currently selected group to a newly selected group to display the items corresponding to the newly selected group on the code data display area.

3-4-3 Edit mode

The RDS data editor can create data to be entered in the following two modes.

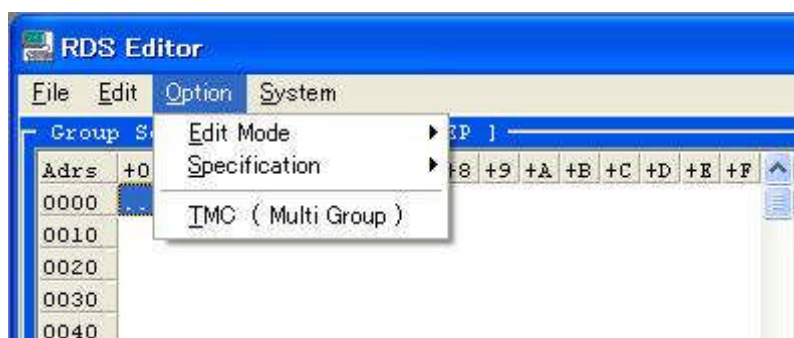
- Auto edit mode..... The PI, PTY, TP, TA, and M / S codes handle the entire RDS data pattern as one for automatic generation. The automatic generation applies to addresses requiring address management; for instance, DI segment address, paging segment address, PSN code address and radio text segment address.
- Manual edit mode No automatic generation is performed, and the data entered from the code data display area is valid for one group which is currently displayed.

- ① Select [Option] - [Edit Mode] on the menu bar. The ● mark appears at the left side of the currently selected mode.



- ② Select either of "AUTO" or "MANUAL".

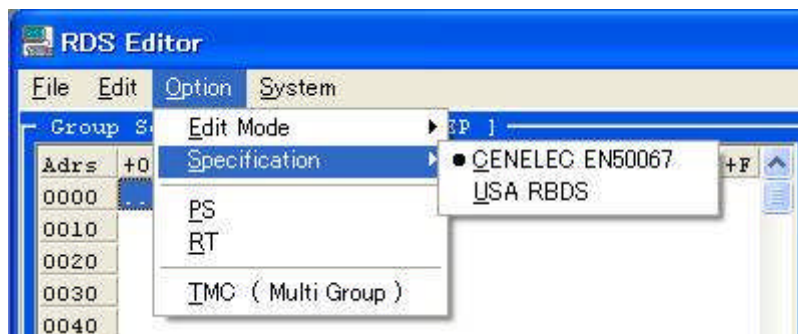
When the manual edit mode is set, select [Option] on the menu bar to change the display as follows:



3-4-4 Selecting specifications

The RDS data editor can select either of CENELEC specification of European countries or NAB specification of the United States to enter data from the code data display area.

- ① Select [Option] - [Specification]. The ● mark appears at the left side of the currently selected specification.



- ② Select either of "CENELEC" or "RBDS". The selected specification "CENELEC" or "NAB" is displayed above each frame of the group sequence display area, code data display area, and HEX data display area.

3-4-5 Creating PS data

The auto edit mode of the RDS data editor can edit PS (Program Service name) code data as a single unit.

Set the auto edit mode (3-4-3 Edit mode) of the RDS data editor and enter an 8-character PS code in the PS code entry dialogue to automatically assign the PS code to the group 0A and 0B placed on the group sequence display area. At this time, segment addresses of 0A or 0B are set to 0 to 3 automatically and successively.

- ① Select [Option]-[PS] on the menu bar to open the PS code entry dialogue.

Enter an 8-character PS code and click the <OK> button.



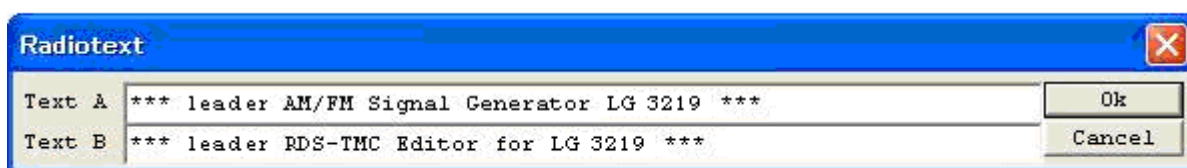
3-4-6 Creating RT data

The auto edit mode of the RDS data editor can edit RT (Radio Text) code data as a single unit.

Set the auto edit mode (3-4-3 Edit mode) of the RDS data editor and enter up to 64-character RT code in the RT code entry dialogue to automatically assign the RT code to the group 2A and 2B placed on the group sequence display area. At this time, segment addresses of 2A or 2B are set to 0_H to F_H automatically and successively. RT of the group type 2B is limited up to 32 characters.

- ① Select [Option]-[RT] on the menu bar to open the RT code entry dialogue.

Enter RT code for each 2A and 2B and click the <OK> button.



3-4-7 Creating TMC data

The auto edit mode of the RDS data editor can edit multi group messages of TMC (Traffic Message Channel: ENV 12313-1:1998) codes as a single unit.

Set the auto edit mode (3-4-3 Edit mode) of the RDS data editor and enter codes for each Direction, Extent, Event, Location, Option, and Message corresponding to CI codes 1 to 6 respectively in the multi group message edit dialogue to automatically assign each TMC code to the group 8A placed on the group sequence display area.

At this time, in the group type 8A, only "GROUP" that is specified to "MULTI" can be automatically edited. FI (First group Indicator), SG (Second group Indicator), and GSI (Group Sequence Indicator) of 8A are set automatically and successively.

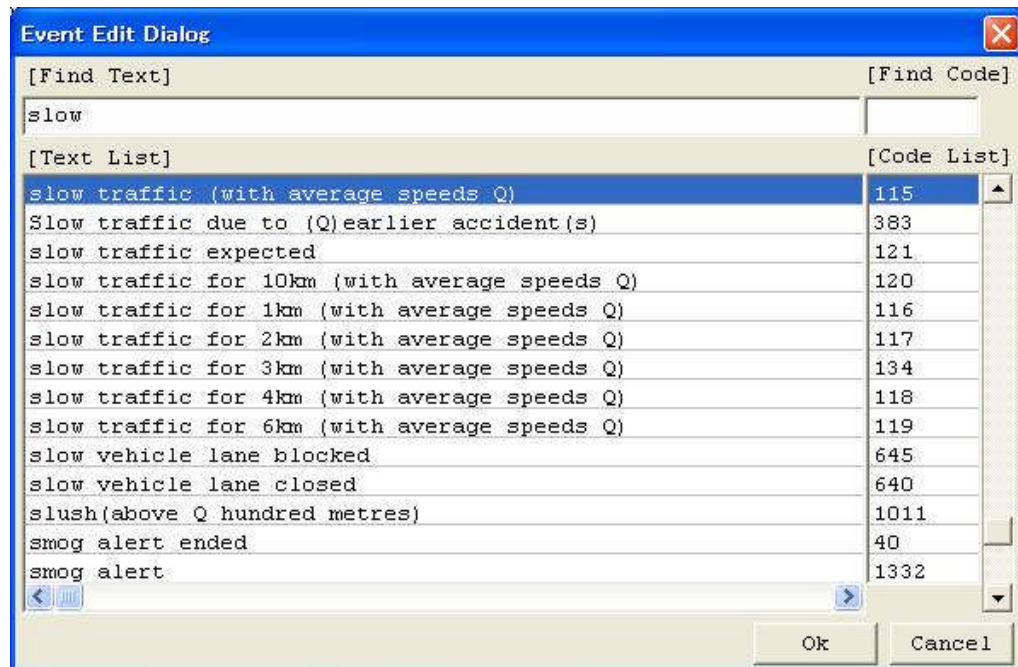
Moreover, setting the number of repetitions (Repetition) of the multi group message sets the transmission repetition of the group type 8A automatically.

- ① Select [Option]-[TMC (Multi Group)] on the menu bar to open the multi group message edit dialogue.

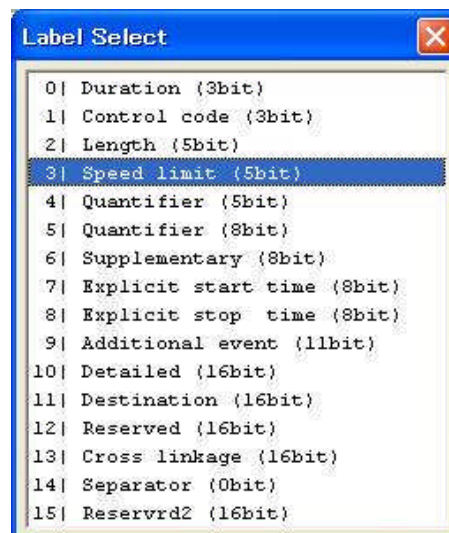
Multi Group Message Data Edit Dialog											
CI1 2		CI2 2		CI3 0		CI4 0		CI5 0		CI6 0	
First Group											
Direction		Positive		Extent		1					
Event (Dec)		121		Location (Hex)		1234					
Option Message											
	[Label]		[Data]		[Group]						
1	Speed limit (5bit)		10	(Dec)	2						
2	Explicit start time (8bit)		64	(Dec)	2						
3	Explicit stop time (8bit)		80	(Dec)	2-3						
<div> Add Del </div>											
Repetition		3		Required 8A : 18		Actual 8A : 80		Ok		Cancel	

- ② Click a desired CI code tab to set each code. The "Location" code should be entered in hexadecimal notation.

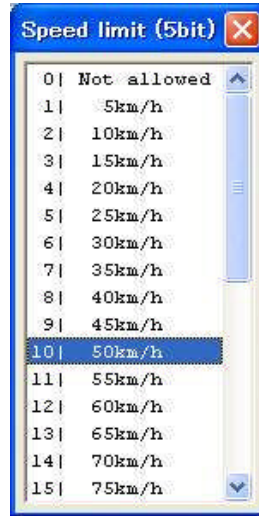
- ③ Double click the "Event" code to display a list. Enter a finding character string at the upper left of the list or a finding code (decimal number) at the upper right of the list to display a candidate list. Select a desired event and press the <OK> button to reflect the set value on the multi group message edit dialogue in hexadecimal notation.



- ④ Up to 16 "Option Message" codes can be set. They can be added with the <Add> button and deleted with the button. Double click the label display area to display the label select dialogue. Click a desired label to determine it.



- ⑤ Double click the data display area of "Option Message" to display the parameter setting dialogue according to the item. On this dialogue, set data to each label.



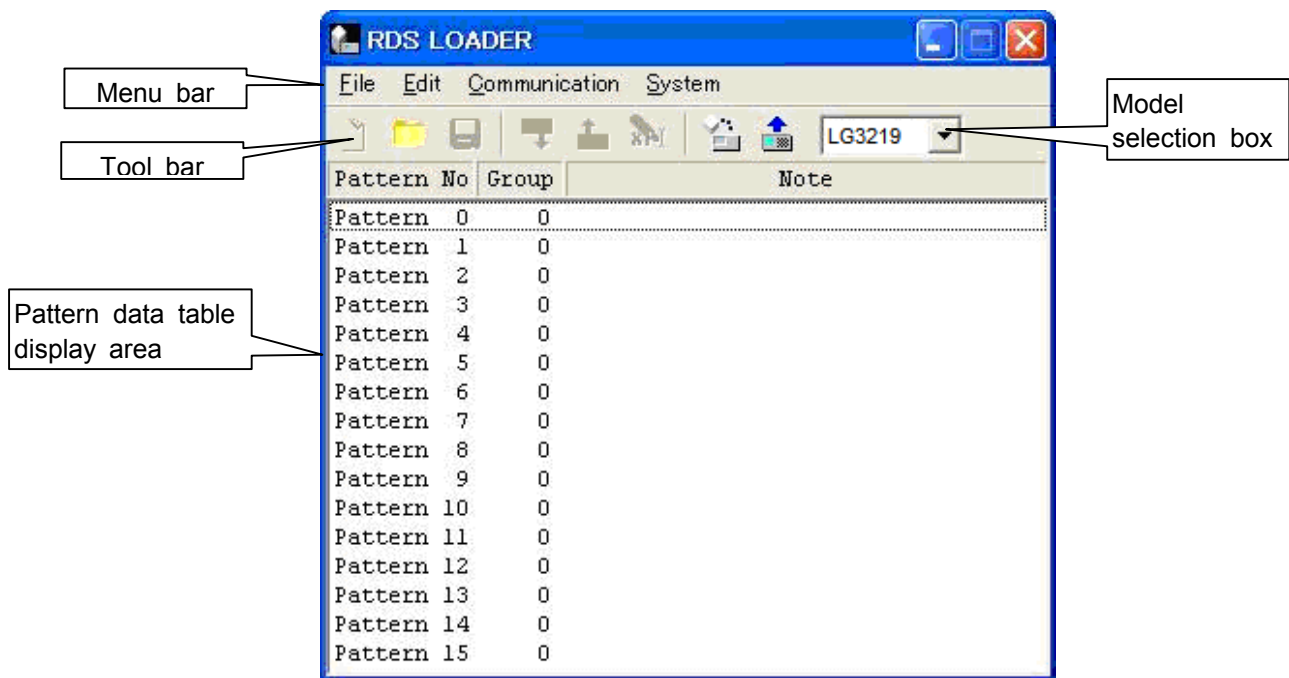
- ⑥ As in the case of above, set each code to other CIs as required.
- ⑦ If the number of repetitions "Repetition" is set to 2 or more, each code specified on the multi group edit dialogue is assigned to the group 8A placed on the group sequence display area automatically and repeatedly by the number of times specified with "Repetition."
- ⑧ Finally, just a click of the <OK> button determines all edited TMC multi group messages.

3-5 BASIC OPERATIONS OF THE RDS LOADER

3-5-1 Starting and ending the RDS loader

(1) Starting the RDS loader

Double click the mouse on the RDS loader icon installed simultaneously with the RDS data editor in paragraph 3-2 to invoke the following initial screen of the RDS loader.



- Menu bar

Displays function menus required for operation in the tree style.

- Tool bar

Displays some of frequently used functions with icons.

- Pattern data table display area

Used to register data created by the RDS editor with a specified pattern number.

- Model selection box


Selects a model which RDS data are downloaded in. Data can be downloaded in the presently selected model.

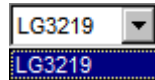
(2) Ending the RDS loader

To end the RDS loader, click the  button or select [File] - [Exit] on the menu bar.


3-5-2 Selecting model

Select a model which RDS data are downloaded in.

Click the  button of the model selection box to open the following menu. Select LG3219.



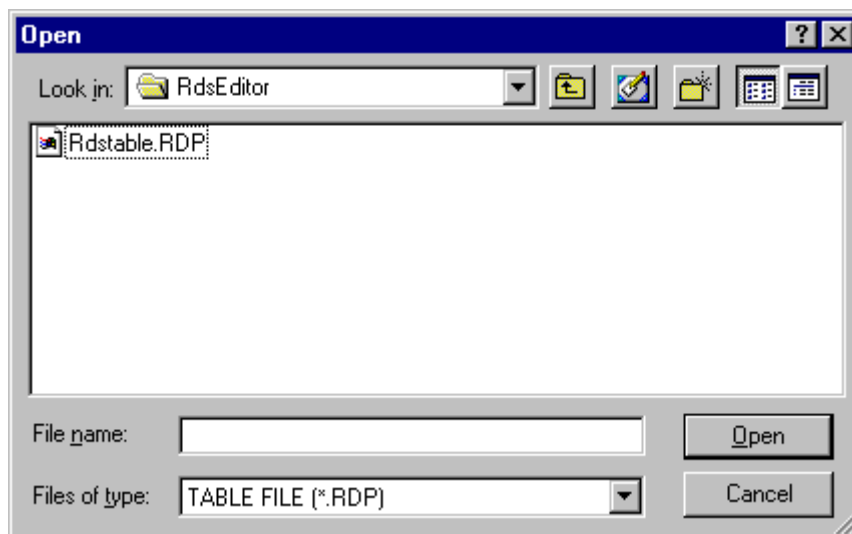
3-5-3 Creating new RDS data table

Select [File] - [New] on the menu bar or click  on the tool bar to clear the data on the pattern data table display area, and the initial screen shown in paragraph 3-5-1 appears to allow a new RDS data table to be edited.

3-5-4 Opening existing file

Open an existing RDS data table file. Procedure is as follows:

- ① Select [File] - [Open] on the menu bar or click  on the tool bar to open the following dialogue.



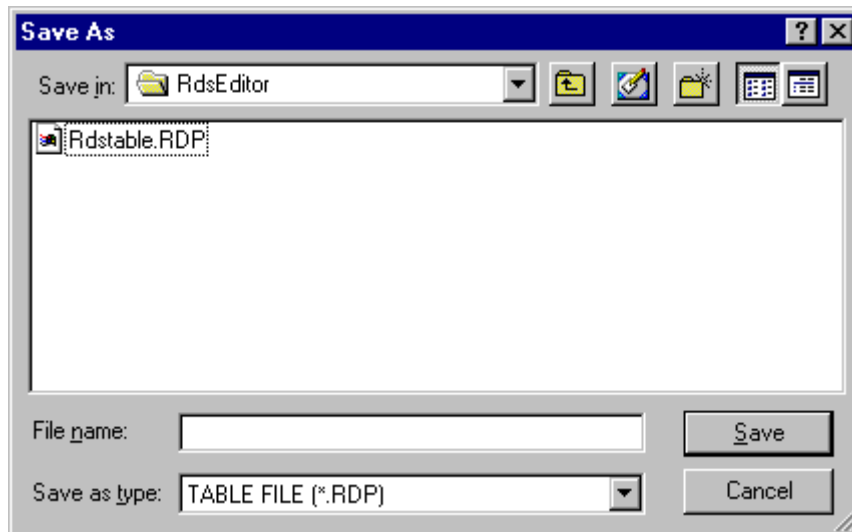
- ② Select a file to be opened and click the [open] button to open the selected RDS data table file.

3-5-5 Saving the RDS data table

(1) Saving under a new file name

Save the presently opened RDS data table file under a new file name. Procedure is as follows:

- ① Select [File] - [Save As...] on the menu bar to open the following dialogue.



- ② Enter a new file name in the [File name] box and click the [Save] button to save the RDS data table file. The filename extension ".RDP" is supplied.

(2) Overwriting

Overwrite the presently opened RDS data table file and save it.

Select [File] - [Save] on the menu bar or click  on the tool bar to overwrite the file and save it.

■ NOTE

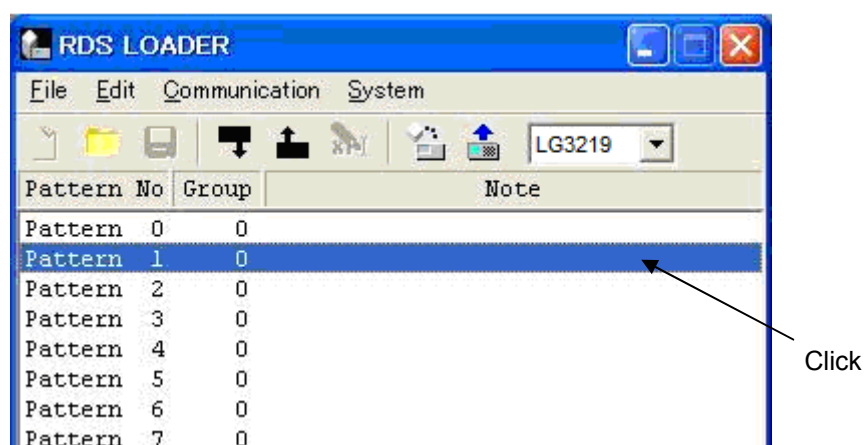
If no change is performed on the data table file after performing overwriting, overwriting operation cannot be performed on the data table file.


3-6 CREATING THE RDS DATA TABLE

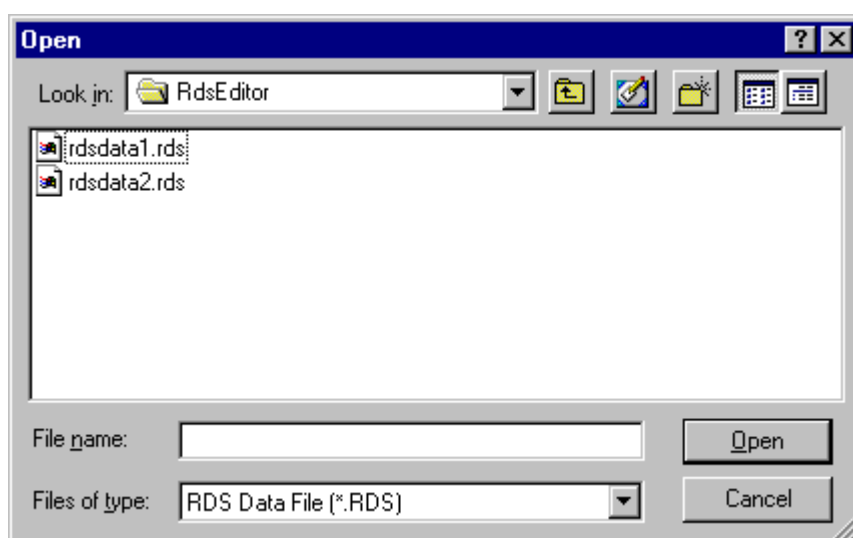
3-6-1 Import

Register an RDS data file to be downloaded with a specified pattern number. Up to 2 048 groups can be registered.

- ① Click a pattern number for registration.



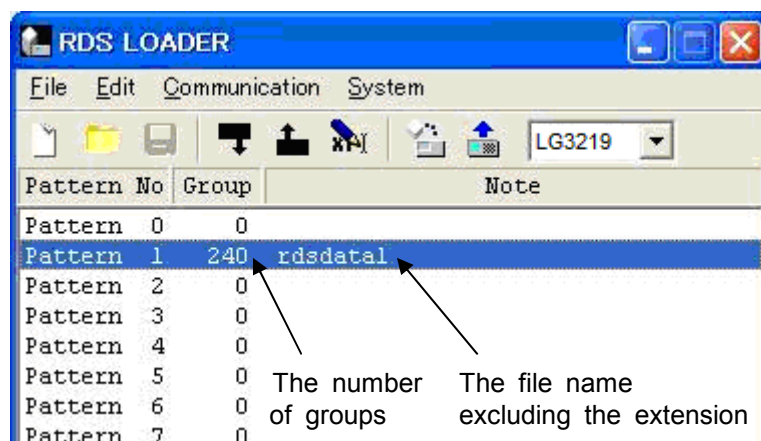
- ② Select [Edit] - [Import] on the menu bar or click  on the tool bar to open the following dialogue.



- ③ Select a file to be imported and click the [Open] button to import the selected RDS data file.

The file name excluding the extension and the number of groups are displayed on the pattern data table. Up to 30 half-sized alphanumerics can be used for displaying file names.

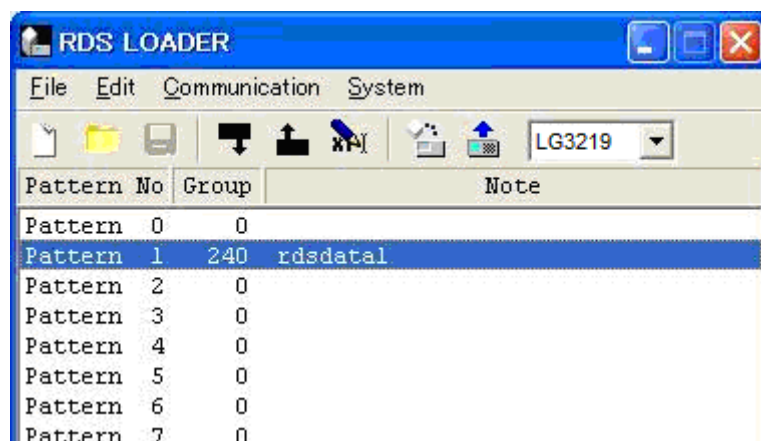
Files can be imported until the number of groups of the registered pattern data reaches 2 048 groups.



3-6-2 Editing file name

File names registered in the RDS data table can be edited to another file names. It is impossible to change original file names. (As for import, see paragraph 3-6-1.) Up to 30 half-sized alphanumerics can be used for displaying file names.

- ① Click a pattern number of a file name to be edited.



- ② Select [Edit] - [Note] on the menu bar or click  button on the tool bar to open the following dialogue.

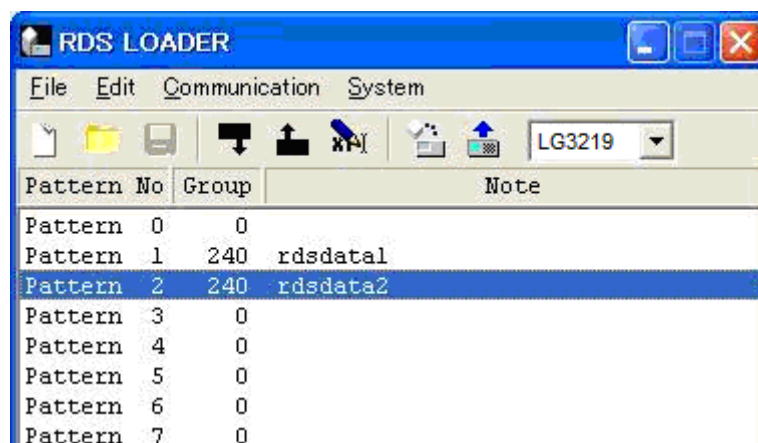


- ③ Enter a file name and click the [OK] button to make the setting valid. Click the [Cancel] button to make the setting invalid.

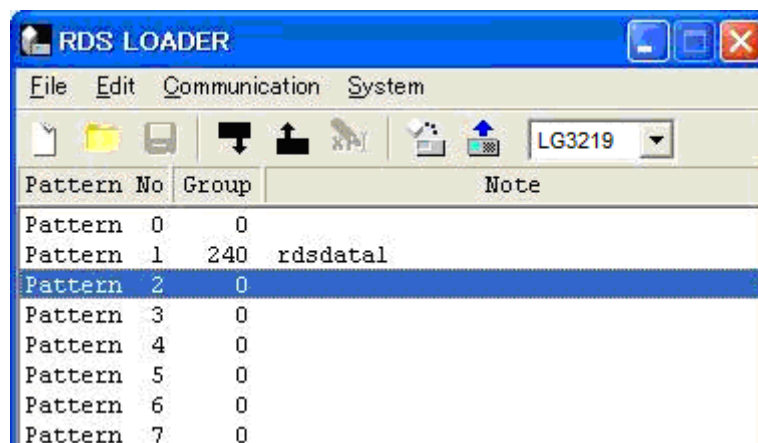
3-6-3 Removing from registration

Registered pattern numbers can be removed.

- ① Click a pattern number to be removed from registration.



- ② Select [Edit] - [Remove] on the menu bar to remove the registration.




3-7 DOWNLOADING / UPLOADING RDS DATA

RDS pattern data table created by the RDS loader can be downloaded in the internal memory of the VP-8194D via the RS-232-C interface. Besides, the RDS pattern data table downloaded in the VP-8194D can be uploaded to a personal computer.

Given below are procedures for downloading and uploading.


3-7-1 Downloading RDS data

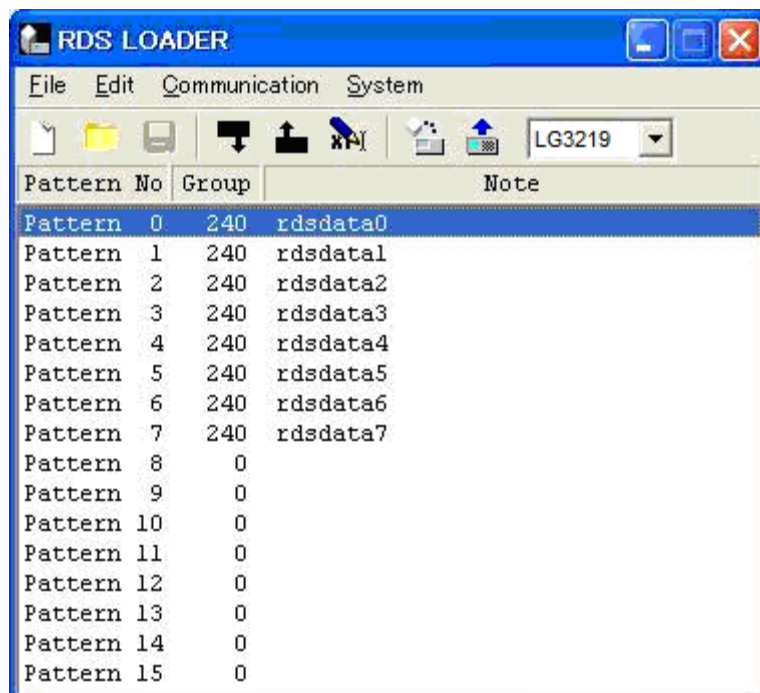
Download the RDS data table edited by the RDS loader in the internal memory of the VP-8194D.

- ① Select [Communication] - [Download...] on the menu bar or click  button on the tool bar to open the setting dialogue of communication ports of a personal computer to be used for connection.
- ② Select a communication port of the personal computer to be used for connection and click the [OK] button to start downloading the RDS data in the internal memory of the VP-8194D.

3-7-2 Uploading RDS data

Upload the RDS data from the VP-8194D to the personal computer for displaying and editing them.

- ① Select [Communication] - [Upload] on the menu bar or click  button on the tool bar to display the setting dialogue of communication ports of the personal computer to be used for connection.
- ② Select a communication port of the personal computer and click the [OK] button to start uploading data on the pattern data table of the personal computer.

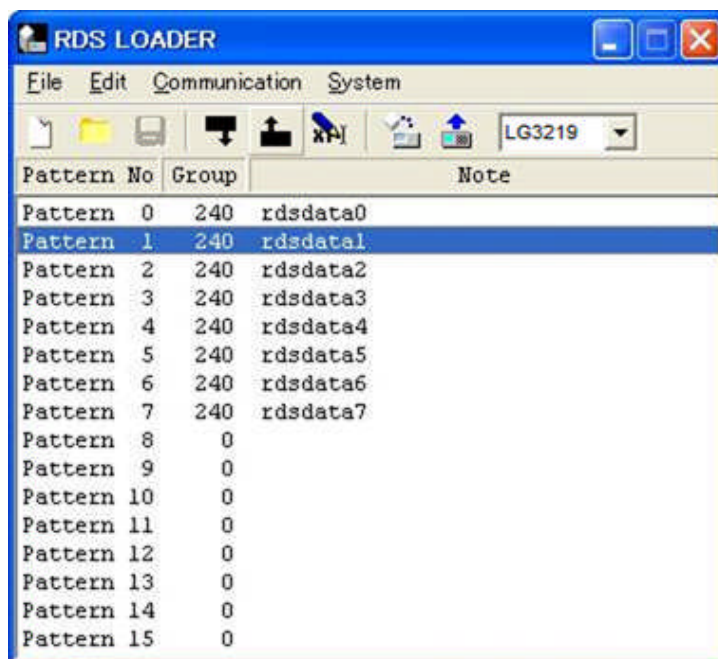



Pattern No	Group	Note
Pattern 0	240	rdldata0
Pattern 1	240	rdldata1
Pattern 2	240	rdldata2
Pattern 3	240	rdldata3
Pattern 4	240	rdldata4
Pattern 5	240	rdldata5
Pattern 6	240	rdldata6
Pattern 7	240	rdldata7
Pattern 8	0	
Pattern 9	0	
Pattern 10	0	
Pattern 11	0	
Pattern 12	0	
Pattern 13	0	
Pattern 14	0	
Pattern 15	0	

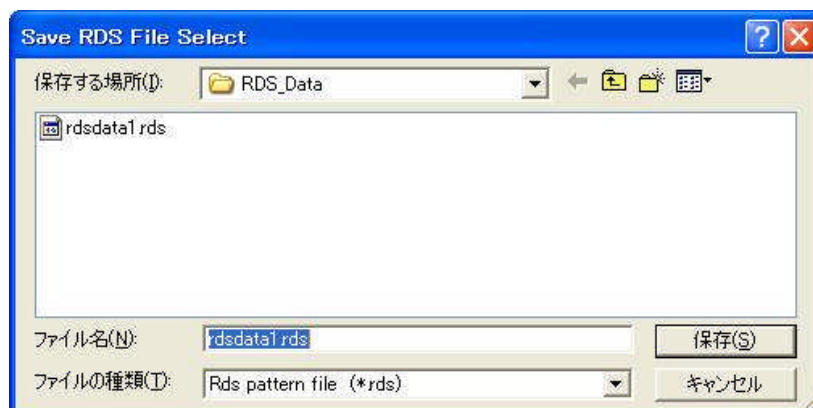
3-7-3 Exporting RDS data

The RDS data which is up-loaded to PC from VP-8194D can be served as a file.

- ① Click a pattern number to be exported.



- ② Select [Edit] - [Export] on the menu bar or click  on the tool bar to open the following dialogue.



- ③ Input the file name and click the [Save] button to save the exported RDS data in the file.

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