

## External Text Sources

The External Text Sources is one of the main features of the Magic RDS 4. It provides complete dynamic control of the RDS encoder from external text sources (especially broadcast automation text output, internet content, serial data line etc.). Up to 16 text sources may be defined. Each text source can be assigned to some RDS service. The text can be also redirected to your website or streaming server. Powerful text parsers include support for XML and JSON. The text processing supports RegEx and JavaScript.

The External Text Sources is a tool which inherently requires permanent connection between the Magic RDS 4 and the device(s) or server(s). This setup is also referenced as 'indirect link'. It offers significantly more sophisticated text processing options compared to the 'direct link' setup. Please see the device documentation for further comparison between the 'indirect' and 'direct' link.

**Note:** In current version, each instance (installation) of the Magic RDS 4 supports only one radio station (with up to 128 transmitters). For more radio stations, please install more instances to different sub-folder(s). This is a temporary restriction which will disappear in near future.

**Important:** Before attempting to use the External text tool consider which RDS service you will use for showing the text (Dynamic PS or Radiotext or both). In the application main window, section RDS Content, configure the Dynamic PS 1 and/or Radiotext 1 for each RDS encoder and confirm the settings by Test and Apply buttons.

**Important:** Using the dynamic (scrolling) PS is restricted in some countries. The manufacturer is not responsible for incompetent use of this feature. This feature is deprecated since new receivers support Radiotext and Radiotext Plus. Consider suppressing or entirely leaving the dynamic PS usage. The dynamic PS has never been supported by the RDS standard, therefore its behavior on different receivers is unpredictable and it's often confusing for the listener. The Radiotext is recommended rather.

### Dynamic PS 1, Radiotext 1

<b>Enable External Text Sources</b>	Check this box to enable the RDS text service to be read from a specified external text source ("now-playing" file, music log file etc.).
<b>Send on change</b>	Sends data to the RDS encoder when the source text changes. Enabled by default.
<b>Select text sources</b>	Here you may select which text source(s) will be assigned to the RDS text service. Each text source must be defined first. If more sources are selected, these will be used sequentially in a loop.
<b>Primary source</b>	Optional choice. Has effect only if more than two text sources are selected for the service. The primary source will occupy places between all sources selected in the loop. As a result, the primary source will take control more frequently. Useful for example for "now-playing" information.
<b>RT1 - Synchronise with Dynamic PS 1</b>	The Radiotext 1 will use the same text data as the Dynamic PS 1. Applies only for the External text driving. This feature cannot be combined with similar option called 'Equal text 1' which is supported by some encoders.

## Text sources

<b>[Delete]</b>	Deletes the text source from the database.
<b>[Test]</b>	Shows the text reading result for the source selected. Includes the Text replacing effect.
<b>Type *</b>	<p>Several text source types are provided, depending on where the desired content is located:</p> <p><b>Local File</b> - The text content is saved in a file which is placed on a local harddisk, virtual disk or local network disk.</p> <p><b>Window Title</b> - The text content can be found in Window title of some application running on the local machine. For example Winamp shows the "now-playing" information in the window title. If no information can be read (application is currently not running), the text "(no title)" will be returned. You may use Text replacing tool to change it to the text desired.</p> <p><b>Internet Website</b> - The text content is accessible via HTTP, FTP or secure HTTP internet protocol, from a server or RSS data provider.</p> <p><b>Internal Channel</b> - Select this option if there's a connection <a href="#">Bridge</a> established with external text source data distribution.</p>
<b>[Find File]</b>	Easy way how to find the text source file on local disk or in Microsoft Network local area.
<b>[Find Window]</b>	Easy way how to find the text source window and its title, if the desired application is running.
<b>Coding</b>	<p>Determines the character coding of the source text.</p> <p>Auto - The application will try to detect the coding automatically. This is a default option.</p> <p>ANSI - Force 8-bit coding, equal to the Windows code table.</p> <p>UTF-8 - Force UTF-8 coding, usually used for web publishing.</p>
<b>Process *</b>	<p>Determines the line to be read or the format to be applied. Has sense only for the <i>Local File</i> type and for the <i>Internet Website</i> type. For the <i>Window Title</i> type it has no effect.</p> <p><b>First line</b> - First line of the file or first RSS item.</p> <p><b>Last line</b> - Last non-empty line of the file or last RSS item.</p> <p><b>All lines - one per session</b> - Each time the source is in order next line is read.</p> <p><b>All lines - all per session</b> - The sequence of all lines is read, standing on each line takes the time specified by the <i>Go to next after</i> parameter. When all lines are processed, the next source takes control.</p> <p><b>Entire file as plain text</b> - Entire file is read and processed as one block of text</p> <p><b>Entire file as XML</b> - Entire file is read and processed as XML or valid XHTML (typical for XML structure are tags in &lt; &gt; )</p> <p><b>Entire file as JSON</b> - Entire file is read and processed as JSON (typical for JSON structure are { } brackets)</p> <p><b>Entire file as script</b> - In this special case the file is executed as a script (list of tasks), without further processing by the External text tool. For example, this option may be used for sending fixed text messages specific to each RDS encoder in the network. For the tasks syntax, follow the menu item Tools - Execute Script.</p>
<b>Name *</b>	Name of the text source, any value.

<b>File/Class/URL *</b>	<p>Depending on the Type choice, this field specifies:  path and filename of the local file  or Window class name  or URL (internet address).</p> <p>For the Local file, wildcards ("*" and "?") are supported (the most recent file found will be read). For example: music_log_??-??-?????.txt  For the URL, all common formats are supported. Examples of the URL:  http://server.com/file.htm  https://server.com/file.asp?item=current  ftp://login:password@server.com/folder/file.txt</p>
<b>Go to next after</b>	If more than one source is selected for any text service, this parameter specifies the duration of the source in the loop.
<b>Cut everything before/after (and including)</b>	Finds the first occurrence of the text specified and cuts everything before/after, including the searched text.
<b>Cut characters from beginning/end</b>	Cuts fixed number of characters from the text. Performed after previous operation.
<b>Prefix</b>	Prefix placed before the text.
<b>Suffix</b>	Suffix placed behind the text.
<b>N/A text</b>	This text is returned if the source fails (file not found, server not responding etc.).
<b>Keep in cache for</b>	<p>The text is placed to internal cache for the time specified and it is not read repeatedly from the source until that period elapses. Useful mainly for the Internet Website type or to suppress fast changes of the text.</p> <p><b>TIP:</b> If the text read unexpectedly does not contain latest information, decrease this value.</p>
<b>Expires after</b>	If the text does not change for more than specified, the corresponding text source will give no output and will be excluded until the text changes again. This feature may be used for example for sending song details only for a limited time after the song starts playing. It also allows to automatically select right text source if different broadcast software is used during the day.
<b>Initial command</b>	If filled, the command is sent to the RDS encoder before the text. For example, it can be used to define different display mode (DPS1MOD=x) or number of transmissions (DPS1REP=x,CLR) for each source. Only one command can be inserted.

Following options apply only if the XML processing is selected:

<b>Element name or full path</b>	<p>Element name or full XML path to the values of interest. Up to four elements are allowed.</p> <p>For example, let's suppose an XML file:</p> <pre>&lt;Current&gt; &lt;Title&gt;Can You Feel It&lt;/Title&gt; &lt;Artist&gt;Larry Heard&lt;/Artist&gt; &lt;/Current&gt;</pre>
----------------------------------	---

Corresponding paths would be:

/Current/Title  
/Current/Artist

**Hint:** The XML language is case sensitive.

**Tip:** Click on the Find Element button for intuitive single-click selection of desired element.

#### Output template

Defines the output text and determines where the XML element values appear in it.

For example:

Now Playing: %1% by %2%

where %1% is finally replaced by the song title and %2% is finally replaced by the artist name.

Following options apply only if the JSON processing is selected:

#### Element name or full path

Element name or full JSON path to the values of interest. Up to four elements are allowed.

For example, let's suppose a JSON file:

```
{  
  "Current": {  
    "Title": "Can You Feel It",  
    "Artist": "Larry Heard"  
  }  
}
```

Corresponding paths would be:

/Current/Title  
/Current/Artist

**Hint:** The JSON language is case sensitive.

**Tip:** Click on the Find Element button for intuitive single-click selection of desired element.

#### Output template

Defines the output text and determines where the JSON element values appear in it.

For example:

Now Playing: %1% by %2%

where %1% is finally replaced by the song title and %2% is finally replaced by the artist name.

\* marked items are obligatory

**Note:** Leave unused fields empty.

**Important:** One text source may be assigned to more services (like Dynamic PS 1, Radiotext 1, Text conditions etc.). But if there are more text sources in use, it's preferred to establish a separate set of text sources for each service (even though there will be more text sources reading the same file or location). This way allows to control additional differences between the services and ensures that values like 'Keep in cache for' will work exactly as expected.

## JavaScript

Once the text is read from the Source, it can be modified by the [JavaScript](#) (JS). This option is suitable for advanced users and specialists.

### **Important:**

The JS is only used for the text modification purposes, using the string handling functions. Other kind of use may not be supported by the environment.

The JS is applicable only in the text box which is explicitly marked as 'JavaScript'. In other cases, the 'script' is expected to be the Magic RDS 4 proprietary script (see the [scripts.pdf](#) for details).

Please keep on mind that current implementation is not protected from getting stuck in an infinite loop. If such error occurs in your script, open the magicrds\_config.xml and set the Root/Sources/JSEnabled property to 0.

Type the JS commands directly into the JavaScript text box. The JS must end by *return* command, followed by the output text or variable.

The simplest JS has only single line:

```
return '%TEXT%';
```

which effectively returns the input text with no modification.

Once you assign the %TEXT% dynamic tag to a variable, you may modify the variable content as you wish:

```
var t = '%TEXT%';
```

```
...
```

```
return t;
```

The Insert button offers more dynamic tags and control elements.

To apply the JS code only to a specific Source, use this template:

```
var srcName = '%SRC_NAME%';
```

```
if ((srcName == 'Source 1') || (srcName == 'TEST')) { ... }
```

Basic text processing sequence:

Reading from the source → Text cutting → **JavaScript** → Text Replacing → (Adding prefix/suffix) → resulting text

## Text replacing

A strong tool supporting basic scripting elements and regular expressions. Compared to the JavaScript, it does not require any programming skills and brings some further features. May be used for replacing of single characters, words or sentences as well as for text filtering and advanced text processing. See the [Examples](#) for more details.

Select a cell and click on right mouse button to insert or delete a row and to insert or delete a command.

Basic text processing sequence:

Reading from the source → Text cutting → (JavaScript) → **Text Replacing** → (Adding prefix/suffix) → resulting text

## Text conditions

This tool allows to control any RDS service and behavior (for example TA) using the "now-playing" file produced by your broadcast automation system. If any pre-defined keyword is found in the file, corresponding command from the Magic RDS 4 scripting repertoire is executed. See the [Examples](#) below. Assign a text source first. A source that reads "*all lines*" in sequence cannot be assigned for the Text conditions tool.

The Text replacing is not used for this feature (the comparison is made just before applying the Text replacing). The Text conditions tool however still supports regular expressions (using the %REGEXP% prefix) and the text can be preprocessed by the JavaScript.

**Tip:** It is preferable to use separate text source for this feature rather than share it with Dynamic PS or Radiotext. This allows to set individual properties although the source file or location may be the same. Especially the 'Keep in cache for' value should be set to 0 when used with the Text conditions to allow immediate response when the source file changes.

## RSS support

<b>Enable RSS Support</b>	If enabled, all Internet Website type sources are first tested for RSS <b>2.0</b> structure presence and if this is found, then are parsed as RSS 2.0.
<b>Target</b>	Read title or description lines?
<b>Limit</b>	Limits the number of lines (items) read from the RSS channel.

## RT+ (Radiotext Plus)

The RT+ is designed to let the listener take additional benefit from the Radiotext service by enabling receivers to offer direct access to specific elements of Radiotext. The RT+ module implemented in this application supports song artist and song title elements. These elements anyway carried in the Radiotext, are identified by their class code, length and location within the Radiotext. The receiver must be equipped with the RT+ function (also called "tagging") to take advantage of this feature.

<b>Enabled</b>	Enables or disables the Radiotext Plus module.
<b>Artist/Title Separator</b>	This is the text string that separates the Artist and Title in the Radiotext. It must be exactly filled, including spaces if present. If your broadcast automation system does not provide explicit separation, the RT+ feature cannot be used this way.
<b>Cut text</b>	Any text in the Radiotext that is not directly related to the Artist or Title can be

removed using these fields.

**Item order** Specifies which information is placed first in the Radiotext, the Artist or the Title.

Before attempting to use this feature make sure the Radiotext 1 is properly read from an external text source, showed on the receiver's display and contains the song information expected.

## Other options

**Distribution Delay** Allows compensating delay of audio distribution so the text is not ahead of the audio content. Useful when using low-cost IP modulation link to the transmitter. Default value is 0 (no delay).

*Note: This option has been removed from version 4.0.37 and it is now replaced by individual Distribution Delay setting in Overview - Extensions.*

## Dynamic elements in the text

When a dynamic element is placed anywhere in the text, actual value is sent to the encoder when the Radiotext or Dynamic PS is served out. Syntactically, the dynamic elements are enclosed between two % characters. The dynamic elements can occur anywhere, in the prefix, suffix, file content etc. **The most important thing about the dynamic elements is that this function belongs to the External Text Tool.** The replacement occurs just **before** the text is sent to the encoder. Some encoders may support further dynamic elements which are updated by the encoder itself.

**Example:** The dynamic element **%DATETIME:dd-mm-yy%** is replaced by current date before sending the final text to the RDS encoder. The date format can be specified.

### List of dynamic elements

DATETIME:	
d	Displays the day as a number without a leading zero (1-31).
dd	Displays the day as a number with a leading zero (01-31).
ddd	Displays the day as an abbreviation (Sun-Sat).
dddd	Displays the day as a full name (Sunday-Saturday).
m	Displays the month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
mm	Displays the month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
mmm	Displays the month as an abbreviation (Jan-Dec).
mmmm	Displays the month as a full name (January-December).
yy	Displays the year as a two-digit number (00-99).
yyyy	Displays the year as a four-digit number (0000-9999).
h	Displays the hour without a leading zero (0-23).

hh	Displays the hour with a leading zero (00-23).
n	Displays the minute without a leading zero (0-59).
nn	Displays the minute with a leading zero (00-59).
am/pm	Uses the 12-hour clock for the preceding h or hh specifier, and displays 'am' for any hour before noon, and 'pm' for any hour after noon. The am/pm specifier can use lower, upper, or mixed case, and the result is displayed accordingly.
a/p	Uses the 12-hour clock for the preceding h or hh specifier, and displays 'a' for any hour before noon, and 'p' for any hour after noon. The a/p specifier can use lower, upper, or mixed case, and the result is displayed accordingly.
'xx' or "xx"	Characters enclosed in single or double quotation marks are displayed as such, and do not affect formatting.

*Further dynamic elements can be supported on request.*

## Text publishing via internal web server

Current Radiotext or Dynamic PS text generated by the External text tool is directly accessible via the internal web server. This feature requires Activation or Full license.

1. Make sure the web server is enabled (Option - Preferences - Web Server).
2. Create a custom web page containing these dynamic tags: **%rt1\_ext** or **%dps1\_ext**. See the example below.
3. Place this file to a folder which belongs to the internal web server file system. This would be the WWWRoot directory in the application folder or the usr directory, as specified in the Preferences.

```
<html>
<head></head>
<body>
<p>Now playing: %rt1_ext</p>
</body>
</html>
```

## Examples

### Text Replacing

For this example, consider a Dynamic PS or Radiotext which is read from a text file generated by your broadcast system. Fill the following to the Text replacing grid and see the effect:

Change	to	Effect:
&	and	Character "&" can't be displayed on most receivers, so we replace it by characters, that can be displayed.
%S%jingle	%CLEAR%%END%	Don't show anything



		during playing a jingle, stop processing the text.
%SC%Background 1	%CLEAR%Now speaking John Smith%END%	Assign a custom text to a background sound, then stop processing the text.
produced by	%TERMINATE%	Remove anything what is written after the 'produced by' words (including).
%SC%Background	%CLEAR%%SOURCE2TEXT%%END%	Assign a text from another text source to the background sound, then stop processing the text.
%REGEXP%^.{0,2}\$	%CLEAR%Default message	Replace all strings shorter than 3 characters by a default message.
%REGEXP%#...		Remove all substrings like #GHI, #RPT or #CCH
%SOURCE1%%REGEXP%.+	%UPPERCASE%	Any text from Source 1 will be converted to CAPITAL letters. Does not affect other sources.
%REGEXP%.+-	%TOUPPERCASE%	Converts the text part before - to CAPITAL letters.
%REGEXP%-.+	%TOTITLECASE%	Converts the text part behind the - to TitleCase.
%SOURCE2%%REGEXP%^.{0,30}	%CLEAR%%MATCHEDSTR%	Limits the source 2 text length to 30 characters.
%REGEXP%^- ^ - - \$-	%GOTONEXT%	Skips the text source if artist or title is missing. (format: 'artist - title')

**Note:** When trying the examples, please take care of the space characters.

Commands and dynamic elements supported in the *CHANGE* (expression) column:

**%SOURCEx%** prefix means that the line will be processed only by specified text source, the x is in range 1 to 16.

**%C%** prefix means that the replacing will be case-sensitive.

**%S%** prefix means that the text must start with expression filled.

**%SC%** prefix means that the text must start with expression filled. The matching will be case-sensitive.

**%REGEXP%** prefix means that the string will be processed as a *regular expression*.

The prefixes above cannot be combined (used together)!

Commands and dynamic elements supported in the *TO* column:

**%CLEAR%** command means that whole text (not only the expression found) will be deleted and replaced by the text written behind the command. The text source's prefix/suffix is not added in this case.

**%TERMINATE%** command terminates the text on a first occurrence position of the expression. Any text behind the expression found (and including it) will be deleted.

**%x%** (for XML source only): if the expression is found, it is replaced by a text from corresponding XML element. The x is in range 1 to 4.

**%SOURCExTEXT%** command means that if the expression is found, it is replaced by a text output from another text source, the x is in range 1 to 16.

**%UPPERCASE%** command means that if the expression is found, entire text is converted to UPPERCASE.

**%TITLECASE%** command means that if the expression is found, entire text is converted to TitleCase.

**%TOUPPERCASE%** command means that if the expression is found, that part of the text is converted to UPPERCASE. Applies to RegExp only.

**%TOTITLECASE%** command means that if the expression is found, that part of the text is converted to TitleCase. Applies to RegExp only.

**%MATCHEDSTR%** command represents the matched string (without conversion). Applies to RegExp only.

**%END%** command means that next rows are ignored if the expression is found.

**%GOTONEXT%** command causes the text source to be skipped. Next source in the loop will apply (if exists).

All these commands and dynamic elements are case sensitive, thus they must be entered in capital letters.

## Text Conditions

Check corresponding text source file/window, fill the following to the Text Conditions grid and enable the feature:

If found	then execute	else execute
jingle - traffic start	send connection:"*" command:"TA=1"	
jingle - traffic end	send connection:"*" command:"TA=0"	
background - news	send connection:"*" command:"PTY=1"	send connection:"*" command:"PTY=3"

Typically, the expression in the 'If found' column is a part of the audio file name/tag as stored in your broadcast automation system. By default, the matching is not case-sensitive.

For complete list of commands, follow the Execute script tool, the Terminal and the RDS encoder's Technical manual.