TinyRDS

Windows control application for RDS encoders
based on MicroRDS, MiniRDS, MRDS1322, MRDS192.

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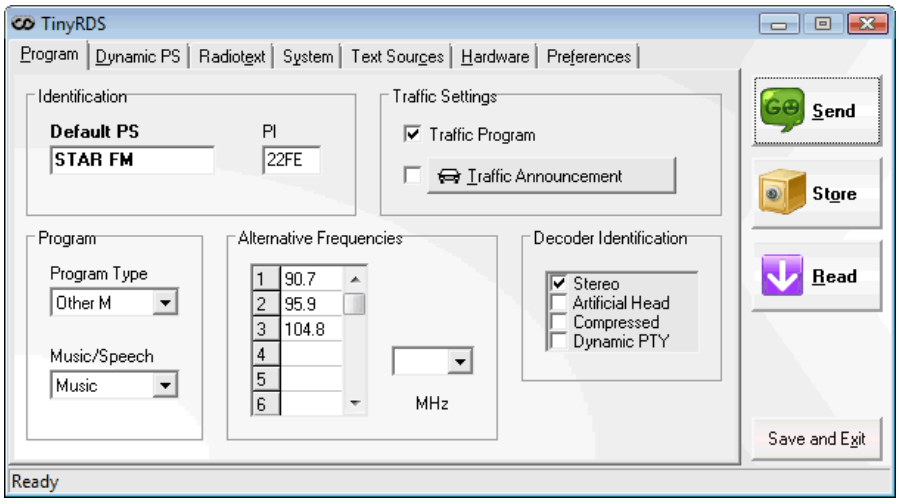

1 Installation

1. Download and run the installation exe file.
2. Select the setup language and finish the installation using the ‘Next’ button.
3. In the case of USB connection install the USB driver now. Pure RS-232 connection or parallel port connection requires no additional driver.
4. Make sure the RDS encoder is connected, powered and well configured, all connectors are seated completely and where possible, use screws to fix the connection.
5. Run the TinyRDS application, go to Hardware card and select appropriate hardware type, communication port and communication parameters. Confirm by the ‘Update’ button.
6. Follow the encoder’s manual for additional information and specifics.

Note for old devices using parallel port connection: The application still supports writing to hardware parallel ports. Appropriate device driver is installed at runtime. To do this you need administrator privileges. In Windows Vista and later, using UAC, you can run the InstallDriver.exe in the application folder to install the parallel port driver appropriate for your OS.

2 Minimum Requirements

- An RDS encoder based on MRDS1322 or MRDS192 chip
- Serial, parallel or USB port (or 3rd party Virtual COM Port driver)
- Windows 98 or later

For understanding all symbols and terminology as well as for connection diagrams please read the device's original manual.

3 Purpose and Features

The TinyRDS is a default control application for your RDS encoder.

- Supports all basic RDS services
- Supports a fixed set of Radiotexts
- ‘Text sources’ tool can update Dynamic PS or Radiotext by actual text produced by your broadcast automation system or similar external application
- Very simple to use

4 Application Control

4.1 Main Buttons

Send	Sends the data to the RDS encoder. That data will be used for the transmission until power off. Use this button also for confirm of RDS services settings, e.g. when changed Dynamic PS mode.
Store	Stores the data into the EEPROM memory so the data will be available also after next power-up or reset.
Read	Reads actual data from the RDS encoder. This button is allowed only in bidirectional communication mode.

4.2 Program Page

Default PS	Static name of the program service, which is displayed by RDS receivers by default in order to inform the listener what program service is being broadcast by the station to which the receiver is tuned. Usually this is your station name. The RDS standard permits max. 8 character long name.
PI (Program Identification)	Four hexadecimal digits. This information consists of a code enabling the receiver to distinguish between countries, areas in which the same program is transmitted, and the identification of the program itself. The PI can never start with zero (0)!
Traffic Program	A flag to indicate that the tuned program carries traffic announcements.
Traffic Announcement	An on/off switching signal to indicate when a traffic announcement is on air. You may control it using the button or leave the box unchecked and contol the flag using external switch connected to the RDS encoder.
Program Type	Specifies the current program type.
Music/Speech	A two-state signal to provide information on whether music or speech is being broadcast.
Alternative Frequencies	List of alternative frequencies. Up to 15 items allowed.
Decoder Identification	Indicates which possible operating mode is appropriate for use with the broadcast audio. Check the items which explicitly correspond to your broadcast equipment.

4.3 Dynamic PS

Dynamic PS (DPS) is defined as using of the station name for showing of sequential information. Up to 72 characters long text message to be displayed on receiver instead of static PS name.

Four display modes (0-3) are available. The user can insert the text manually from the keyboard or configure the ‘Text sources’ automation tool for Dynamic PS. The result can be immediately visible due to Preview feature.

Note: Using the dynamic PS is restricted in some countries and it's fully prohibited by the RDS standard! The manufacturer is not responsible for incompetent use of this feature. Consider of using Radiotext instead of Dynamic PS. Some receivers may not display the dynamic/scrolling PS properly for reasons that lie entirely on their side. Commercial receivers produced in last years usually support Radiotext.

Enabled	Enables or disables the Dynamic PS, including all related functions.
Dynamic PS Mode	Selects one of four possible display modes for the Dynamic PS text loop. Mode 0 is a ‘raw’ mode as it uses a fixed 8 character cells. A separate field is dedicated for this mode. For other modes, the text is entered as a single text line, the encoder processes the text automatically.
Scrolling PS Speed	Sets high or low speed of scrolling PS transmission, applied in DPS mode 1 and 3. The high speed does not work on some receivers, especially car radios, or under bad reception conditions. The reason is absolutely outside the RDS encoder and comes out from the fact that scrolling PS has never been included in the RDS standard. Due to this the high speed is not recommended.
Label Period	A period between two strings, applied in DPS Mode 0 and 2.
Delay between text loops	Specifies the time between two repeats of the Dynamic PS text loops. Static PS is displayed during this time. If the maximum value is set, the Dynamic PS will be displayed only once - when changed.

4.4 Radiotext

This refers to text transmissions, primarily addressed to consumer home receivers or mobile receivers, which would be equipped with suitable display facilities. The text can be up to 64 characters long. Some receivers do not support the Radiotext (RT) service.

Enabled	Enables or disables the Radiotext, including all related functions. *Note: If Radiotext is disabled, the encoder sends no 2A groups.*
Radiotext messages	A set of Radiotexts. To get the RT working, at least one line must be filled by some text and that line must be selected. If 'Text sources' tool is enabled for the Radiotext, the text appears in the first line.
Type	Radiotext type A and B are equal. On most receivers, a changing of the type completely clears previous Radiotext while leaving the type unchanged causes the new message to rewrite all letters as they are received. Some receivers keep RT A and RT B in separated memory space.
Send next RT after	Allows switching between more Radiotexts using predefined time period. This function needs the application to be running and connected. Empty messages will be omitted. The feature may be combined with reading the RT from file. You may also select the Radiotext manually.
Toggle RT type automatically	Controls the RT type automatically (recommended). Toggles the RT type any time a new Radiotext is sent to the encoder.

4.5 System

Clock-Time and Date (CT)	Starts/Stops the Clock-Time and Date transmission (CT). The time and date information is taken from PC system clock. Needs the TinyRDS application to be running and connected.
Subcarrier Phase Shift	Fixes the relative phase shift between the pilot tone and the RDS signal. The value serves only as a scale, it may not provide real phase shift value. Has a sense only if Clock Source is set to Auto.
PLL Lock Range (MRDS192 only)	Specifies the maximum PLL lock range for the pilot signal. The PLL will never lock to any signals

	outside this range and stays stable in any situation. If high quality stereo encoder is used, you may set +/- 2 Hz value. Default value is +/- 5 Hz.
Cyclic User Defined Group	The user may add one RDS group with any content to the RDS stream. This group is cyclically transmitted approx. twice per second. Insert the content in hexadecimal format. This feature is intended mainly for advanced users or experimental purposes. It may be used for example to include ECC code. Do not enable if you are not sure what you're doing!
Reset	Resets the RDS encoder. RDS data will be read from internal EEPROM.
Read Status	Reads the RDS encoder's Status byte. Allows to detect if the connection to the encoder is working. Includes information about pilot tone, dynamic PS transmission and TA.
Switch Off	Switches off the RDS carrier. Doesn't affect the communication, the encoder stays powered and responding.
Switch On	Switches on the RDS carrier if previously switched off.

4.6 Hardware

Hardware Type	Selects the device type. Follow the device documentation for more details. *Note: Since the MRDS192 is obsolete, most of current products are the MRDS1322 based.*
Communication Port	Select the port where the RDS encoder is connected. It may be a virtual serial port as well.
List	Shows list of serial/parallel ports installed in your system.
Bidirectional	Select this item to allow connection diagnostics, data verify and data reading back.
Slow	Low speed option. Tick if there's some communication problem. For RS232 mode (MRDS1322 only), this item effectively selects between 19200 and 2400 bps.
LPT2 address	Allows entering a non-standard parallel port address for parallel port connection.
Connection Update	Establishes a connection based on actual configuration.

4.7 Preferences

Skin Picture and Font Color	You may insert your own BMP picture to the application, showed on the first page. You may also change the font color. To clear the skin, enter a non-existing file name.
UTC Offset	Your local time offset.
Summertime Offset	Your summertime offset, usually 1.
Always on Top	Keeps the application window on top so it is not overlapped by other windows.
High Priority	Assigns the application high priority. Not recommended if broadcast automation system is running on the same PC.
Confirm Exit	Enables a confirmation dialogue box showing any time the user tries to exit the application.
PTY Coding	Allows showing correct PTY names in application depending on broadcast area.

5 Text Sources

This tool can update Dynamic PS, Radiotext or both by actual text produced by your broadcast automation system or similar external application.

The text processing scheme is as follows:
Reading from file → Characters cutting → Processing Options → (Adding prefix)

To get it working, set all parameters, then check the From file box.
Dynamic PS and/or Radiotext must be Enabled.

5.1 Dynamic PS, Radiotext

From file	If enabled, reads the text from specified text file. This can be for example "now-playing" file, music log file etc. Wildcards ("*" and "?") are supported as well (the most actual file found will be read). Next time the file will be read again when the text changes.
Send on change	Sends data to the RDS encoder when the text source file changes. Enabled by default.
Read from	Determines from which line the text has to be read.
Cut characters from beginning/end	Cuts redundant or unwanted characters from the text.
Prefix	Prefix placed before the text, for example “Now playing: ”.

5.2 Options

ANSI Character code conversion	Affects how national characters are converted before sending to RDS encoder. The middle option is recommended as it ensures readability of national characters on all receivers using conversion to similar characters from basic set.
DPS Mode 0 Justification	Text justification for the Dynamic PS. Applies only if mode 0 is selected. Fill with - Character used to fill the free space around the words.

6 ANNEXES

6.1 Setting Basic RDS Data

Before getting on-air with the RDS signal, you will need to decide on the settings to be used. The following RDS services should be set as the first.

6.1.1 PI (Program Identification)

This is very important information that enables the receiver to distinguish between countries, areas in which the same program is transmitted, and the identification of the program itself. The code is not intended for direct display and is assigned to each individual radio program, to enable it to be distinguished from all other programs. The PI code consists of four characters (hexadecimal numbers).

Important notes: If the station has only one transmitter, second PI digit must be zero (x0xx). Meaning of some PI digits may be different for US RBDS.

The first character identifies country:

0	***Cannot be assigned!***	8	PS, BG, LV, PT
1	DE, GR, MA, IE, MD	9	AL, DK, LI, LB, SI
2	DZ, CY, CZ, TR, EE	A	AT, GI, IS
3	AD, SM, PL, MK	B	HU, IQ, MC, HR
4	IL,CH, VA	C	MT, GB, LT
5	IT, JO, SK	D	DE, LY, YU
6	BE, FI, SY, UA	E	RO, ES, SE
7	RU, LU, TN, NL	F	EG, FR, NO, BY, BA

The second character identifies program type in terms of area coverage:

0	Local	Local program transmitted via a single transmitter only during the whole transmitting time.
1	International	The same program is also transmitted in other countries.
2	National	The same program is transmitted throughout the country.
3	Supra-regional	The same program is transmitted throughout a large part of the country.
4 to F	Regional	The program is available only in one location or region over one or more frequencies, and there exists no definition of its frontiers.

The third and fourth characters are used to clearly identify different stations within the area of coverage.

Important note: Factory default PI value is FFFF and it's needed to change it as soon as possible to avoid the situation that two different stations with common area of coverage have the same PI. For each station in the same location the unique PI must be assigned. Stations that carry different program must be unambiguously identified by the last two PI digits. In other case they are recognized as one station by car radios, regardless of any other service settings. If the broadcaster hasn't received the 4-digit PI from regulatory office, he must choose such number that is not in conflict with other stations in the location. Set your final PI as soon as possible!

6.1.2 PS (Program Service name)

The PS name is max. 8 character long radio station name that will be shown most of the time on the radio display.

6.1.3 PTY (Program Type)

The PTY code defines the type of the programme broadcast within 31 possibilities. This code could be used for search tuning.

6.1.4 TP (Traffic Program)

This is a flag to indicate that the tuned program carries traffic announcements. The TP flag should only be set on programs which dynamically switch on the TA identification during traffic announcements. The flag shall be taken into account during automatic search tuning.

6.1.5 MS (Music/Speech)

This is a two-state signal to provide information on whether music or speech is being broadcast. The signal would permit receivers to be equipped with two separate volume controls, one for music and one for speech, so that the listener could adjust the balance between them to suit his individual listening habits.

6.1.6 AF (Alternative Frequencies)

The Alternative Frequencies are used to tell receivers what frequencies they can receive the radio station on. This facility is particularly useful in the case of car and portable radios. For this to work, each transmitter must have RDS with the same PI code.

Important note: If second PI digit is set to zero (x0xx), this indicates that the station has only one transmitter and the AF list is ignored on most receivers.

6.2 Software Troubleshooting

The RDS encoder uses simple connection and has been designed to make its use as easy and painless as possible. However, success depends upon several settings and things working together correctly. While correcting problems is usually quite simple, the difficulty lays in knowing where to look. This section is designed to assist you in determining the cause of problems that may occur when establishing a communication with the PC software, so they can be fixed quickly.

6.2.1 How to verify the connection to the RDS encoder?

In case of some troubles it may be important to check if the RDS encoder receives data from the computer. The easiest way how to check the connection is clicking on the "Read Status" button on "System" card in the Windows software. Correct connection will result in pop-up a message window with status information whereas incorrect connection is indicated by a "!Ready" message in the bottom line of the application.
Note that "Bidirectional" option must be enabled on "Hardware" card for this test.

6.2.2 What to check if the connection does not work?

- Is the RDS encoder really connected to the port selected? Typically there are more ports installed in the system (modem, mobile phone, IrDA port, bluetooth etc.) - opening of these ports is usually possible, however it results in no success.
  User should ensure that the serial port desired is enabled in BIOS Setup. No other configuration of the port is required, the software does that itself.
- Is the RDS encoder connected to a power supply? Connecting a power supply is required prior to communicating with the unit.
- Is there right Communication mode selected on the encoder? Some RDS encoders allow selection of communication mode. See the product manual for more details. A power off/on cycle is required after changing the communication mode.
- Is there right communication speed selected in the software (MRDS1322 only)? The speed can be selected on "Hardware" card, by item "Slow". Enabling this item, the encoder is expected to communicate on 2400 bps (mode 2), otherwise 19200 bps is expected (mode 0 and 1).
- Is there right hardware type selected in the software? The software supports two types of hardware. Make sure the right device is selected on "Hardware" card.
- Is the communication cable wired right? If the cable is a Do-It-Yourself job, please check the wiring several times. Follow the product manual.

6.2.3 How to run multiple instances of the application on one PC?

The application supports multiple instances. Install each instance to a different subfolder.