

MAINTENANCE AND OPERATION  
INSTRUCTION MANUAL

# SmartGen Encoders Manager

Compatible with:  
SmartGen 6.0, SmartGen 5.0,  
SmartGen 4.1, SmartGen Mini



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# Contents

|   |           |
|---|-----------|
| <b>Introduction</b> .....                                 | <b>5</b>  |
| <b>Typographic conventions</b> .....                      | <b>6</b>  |
| <b>General Information</b> .....                          | <b>7</b>  |
| <b>Loading and Running The Software</b> .....             | <b>8</b>  |
| <i>Minimal System Requirements</i> .....                  | 8         |
| <i>Installing the Software</i> .....                      | 8         |
| <i>USB Drivers Installation for Windows® 7</i> .....      | 10        |
| <b>Using the SmartGen Encoders Manager</b> .....          | <b>13</b> |
| <b>Getting Started</b> .....                              | <b>14</b> |
| <i>Master Password</i> .....                              | 14        |
| <i>Quick access tools</i> .....                           | 15        |
| <i>Group</i> .....  | 15        |
| <i>Device</i> .....                                       | 16        |
| <i>Connection</i> .....                                   | 16        |
| <i>Map</i> .....  | 16        |
| <i>Settings, Help and Exit</i> .....                      | 16        |
| <b>Device Managing</b> .....                              | <b>17</b> |
| <i>Add Device</i> .....                                   | 17        |
| <i>Identification</i> .....                               | 17        |
| <i>Group</i> .....  | 17        |
| <i>Location</i> .....                                     | 17        |
| <i>Connection</i> .....                                   | 18        |
| <i>Edit Device</i> .....                                  | 19        |
| <i>Remove Device</i> .....                                | 19        |
| <i>View Device</i> .....                                  | 19        |
| <i>Lock/Unlock Device</i> .....                           | 19        |
| <i>Locate device on map</i> .....                         | 19        |
| <i>Export/Import Device List</i> .....                    | 20        |
| <i>Export Device List</i> .....                           | 20        |
| <i>Import Device List</i> .....                           | 21        |
| <i>Current Status</i> .....                               | 22        |
| <b>Connections Managing</b> .....                         | <b>23</b> |
| <i>New Connection</i> .....                               | 23        |
| <i>Edit Connection</i> .....                              | 23        |
| <i>Remove Connection</i> .....                            | 24        |
| <i>Monitor/Un-Monitor Connection</i> .....                | 24        |
| <i>Connect</i> .....                                      | 24        |
| <b>Map</b> .....  | <b>25</b> |
| <i>Zoom IN/OUT</i> .....                                  | 25        |
| <i>Fit All</i> .....                                      | 25        |
| <i>Grayscale Map/Color Map</i> .....                      | 25        |
| <b>How to apply new setting to Group of devices</b> ..... | <b>26</b> |
| <b>Software Settings</b> .....                            | <b>27</b> |
| <i>General Settings</i> .....                             | 27        |
| <i>Map</i> .....  | 28        |
| <i>Monitoring</i> .....                                   | 29        |
| <i>AIDs</i> .....   | 30        |
| <i>Date/Time</i> .....                                    | 31        |
| <i>Security</i> .....                                     | 32        |

|   |           |
|---|-----------|
| <b>Device Control Window</b> .....                                      | <b>33</b> |
| <i>Sending and Reading Data</i> .....                                   | 33        |
| <i>Main Window</i> .....  | 33        |
| <i>Hardware Configuration</i> .....                                     | 35        |
| <i>General</i> .....  | 35        |
| <i>Alarms</i> .....   | 37        |
| <i>Communication</i> .....  | 39        |
| <i>Services</i> .....   | 41        |
| <i>GPIO</i> .....   | 42        |
| <i>GPS</i> .....  | 44        |
| <i>Basic RDS</i> .....  | 45        |
| <i>How to add a new AF by Method A</i> .....                            | 47        |
| <i>How to add a new AF by Method B</i> .....                            | 48        |
| <i>Advanced RDS</i> .....   | 49        |
| <i>How to add Site/Encoder address</i> .....                            | 50        |
| <i>How to manage the Encoder Access rights</i> .....                    | 51        |
| <i>Data Sets</i> .....  | 52        |
| <i>Main Group Sequence</i> .....  | 52        |
| <i>Slow Labeling Codes</i> .....  | 53        |
| <i>Variant Code Sequence</i> .....                                      | 54        |
| <i>ODA 3A Sequence</i> .....  | 55        |
| <i>Program Services</i> .....   | 56        |
| <i>Information</i> .....  | 56        |
| <i>Indication</i> .....   | 57        |
| <i>AF List</i> .....  | 58        |
| <i>EON</i> .....  | 59        |
| <i>ODA</i> .....  | 60        |
| <i>How to create an ODA Groups Configuration</i> .....                  | 61        |
| <i>How to create an ODA Relative Priority Group Sequence List</i> ..... | 62        |
| <i>How to create a Buffers Configuration for ODA Group</i> .....        | 63        |
| <i>Console</i> .....  | 64        |
| <b>Product Registration Card</b> .....                                  | <b>65</b> |
| <b>WARRANTY TERMS AND CONDITIONS</b> .....                              | <b>66</b> |
| <b>APPENDIX A</b> .....   | <b>67</b> |
| <i>RDS: Europe vs America</i> .....                                     | 67        |
| <i>The RDS System</i> .....   | 67        |
| <b>APPENDIX B.1</b> .....   | <b>68</b> |
| <i>RDS Applications Supported</i> .....                                 | 68        |
| <b>APPENDIX C.1</b> .....   | <b>72</b> |
| <i>PTY Code Description Used in RBDS Mode – North America</i> .....     | 72        |
| <b>APPENDIX C.2</b> .....   | <b>73</b> |
| <i>PTY Code Description Used in RDS Mode – Europe, Asia</i> .....       | 73        |
| <b>APPENDIX E</b> .....   | <b>74</b> |
| <i>Alarms</i> .....   | 74        |

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## Introduction

DEVA Broadcast Ltd. is an international communications and high-technology manufacturing organization, its corporate headquarters and facility located in Burgas, Bulgaria. The company serves the broadcast and corporate markets worldwide – from consumers and small businesses to the largest global organizations. It is dedicated to the research, design, development and provision of advanced products, systems and services. DEVA launched its own brand back in 1997 and has nowadays evolved to become known as a market leader and internationally reputed manufacturer of user-friendly, cost-effective and innovative broadcast products.

Creativity and innovation are deeply woven into DEVA corporate culture. Through successful engineering, marketing and management our team of dedicated professionals creates future-oriented solutions to improve customers' performance. You may rely that all issues communicated to our crew would be addressed accordingly. We pride ourselves on our pre and post-sales support and purchase services, which along with the outstanding quality of our radio gear have won us due respect and the market authority position.

DEVA best-of-breed solutions have become the best sellers for our partners. The strategic partnerships which have been formed with industry leaders during all these years that we have been operating on the broadcasting market, have proved us a reliable business partner and a valuable asset, as our dealers worldwide would confirm. In constant pursuit of precision and long-term satisfaction, DEVA enhances the reputation of our partners and clients alike. Furthermore, we have already a proven merit as a credible partner provider.

Our portfolio offers complete line of high quality and competitive products for FM and Digital Radio, Radio Networks, Telecommunication Operators and regulation authorities. For almost two decades of intensive software and hardware development, we have achieved a unique price-performance and endurance of our product lines. Our company's multitude of equipment and services is in line with the latest technologies and key trends. The most recognizable characteristics attributed to DEVA products are their clear-cut, streamlined design, easiness of use and cost-effectiveness: simplicity of forms but multiplicity of functions.

For us there is no stage when we deem that we have reached the most satisfactory level in our work. Our engineers are in constant pursuit of new ideas and technologies to be captured in DEVA solutions. Simultaneously, a strict control is being exercised at each step of any new development. Experience and hard work are our fundament but the continuous improving process is what we never leave aside. DEVA participates on a regular basis in all landmark broadcasting events, not only to promote its products, but to exchange valuable know-how and experience. We are also engaged in international large-scale projects involving radio and audio solutions which makes us even more competitive on the global market.

All DEVA products are developed and produced in accordance with the latest ISO 9001 quality control standards.

## Typographic conventions

This manual uses the following typographic conventions:

| Style                              | Used for  |
|------------------------------------|---|
| <b>NOTE</b>                        | Important notes and recommendations   |
| Example                            | Used when example text is cited   |
| <a href="#">“Menu” on page XX.</a> | References  |
| [OK]                               | Interface Interactive buttons.  |
| <i>Settings</i>                    | Menu paths are represented as follows: <i>Settings</i> > <i>General</i> > <i>Backup</i> |

## General Information

The SmartGen Encoders Manager is software to control several devices from DEVA's wide range RDS/RBDS Encoders:

- **SmartGen 6.0** – Professional Dynamic RDS/RBDS Encoder, RS-232, USB & TCP-IP Ports, UECP Compatible, GPS Time Sync
- **SmartGen 5.0** – Professional Dynamic RDS/RBDS Encoder, RS-232, USB & TCP-IP Ports, UECP Compatible
- **SmartGen 4.1** – UECP Compatible RDS/RBDS Encoder with LAN & USB Connectivity
- **SmartGen Mini** – UECP Compatible, Compact RDS/RBDS Encoder with LAN & USB Connectivity

Aimed at facilitating the use of our products, SmartGen Encoders Manager is free of charge. The latest release can be found on our website [www.devabroadcast.com](http://www.devabroadcast.com) or on a supplied CD accompanying the purchased product. The downloaded software can be used by customers who have an already installed SmartGen Encoders Manager, for the purposes of software update or by clients who have recently purchased a DEVA RDS/RBDS Encoder.

This Manual is intended to:

- Guide you through the installation process;
- Help you with the initial setup of the Software;
- Familiarize you with the supported applications.

### **PLEASE NOTE**

- That the supported functions differ, depending on the used device and might be contextually different. An explanatory mark at the beginning of each application will indicate which device supports the particular function that is being explained.
- That for the purposes of this manual and the thorough explanation of the Software functionalities, the used screenshots are from SmartGen 6.0 RDS/RBDS Encoder

## Loading and Running The Software

SmartGen Encoders Manager Software is provided to our customers free of charge. The latest release can be found on our website [www.devabroadcast.com](http://www.devabroadcast.com) and the supplied CD. The installation process is fairly simple and identical for all supported by the software devices.

### MINIMAL SYSTEM REQUIREMENTS

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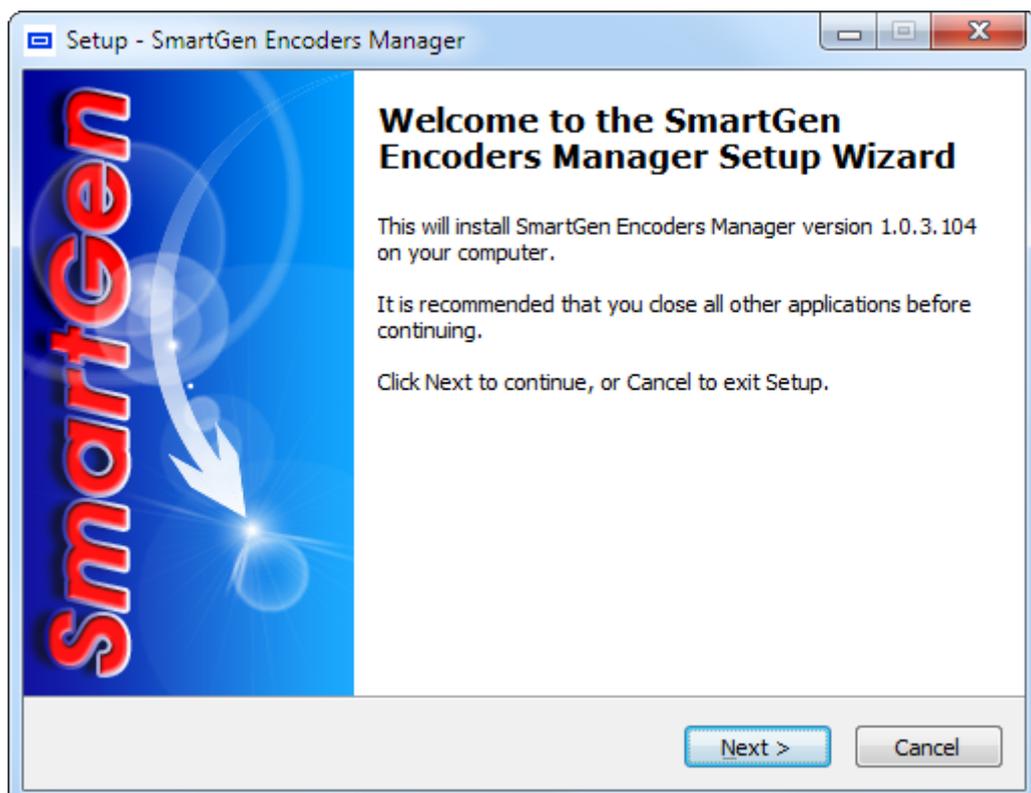
Pentium(R) Processor or Compatible  
Windows XP and above  
1024MB RAM  
100MB free hard drive space for installation  
16 or 32-bit graphics color depth  
1024 by 768 pixels screen resolution  
Screen DPI setting to 96 dpi  
Universal Serial Bus 2.0

**NOTE:** To avoid hardware conflicts and encoder connection problems, install the software before attempting to connect the encoder with the computer.

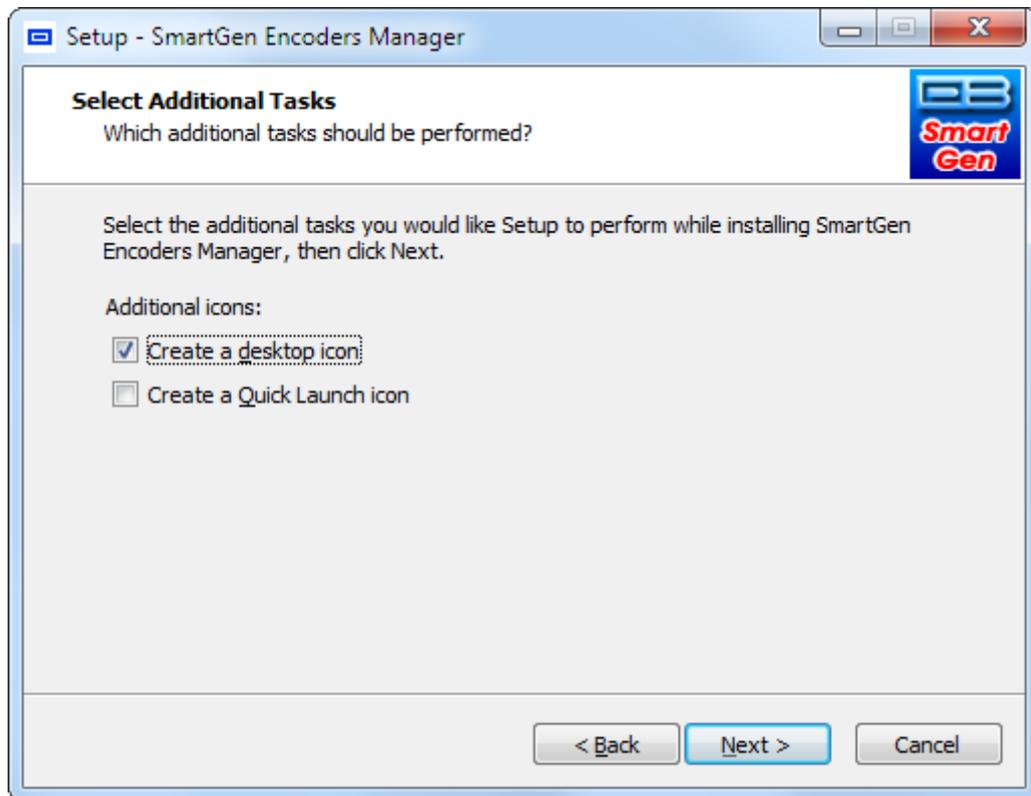
### INSTALLING THE SOFTWARE

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1. Use the Installation file which can be found on the supplied CD or downloaded from [www.devabroadcast.com/downloads](http://www.devabroadcast.com/downloads);
2. Find SmartGen folder and double click on the installation file to launch the Wizard;



3. Accept the default recommendations and select “Next>” in the end of each step;
4. When asked to place an icon on the Desktop of your computer make, sure that the check box is enabled and click “Next> Finish”;

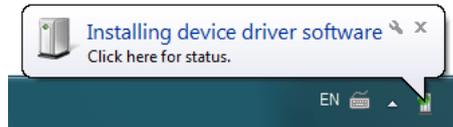


5. Finally select NOT to launch the program.

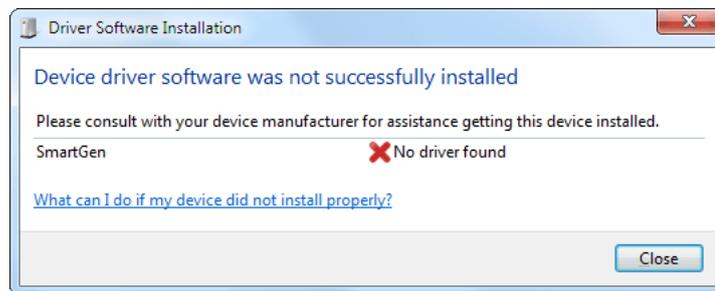
Once the programming Software is installed, the USB port driver must also be installed in order for the unit to be accessed through the USB Port.

## USB DRIVERS INSTALLATION FOR WINDOWS® 7

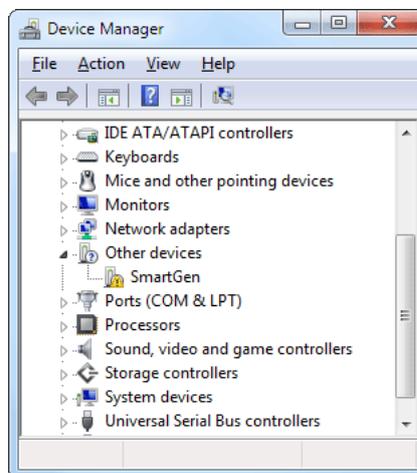
1. Connect SmartGen to the AC, then connect the front-panel USB port to the computer. A “New Hardware” notification will appear. Click on the Status balloon or proceed with the next step;



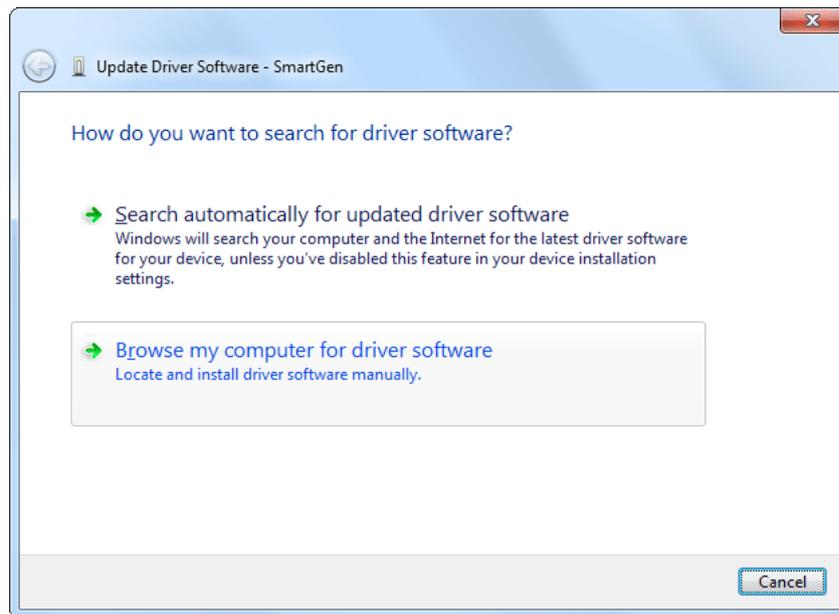
2. If an installation failure occurs, a notification status will appear. Close the status window and proceed with the next step;



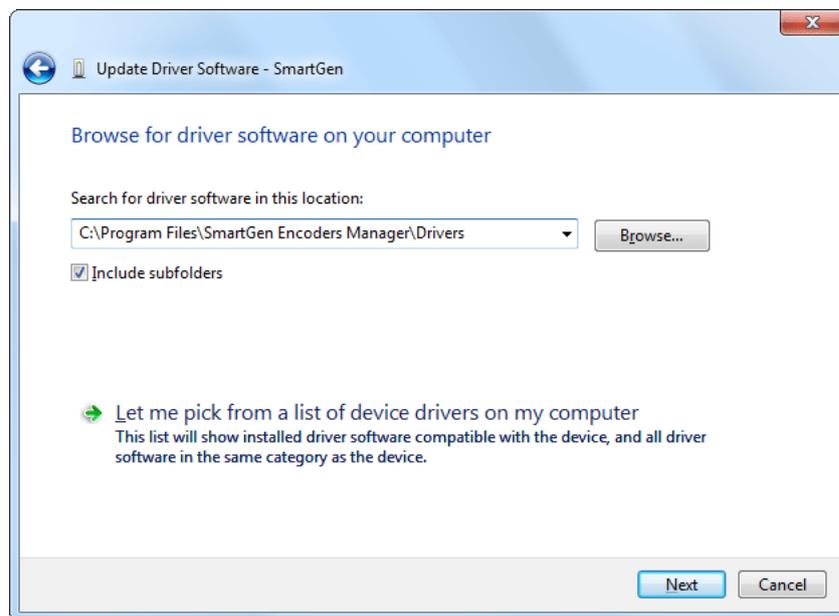
3. To start the Device manager go to *Start> Control Panel>Device Manager> Other devices*;



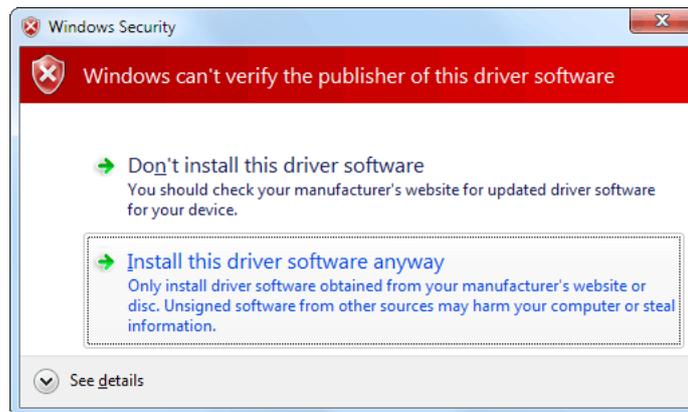
4. Right click on “SmartGen” and select “Update Driver Software”. The Update Driver Wizard will appear;



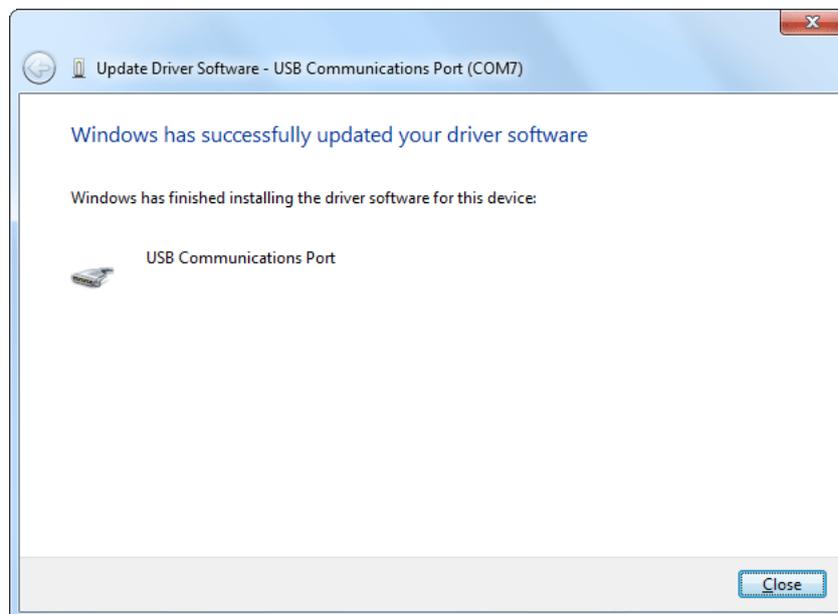
5. Click on “Browse my computer for driver software” and select the drivers folder (usually: C:\Program Files\SmartGen Encoders Manager\Drivers.) then click “OK” and “Next”;



6. Windows® 7 will advise that this driver is ‘unsigned’. Disregard the message and click ‘Install this driver software anyway’;



7. After the installation process is completed a notification message will be displayed.



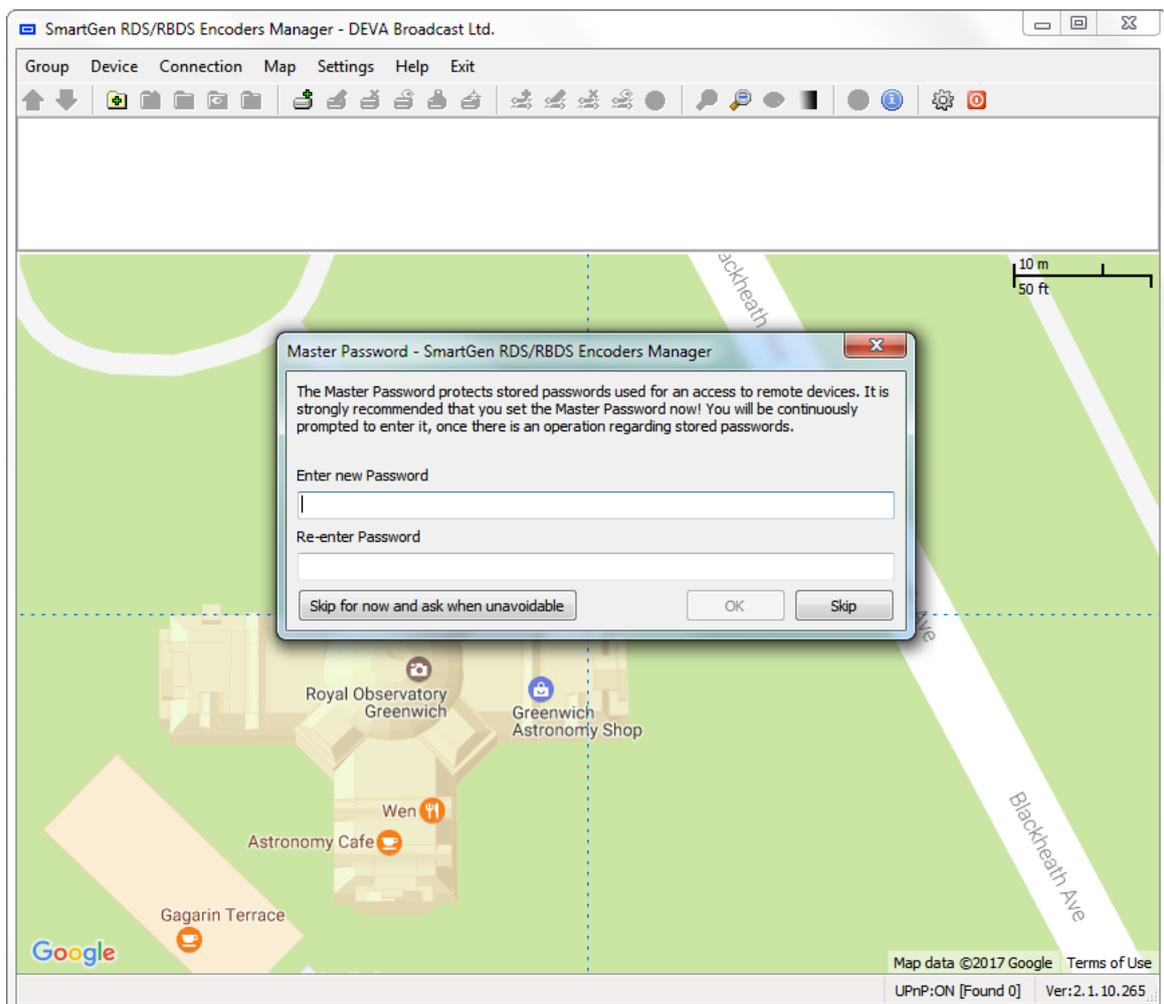
**NOTE:** During the installation process an USB RS-232 Emulation will be made. Administrator rights might be needed in order for the USB drivers to be installed.

## Using the SmartGen Encoders Manager

Upon completion of the installation process, a shortcut to the software will appear on the desktop of your PC.



Double click on the shortcut to run the Software. Subsequently, the main application window will appear, followed by a dialog window requiring a Master Password ([see “Master Password” on page 14](#)). Most of the functions would be disabled since no devices have been listed in the SmartGen Encoders Manager so far.

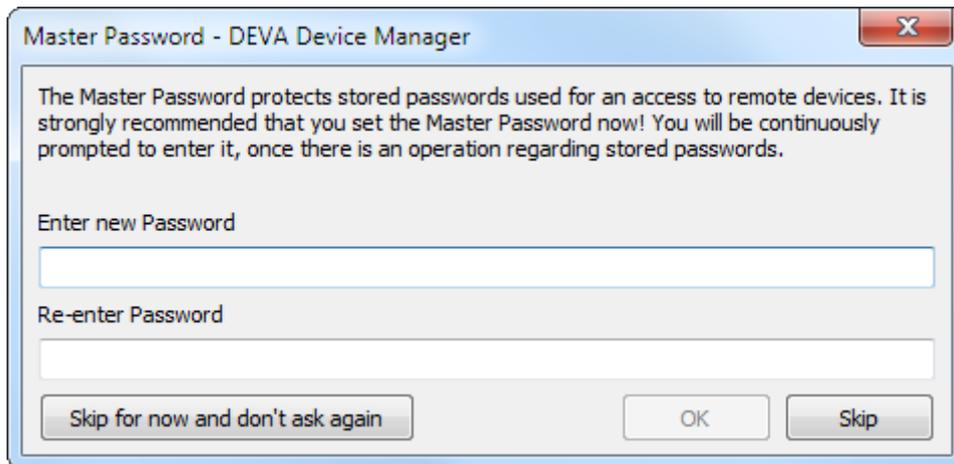


## Getting Started

### MASTER PASSWORD

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The Master Password protects stored passwords used for an access to remote devices. If you share a computer with anyone, it is recommended that you use a master password.



We recommend that you enter the password when SmartGen Encoders Manager is activated for the first time. Otherwise, you will be continuously reminded to enter it any time there is an operation regarding stored passwords.

The master password is used only for export and import of the list of devices operated by the SmartGen Encoders Manager software. It is not intended to be used as user credentials for the DEVA devices supported by the software.

**NOTE:** Please make sure you remember the Master Password you have set. If you forget your Master Password, you would not be able to access any of the information protected by it.

If you have enabled the UPNP function, SmartGen Encoders Manager will find and add automatically all supported devices connected to your PC trough USB or LAN ([see “Monitoring” on page 29](#)). In case of a failure, remote device can be added manually by two methods – *New Device* or *Import Device List*. These options are explained in detail below:

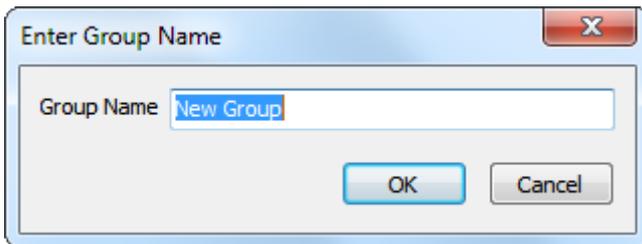
## QUICK ACCESS TOOLS



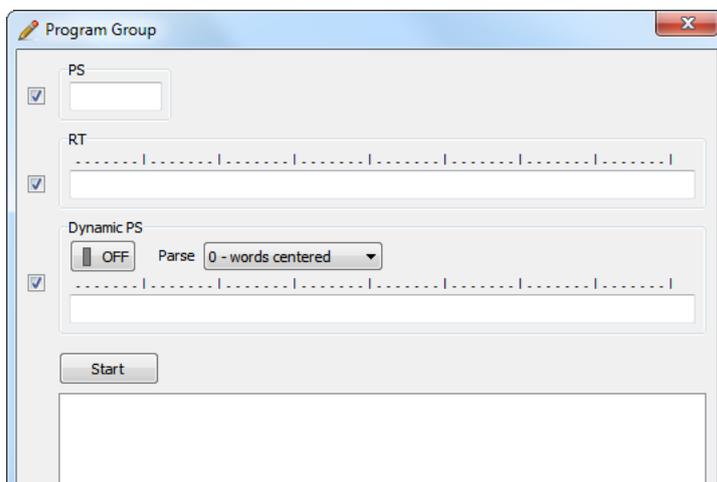
The quick access tools are divided in several groups and represent the same settings that can be applied trough the relevant drop-down menus.

### Group

 Add Group – allows new group to be created. Upon pressing the button, a new window requesting group name to be specified will appear. To create a new group, specify name and press [OK];



-  Edit Group – allows the name of the group to be edited;
-  Delete Group – deletes the selected group. Only empty groups can be deleted. To empty a group, all included device should be manually deleted using the Delete Device option;
-  Fit Group – will fit the map in the SmartGen Encoders Manager main window so as all devices from the group could be visible;
-  Program Group – allows all devices in the group to be configured at once with the same **PS**, **RT** and **Dynamic PS**.



## Device

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-  – allows the sequence of the devices in the list to be changed;
-  Add New Device – allows new device to be added;
-  Edit Device – allows editing of the basic settings applied in order for connection to be established;
-  Delete Device – deletes the selected device;
-  View Device – will open the main control window of the device. To establish connection, press [Connect];
-  Lock/Unlock Device – will lock permanently the position of the device on the map. To unlock/change the position, select the device from the list and press the button again;
-  Locate Device on Map – will show the position of the device in the center of the map.

## Connection

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-  New Connection – allows new connection to the device to be added;
-  Edit Connection – allows editing of the basic settings used for the connection;
-  Delete Connection – deletes the selected connection;
-  Monitor/Unmonitor Connection – select a connection and press the button in order for it to be used for background monitoring of the device. To stop monitoring the connection, press the button again; **NOTE:** Only connections of type UDP could be used for monitoring.
-  Connect – will establish connection with the device and open the main control window.

## Map

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-  Zoom In – will zoom in the map;
-  Zoom Out – will zoom out the map;
-  Fit All – will fit the map in the SmartGen Encoders Manager main window so as all devices could be visible;
-  Grayscale/Color Map – allows different color representation to be chosen.

## Settings, Help and Exit

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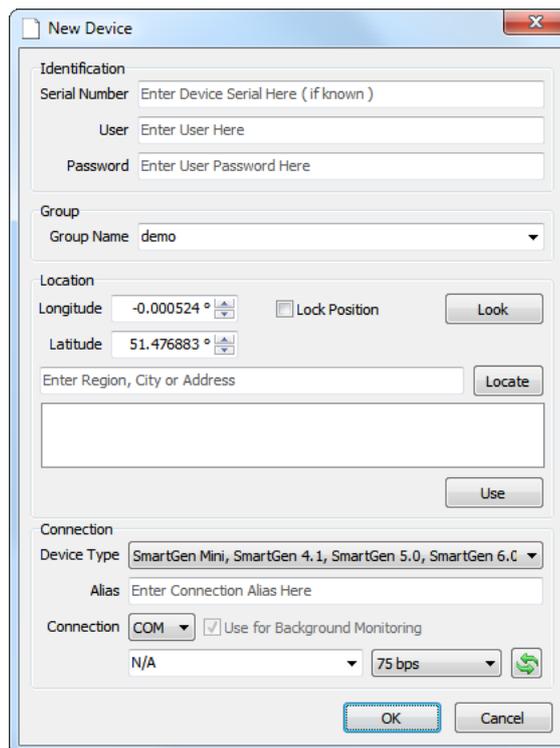
-  About – will open a new window with contact details of the manufacturer and software version;
-  Settings – will open the main/general settings of the SmartGen Encoders Manager software;
-  Exit – will close the software.

## Device Managing

### ADD DEVICE

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Press the “New Device” button . A dialog box requiring information about the device will appear. The requested data is not obligatory but might be required in order for an assigned task to be completed.



#### Identification

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**Serial Number** – this field could be left blank. It will be automatically assigned the first time when you connect to a device via SmartGen Encoders Manager Software. Once assigned, the Serial Number cannot be changed;

**User and Password** – credential required to access the device;

#### Group

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**Group Name** – Select from the drop-down menu the group to which the device should be included.

#### Location

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**Longitude and Latitude** – if known the coordinates of the device location could be specified;

**Lock Position** – selecting this option will “lock” the device on its current position on the map. This will prevent repositioning the device by mistake;

**Look** – the currently entered Longitude and Latitude will be used as a center of the Map.

**Locate** – Enter Region, City or Address and press the “**Locate**” button. All results found will be listed. Select the required location and press the “**Use**” button in order the currently selected location to be filled in the relevant fields.

## Connection

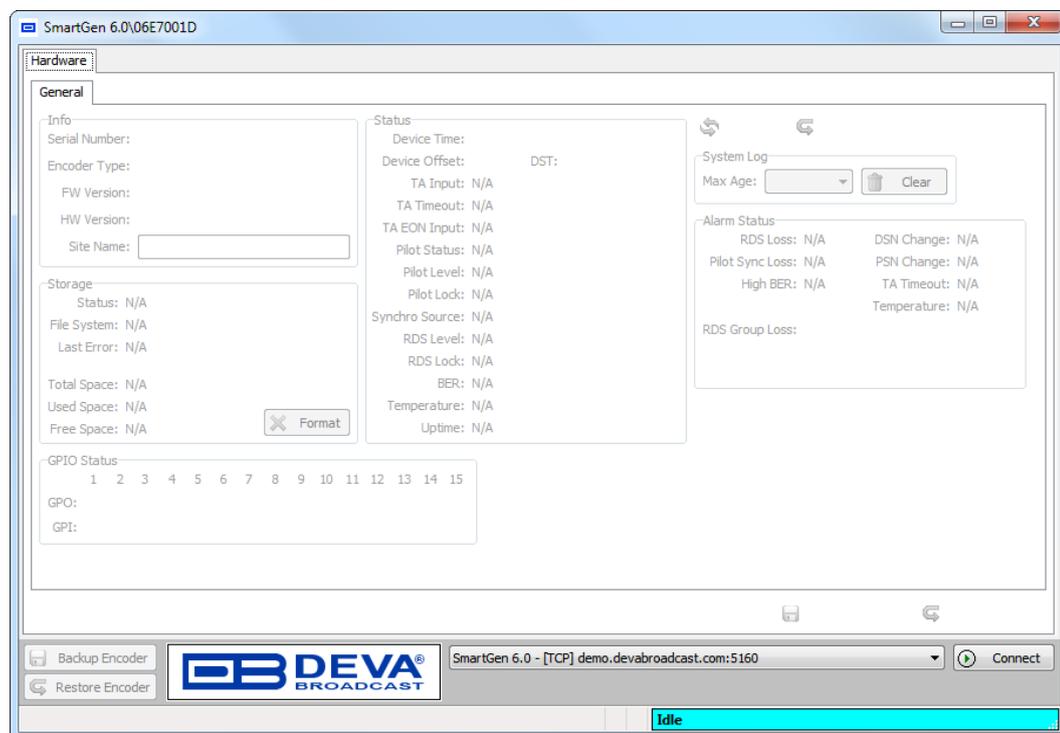
Select the device type from the relevant drop-down menu, and enter the required data (for further information on the connection settings refer to [“New Connection”](#));

After the needed parameters are defined, the device will appear in the Device List and on the Map. There are two options of entering the device:

1. Select the preferred device and click on “View Device” button ;
2. Double click on the connection listed below the device.

**NOTE:** Once a new device is defined an automatic connection to it will be added. For further information about the “Connection” usage refer to [“Connections Managing” on page 23](#).

Once the device is entered, the Device Control Window will be displayed.



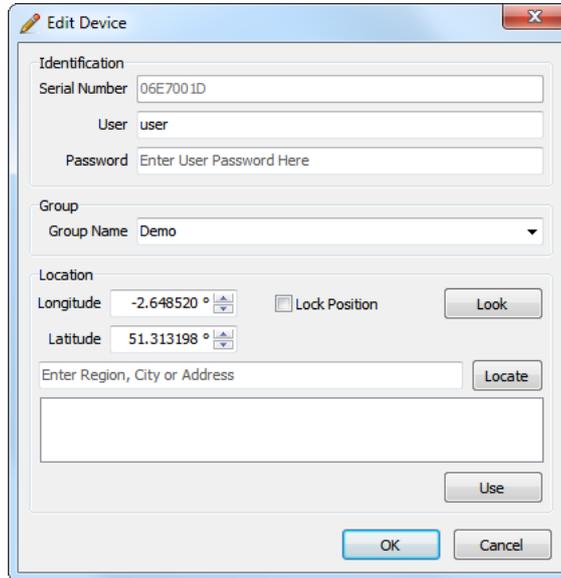
For further information refer to [“Device Control Window” on page 33](#)

**PLEASE NOTE** that the appearance of the Device Control Window differs depending on the currently selected Device.

## EDIT DEVICE

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 Used for editing of the device's current information.



## REMOVE DEVICE

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Select the device and press the “Remove device” button . A dialog warning window will appear. Confirm that you want to delete the device and wait for the process to complete.

## VIEW DEVICE

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A click on the “View Device” button  will open the [“Device Control Window”](#).

## LOCK/UNLOCK DEVICE

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Used for “locking/unlocking” of the device on its current position on the map.

1. Set the device at its position on the map;
2. Select the device from the list;
3. Press the “Lock”/”Unlock” button  .

Once “Lock” action is performed the device should be “unlocked” in order for the current position to be changed.

## LOCATE DEVICE ON MAP

---

This function is very useful when several devices are listed.

1. Select the desired device from the Device List;
2. Press the “Locate Device on Map” button .

The Software will automatically position the Map as to the device to be displayed in its center.

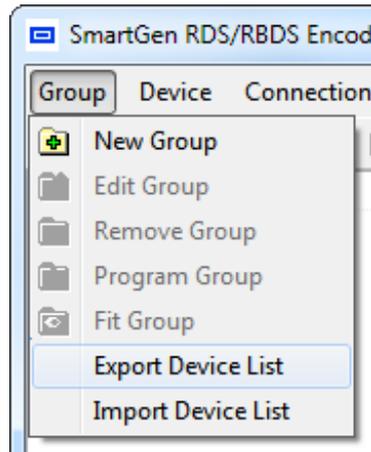
## EXPORT/IMPORT DEVICE LIST

This option is very useful for those users who want to install SmartGen Encoders Manager on several computers and monitor the condition of devices installed on different locations.

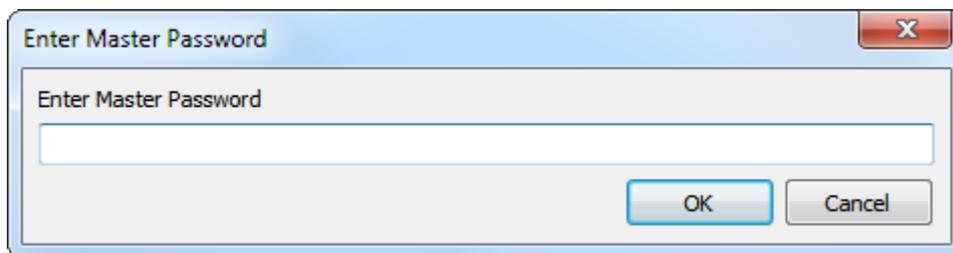
Once you have defined all devices and placed them on the Map, you could export all settings and import them into other PCs, with SmartGen Encoders Manager Software already installed.

### Export Device List

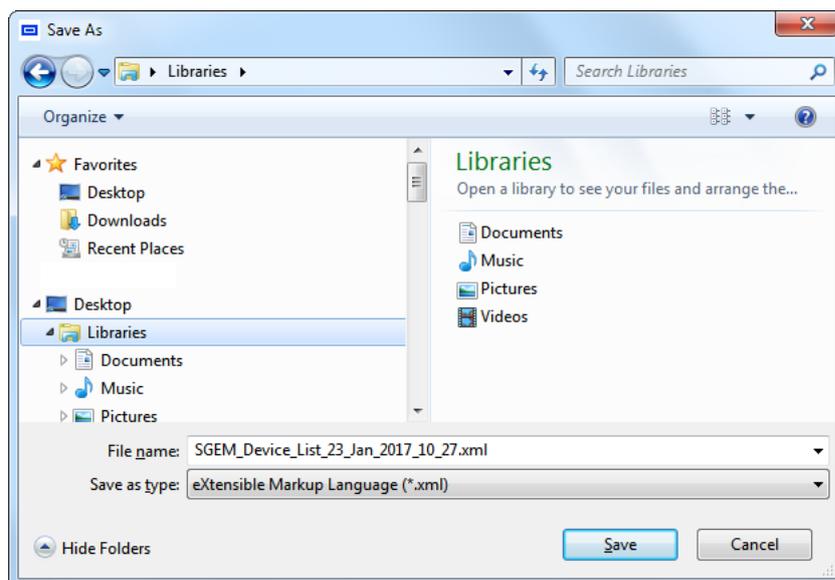
1. Click on “**Group**” menu and select “**Export Device List**”;



2. Enter your Master password and press [OK];



3. Save the file.

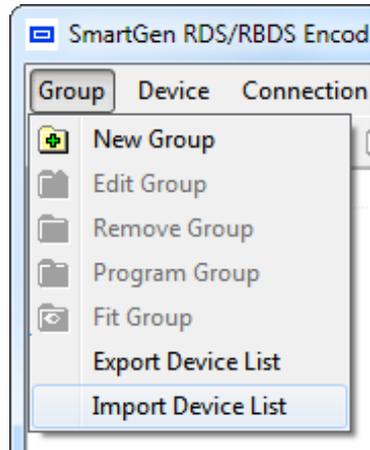


**NOTE:** Once the Device List has been exported all passwords in the resultant file will be visible to anyone who has access to it.

## Import Device List

---

1. Click on “**Group**” menu and select “**Import Device List**”;



2. Select the desired file and press [OK];
3. The information will be transferred and displayed on SmartGen Encoders Manager main window.



## Connections Managing

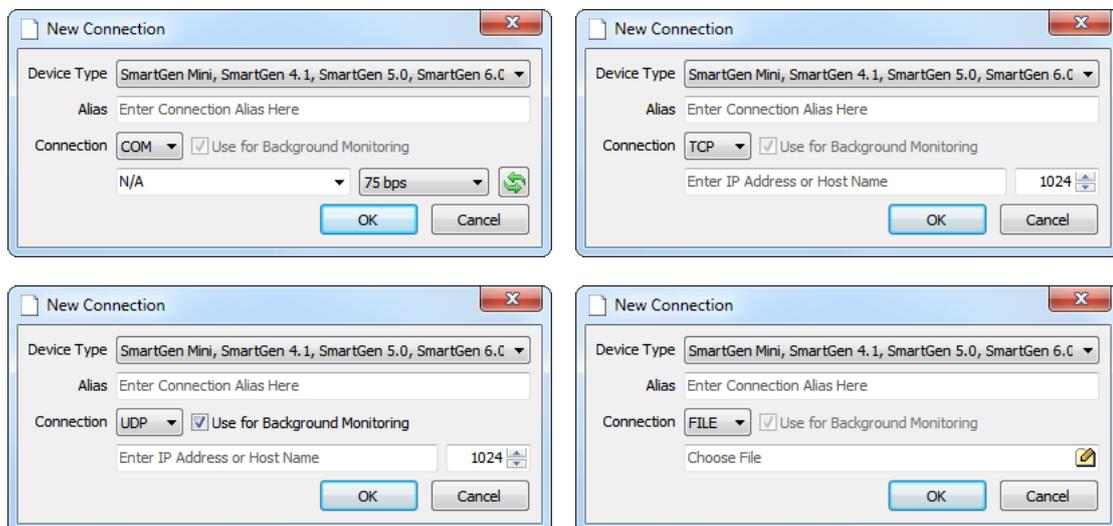
Once a new device is added, the SmartGen Encoders Manager can utilize several sub-connections with different functions which will facilitate the use of the device.

### NEW CONNECTION

Several connections for each device could be added. In order a new connection to be added the "New connection" button  should be used.

**NOTE:** Although several connections for different purposes can be utilized, only one connection at a time can be used for connecting and maintenance of the device.

A window requiring information about the connection will appear:



- **Device Type** – SmartGen Encoders Manager will determine the connection actions depending on the selected "Device Type";
- **Alias** – a user-defined name that identifies the connection;
- **Connection** – specifies the connection type to be used;
- **Address** – IP Address, Host Name or COM Port Name of the device;
- **Software port (TCP, UDP) or Speed (COM)** – The default value of the Software Port is 1024, and the speed in 78 bps;
- **File** – location of the Encoder's Backup file which could be connected and interactively edited as real device connection with the exception that changes will be saved to the chosen file.

**NOTE** that "Use for Background monitoring" check box is only enabled for UDP Connection Type. Using background channel for receiving data from the device without interrupting the working process, is an ideal option for monitoring of the device's current status. The "Eye icon", Indicating that the function is in use, will appear in front of the connection.

Complete the needed information and press [OK].

### EDIT CONNECTION

Used for editing of the connection's current information – new Alias, Address / Host Name / COM Name / File and Port could be set from here.

## REMOVE CONNECTION

---

Select the connection and Press the “Remove connection” button . The connection will be deleted immediately.

## MONITOR/UN-MONITOR CONNECTION

---

Select the UDP Connection to be used for background monitoring of the device and press the “Monitor Connection” button . ([see “Monitoring” on page 29](#))

## CONNECT

---

Control option used for connecting/disconnecting with the currently selected device through the selected connection.

## Map

Each device is visually represented on the Map. This is an additional tool for fast evaluation of the currently selected device – condition, location, etc.

### ZOOM IN/OUT

---

**Zoom In**  – Control option that will zoom in the Map image.

**Zoom Out**  – Control option that will zoom out the Map image.

### FIT ALL

---

 – Control option that will position the Map in such manner as to display all devices situated on the map.

### GRAYSCALE MAP/COLOR MAP

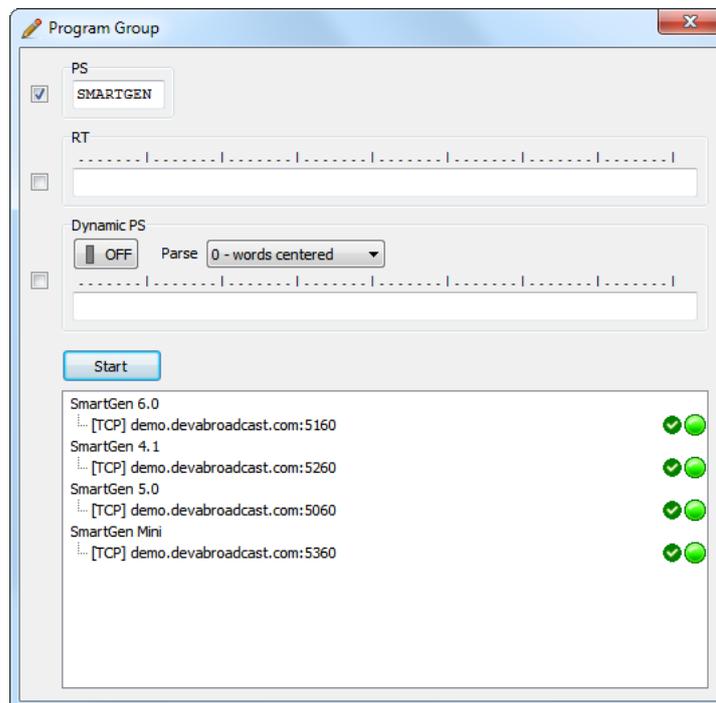
---

Having in mind that visual perception differs from person to person, the used map could be gray-scaled via this option, allowing easy monitoring of the current status and position of the devices.

The button is with dual use  – once the grayscale function is applied, the same button would be referred as and used for “Color Map”.

## How to apply new setting to Group of devices

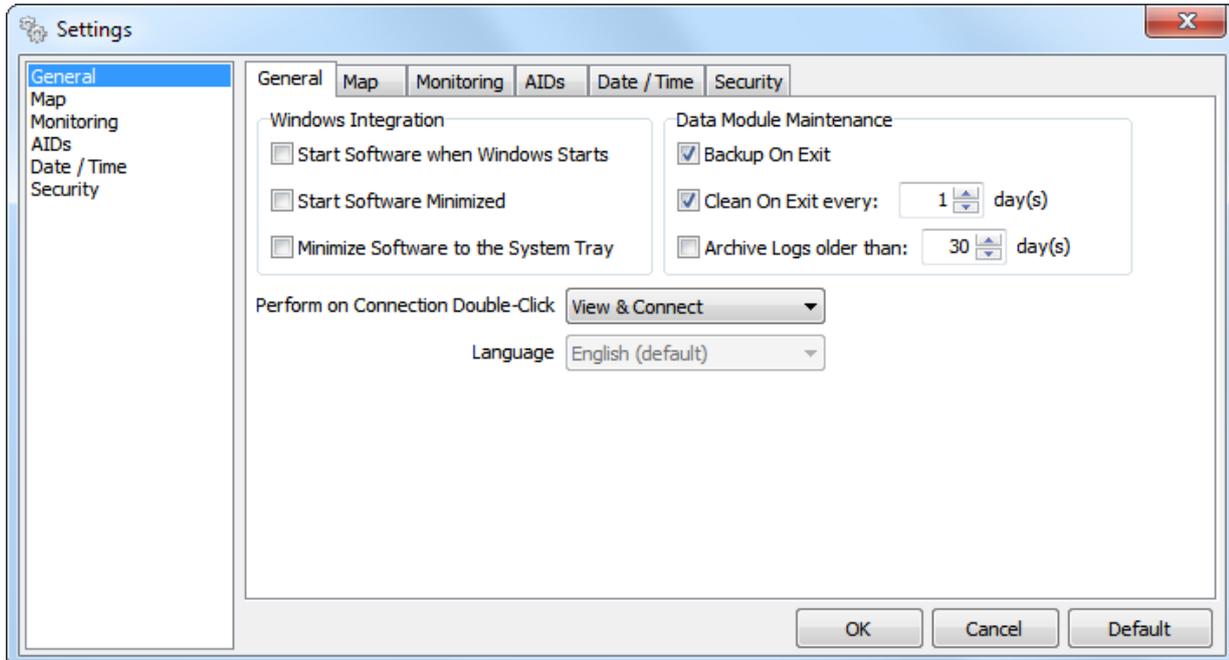
1. If not already done that, create a group of devices;
2. Click on Program Group  (or select it from the drop-down menu);
3. Specify the parameters to be changed (for example **PS**). If a parameter must remain unchanged, remove the tick placed in front the relevant parameter (for example, and as depicted below - **RT** and **Dynamic PS**).
4. Once ready, press the [Start] button and wait for the process to be completed.
5. The Software will automatically apply the change the specified parameters in all devices included in the group. Once the process is completed, a list with indicating green light against each device will appear. If the process fails, the light will be illuminated in red.



## Software Settings

A click on the “Settings” button  will open the “Software Settings Window”.

### GENERAL SETTINGS



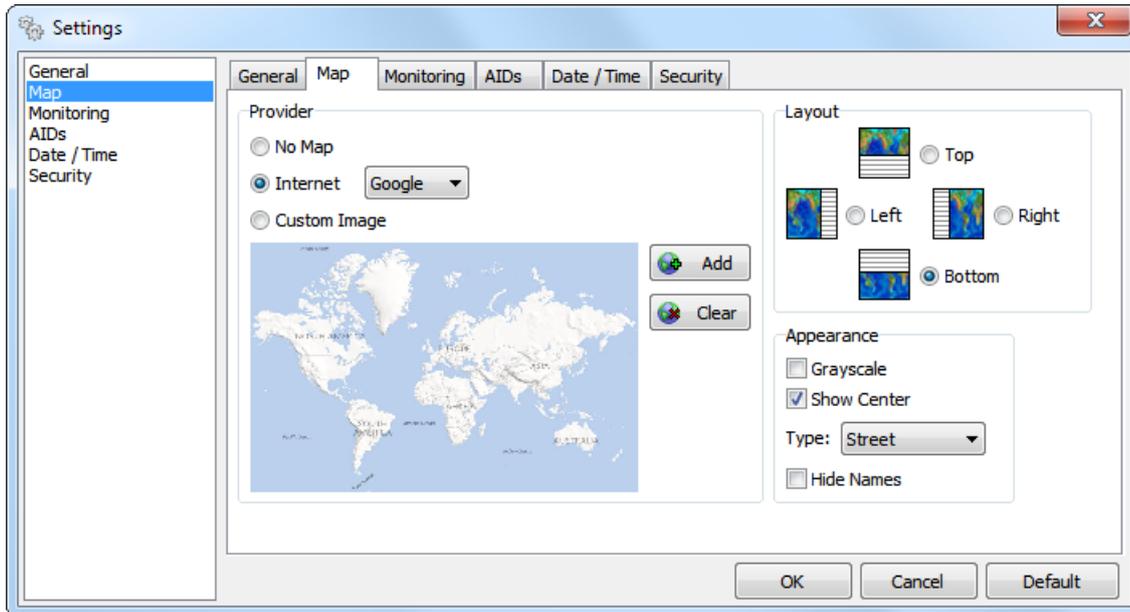
**Windows Integration** - Allows windows integration commands to be specified.

**Data Module Maintenance** – The general Maintenance settings are made trough this section. All parameters could be set according your preferences.

**Perform on Connection Double-Click** – The following options are available:

- View and Connect;
- Edit;
- View.

## MAP



This section gives you the opportunity to alter the look of the Map section placed in the main application window.

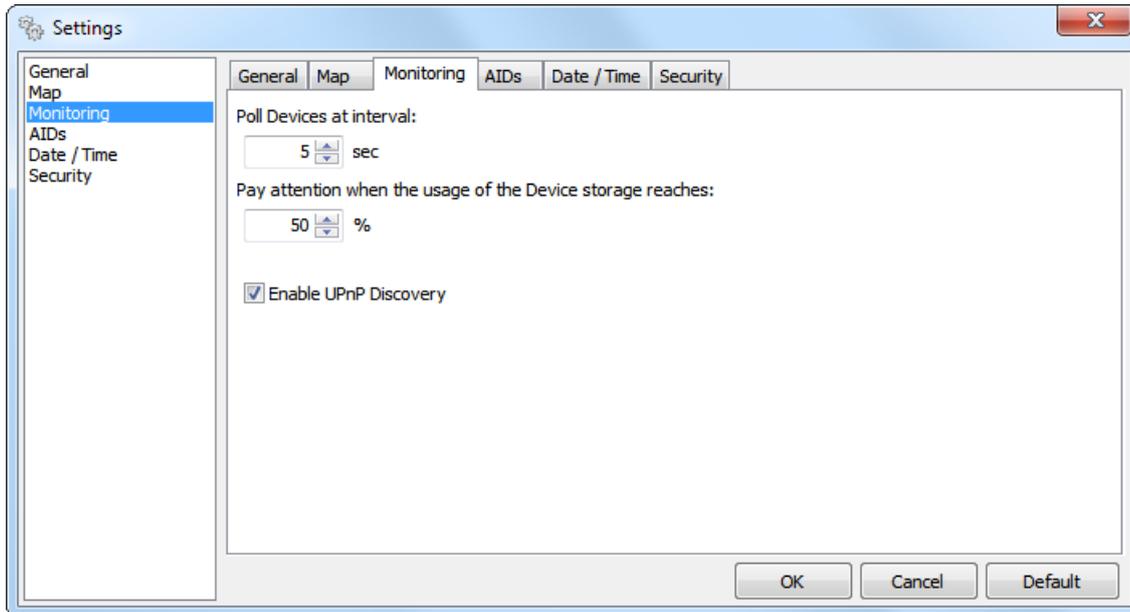
**Provider** - Depending on the requirements the map could be user-defined, or could not be used at all. Custom image may be added using the [Add] button – all types of images are supported. The currently employed user-defined map could be obliterated using the [Clear] button. In addition to Google Maps, Internet Map option allows the chinese map interface equivalent Baidu to be used.

**Layout** – The Map could be situated on the To, Bottom, Left or Right part of the screen

### Appearance

- Selecting the **Grayscale** option check box, will grayscale the map allowing easy monitoring of the current condition and position of the devices.
- **Show Map Center** – shows/hides the dotted lines used for indicating the map center.
- **Hide names** – The device's names could be made visible or not, by choosing the corresponding check box.
- **Type** - This option is available only when the chosen Provider is "Google Earth". Three types of Map visualization are utilized: Street map, Terrain map and Satellite map.

## MONITORING

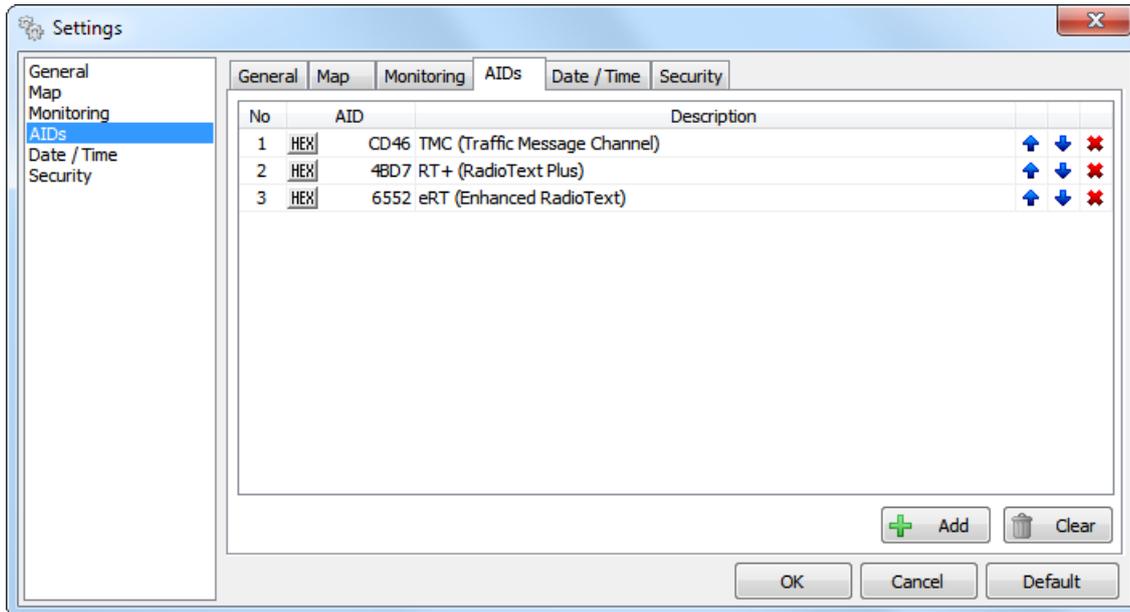


The managed network devices are polled periodically to synchronize the device status with the software. The Polling interval is set at 5 sec and can be changed by the user.

When the **Device Storage** reaches 50%, the Software will make an automatic notification. This value could be modified by the user.

The **UPnP Discovery** feature is enabled by default but can be disabled by the user. When the UPnP function is enabled, the software will find and add to the "Unknown Group" automatically all supported devices connected to the same network as your PC through USB or LAN. The device should be with activated UPnP in order to be discovered by the software.

## AIDS



Application identification for Open data (AID) Selector is unique identification associated with one ODA group. In order to facilitate the AID usage, the software offers predefined AIDs for most commonly used ODA Application.

A custom defined AID can be added as well by pressing the [+Add] button, and then specifying AID and description. To save the changes press [OK].

Pressing [Clear] will delete the entire list. In order for a particular AID to be deleted, press the [X] button placed on the right side of the AID. The [Up] and [Down] buttons will change the position of the AID in the list.

## DATE/TIME

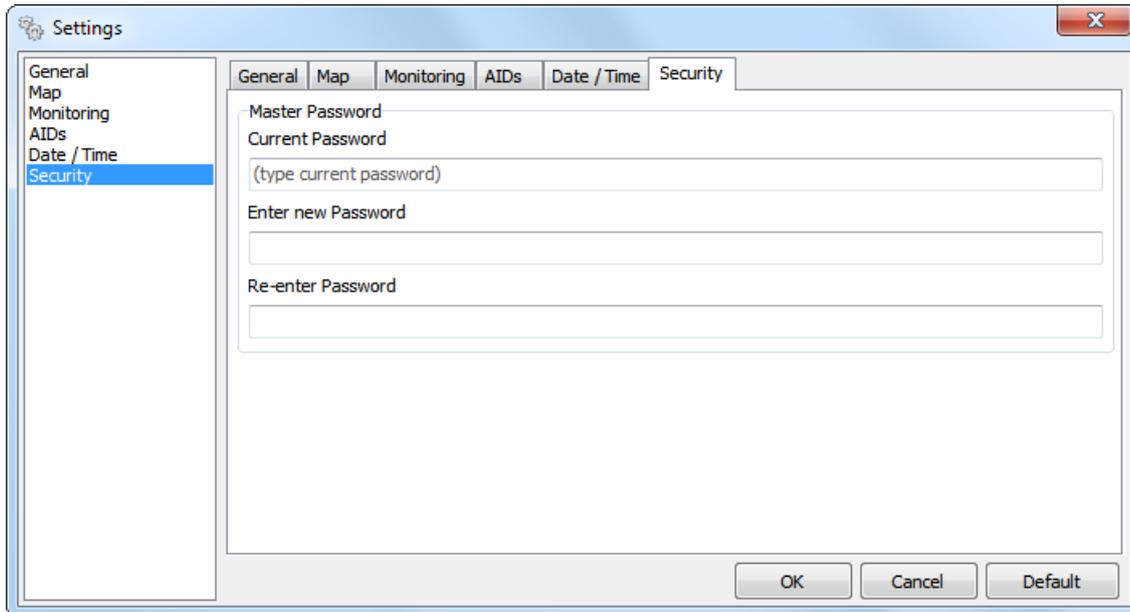
The screenshot shows the 'Settings' dialog box with the 'Date / Time' tab selected. The 'Custom' radio button is chosen. The 'Time' section has dropdowns for Hours (hh), Minutes (nn), Seconds (ss), AM/PM (--), and Separator (:). The 'Date' section has dropdowns for Day (dd), Month (mm), Year (yyyy), and Separator (-). The 'Order' section has radio buttons for 'Date, Time' and 'Time, Date' (selected), and a 'Separate With:' field containing a comma. The 'Examples' section shows 'Time: 11:48:14', 'Date: 23-01-2017', and 'Date/Time: 11:48:14, 23-01-2017'. Buttons for 'OK', 'Cancel', and 'Default' are at the bottom.

The system default settings can be used for displaying of the date and time or be customized. The software utilizes several types of visualization, depending on your requirements.

**NOTE:** These settings are not generally applicable. They are used only when it is appropriate.

## SECURITY

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The **Master Password** protects stored passwords used for an access to remote devices. If you share a computer with anyone, it is recommended that you use a master password. If you have set a Master password upon software's first activation, this section could be used for changing of the password.

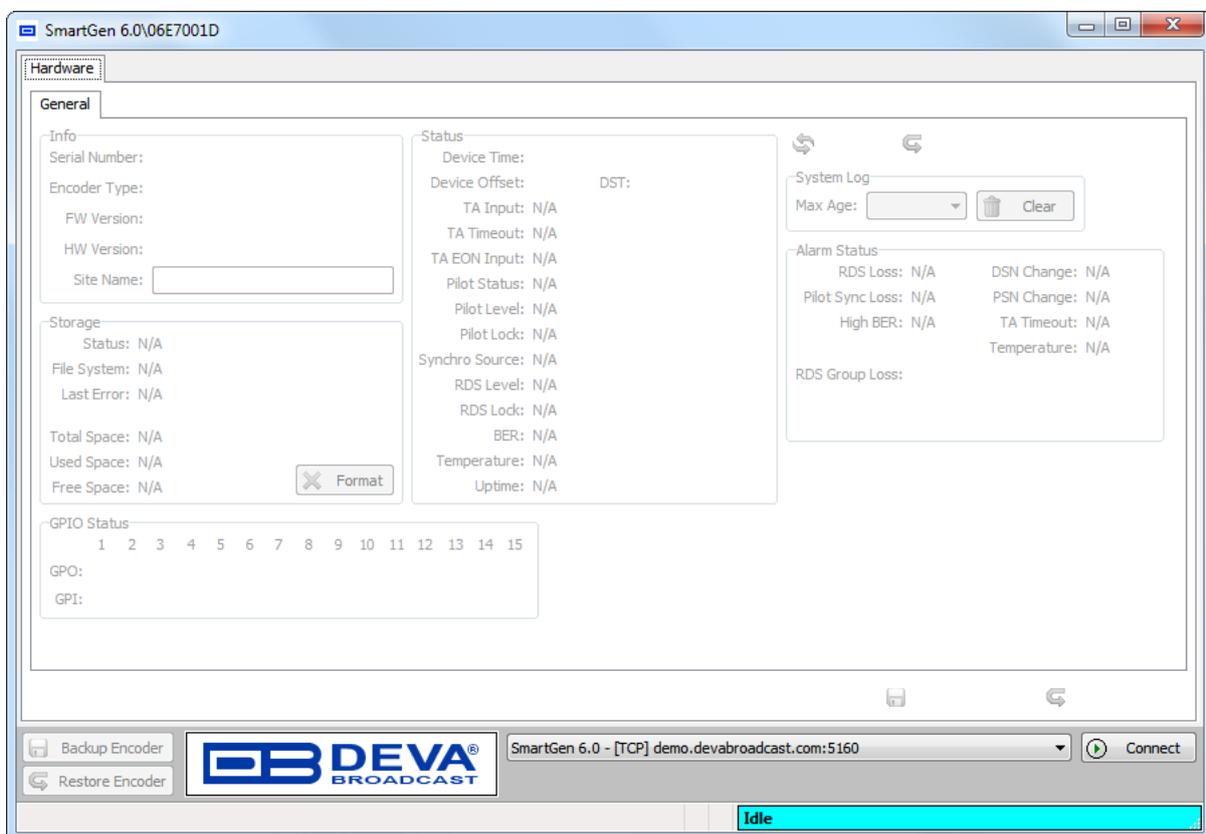
**NOTE:** Please make sure you remember the Master Password you have set. If due to any reason you forget your Master Password, contact us for detailed instructions on the reset procedure.

## Device Control Window

### SENDING AND READING DATA

The data resident in the SmartGen encoder memory may be downloaded back onto the software screen without interrupting the RDS transmission. This feature is useful for updating only certain fields of RDS data being transmitted, without having to re-enter the entire information. Just download the data with a click of the [Connect] button, then select the appropriate tab. Make changes in any of the fields, and then upload the new information to the encoder via the [Save Changes] button. If a change of the parameters is made, the [Save Changes] and [Revert Changes] buttons will be activated. To upload changes to encoder [Save Changes] button must be pressed. The [Revert Changes] (Undo) function will fill back the information last read from the encoder.

### MAIN WINDOW



The bottom section of the Software is permanent for all tabs and contains several interactive buttons and drop-down menus.

A click on the [Backup Encoder] button will commence the Backup procedure. First, you will be prompted for backup file name and folder to save it. A predefined name, that consist of the Encoder Serial Number and Date/Time of backup will be automatically generated. Once the name and directory are specified, all available settings and data will be read from the currently connected encoder and saved in .xml format.

**NOTE:** Interrupting the Backup process is not critical for the Encoder, but the backup data will be incomplete, and performing Restore is not recommended.

A click on the [Restore Encoder] button will start the Restore process. First, you will be prompted to Backup the encoder's data. Next, you will be acquired to select the previously created backup file and to confirm the Restore Process. Because some restoration data could be ambiguous or just erroneous (restoring from different encoder type) before actual restoration are performed preliminary checks. Warning messages intended to alert for some limitations, in contrast with errors which will stop the Restore might be generated. Once the Restore Process is completed the software will reconnect to the Encoder.

**NOTE:** The restore process is crucial and interrupting is not recommended, as this might cause malfunctioning of the Encoder. In case an intentional interruption, it is recommended emergency recovery of factory defaults to be performed.

All available connection presets are listed in the drop-down menu placed on the bottom right of the tab. Once selected, the preset will automatically fill the appropriate connection details in the fields below.

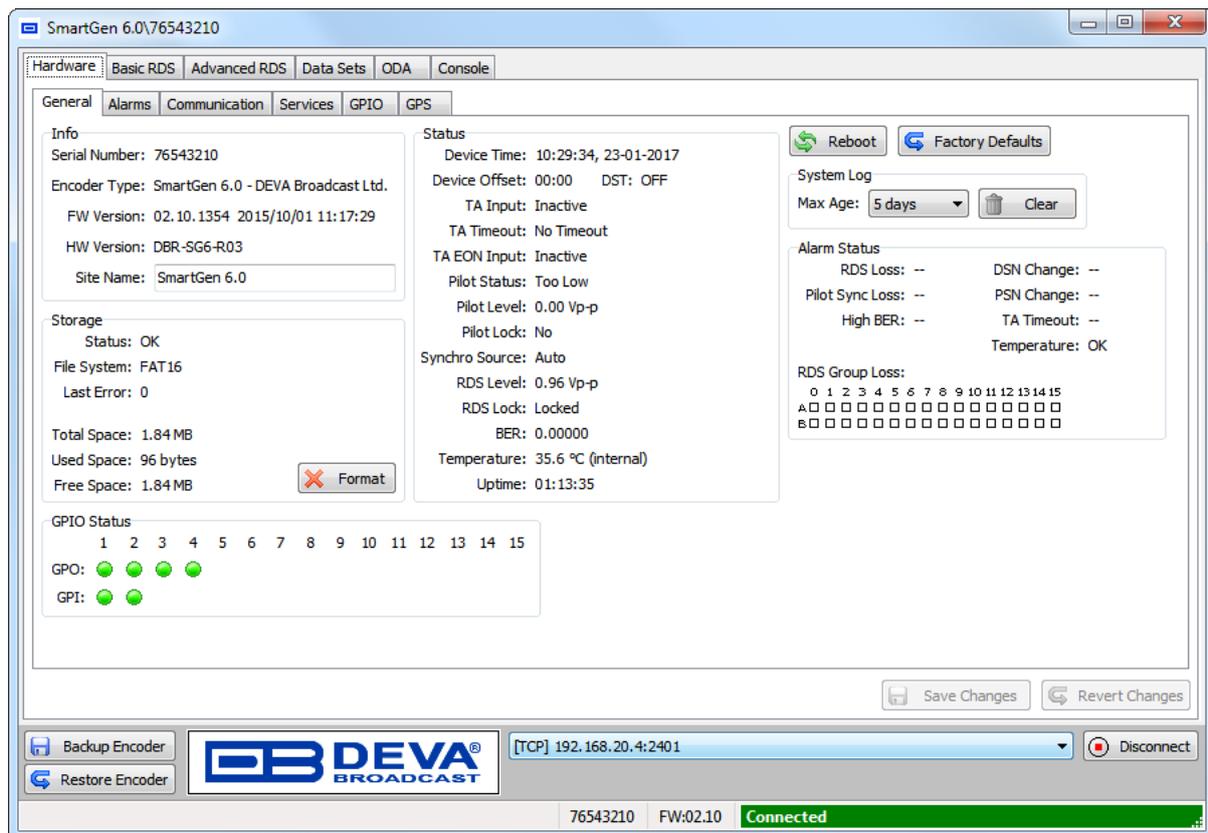
At the bottom of the section, you will find information on the Firmware version, Serial Number and information about the connection status.

## HARDWARE CONFIGURATION

Once read the Hardware configuration tab will be visible and ready for editing. All other tabs will also be enabled and ready for usage. As it is usual for all DEVA Software and WEB Interfaces, the tabs are divided into several subsections, each corresponding to relevant settings.

### General

*The 'Info' and 'Status' section of the 'General' tab will be active for all of the supported RDS/RBDS Encoders. The information considering Storage, Status, System Log etc. will be visible only for SmartGen 6.0 (as indicated below).*



### Applicable for all of the Supported RDS/RBDS Encoders

**Info** is intended for maintenance purposes and reads the hardware characteristics of the RDS/RBDS encoder. The only editable field is 'Site Name' (e.g. physical location).

**Status** is intended for real-time monitoring and includes Pilot, RDS and TA Input status. The information is updated automatically.

[**Reboot**] – will reboot the device

[**Factory Defaults**] – All DEVA RDS encoders can be restored to their 'Factory Defaults' from the non-volatile memory, when an emergency recovery is necessary. Hopefully this function will never be used. If needed, though, press the 'Factory Defaults' button.

**WARNING:** Perform Emergency Recover with caution, as the remote users would not be aware that the unit was restored to its factory defaults, hence they may cease communication with the device.

### Applicable only for SmartGen 6.0

**Storage** – Information about the device storage space is found in this section. The internal storage could be deleted by pressing the [Format] button.

**GPIO Status** – General Purpose Inputs/Outputs status is indicated here.

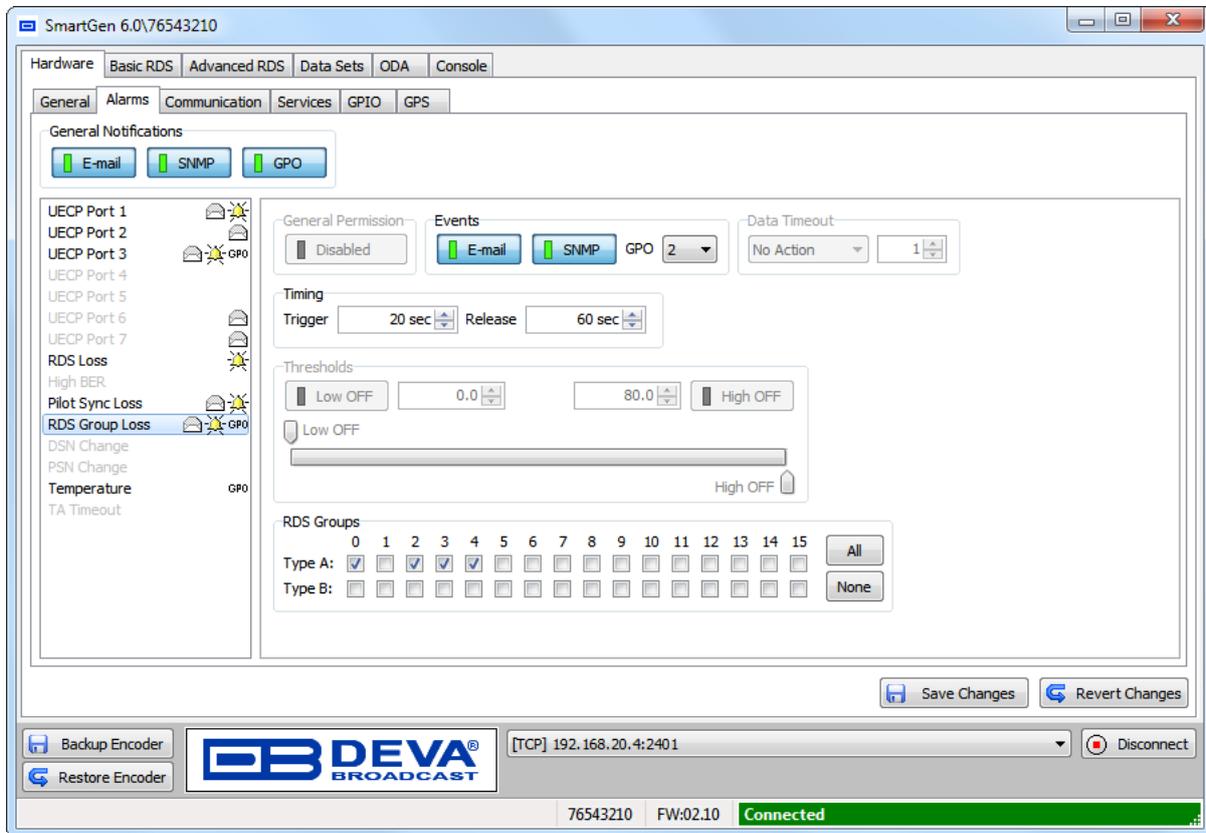
**System Log** – the maximum storage time of the log files is chosen from here. Log files older than the specified will be permanently deleted.

**Alarm Status** – If an alarm is generated, this will be indicated in this section of the Software.

**RDS Groups Loss** – When group presence is detected, corresponding LED illuminates in green. When group Loss is detected, corresponding LED illuminates in red. ([see “Alarm set-up for RDS Group Loss” on page 38](#))

## Alarms

*This function is supported only by SmartGen 6.0. Thus, the tab will not be active for the other RDS/RBDS Encoders.*



**General Notification** – Generally enables the type of notification/s to be used in case an alarm event is generated.

**NOTE:** Please note that if the types of alarm notification are generally disabled (from section ‘General Notifications’), nevertheless whether the alarm is turned on, an alarm notification will not be received and the event will be stored in the Log files of the unit.

The section below allows the alarms to be enabled and set at the preferred parameters. On the left part are listed all available alarms. Please have in mind that in order for an alarm to be activated the ‘General permission’ and ‘Events’ should be enabled/selected.

The setup for all parameters is simplified. Below is an explanation on the procedure depending on the Alarm:

### Alarm set-up for UECP Ports 1 to 7

1. Enable the ‘**General Permission**’;
2. Select the preferred alarm method(s)/‘Event’ – **E-mail**, **SNMP** or **GPO**. In order for the GPO notification to be enabled, the GPO port number should be specified from the drop-down menu;
3. Specify the ‘**Data Timeout**’ after which an alarm event should be generated.

### **Alarm set-up for RDS Loss, High BER, Pilot Loss**

1. Enable the '**General Permission**';
2. Select the preferred alarm method(s)/'Event' – **E-mail**, **SNMP** or **GPO**. In order for the GPO notification to be enabled, the GPO port number should be specified from the drop-down menu;
3. Specify the '**Trigger**' (waiting time before Active Alarm is generated) and '**Release**' time (waiting time before Idle Alarm is generated) after which an alarm event should be generated.

### **Alarm set-up for RDS Group Loss**

1. Select the preferred alarm method(s)/'Event' – **E-mail**, **SNMP** or **GPO**. In order for the GPO notification to be enabled, the GPO port number should be specified from the drop-down menu;
2. Specify the '**Trigger**' (waiting time before Active Alarm is generated) and '**Release**' time (waiting time before Idle Alarm is generated) after which an alarm event should be generated.
3. Selected the groups for which the alarms should be generated.

### **Alarm set-up for TA Timeout, DSN and PNS Change**

1. Enable the '**General Permission**';
2. Select the preferred alarm method(s)/'Event' – **E-mail**, **SNMP** or **GPO**. In order for the GPO notification to be enabled, the GPO port number should be specified from the drop-down menu.

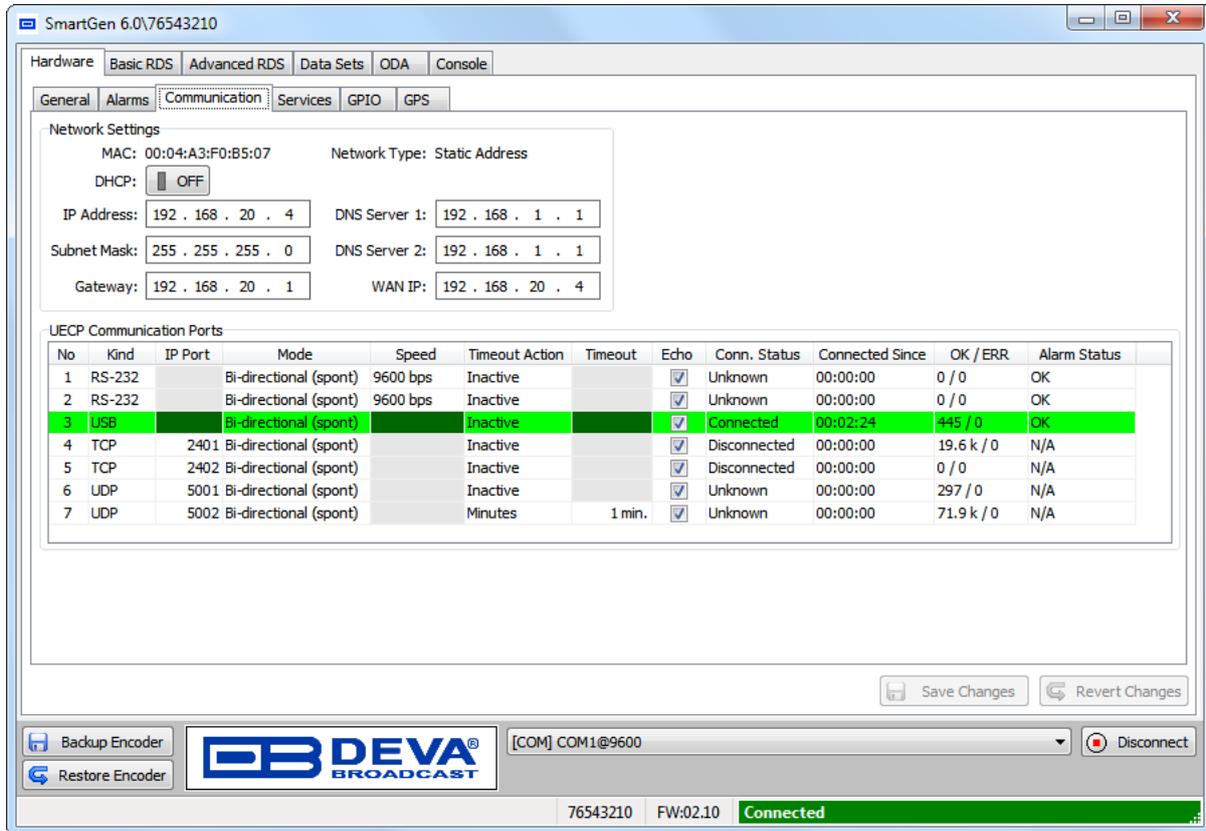
### **Alarm set-up for Temperature**

1. Select the preferred alarm method(s)/'Event' – **E-mail**, **SNMP** or **GPO**. In order for the GPO notification to be enabled, the GPO port number should be specified from the drop-down menu;
2. Specify the '**Trigger**' (waiting time before Active Alarm is generated) and '**Release**' (waiting time before Idle Alarm is generated) time after which an alarm event should be generated;
3. Specify '**Low**' and '**High**' temperature. In order for an alarm to be generated, the [Low] and [High] buttons should be enabled (turned on).

For additional information see [“APPENDIX E” on page 74](#).

## Communication

Depending on the RDS Encoder in use, some of the requisites in the 'Network Settings' section will be disabled. For example, DSN Server 2 and WAN IP are property of SmartGen 6.0 only.



The screenshot shows the 'Communication' tab in the SmartGen 6.0 software. The 'Network Settings' section is active, showing a static IP configuration. The DHCP is turned OFF. The IP Address is 192.168.20.4, Subnet Mask is 255.255.255.0, and Gateway is 192.168.20.1. DNS Server 1 and 2 are both 192.168.1.1. The WAN IP is also 192.168.20.4. Below this, a table lists UECP Communication Ports. Port 3 (USB) is highlighted in green and is in a 'Connected' state.

| No | Kind   | IP Port | Mode                   | Speed    | Timeout Action | Timeout | Echo                                | Conn. Status | Connected Since | OK / ERR   | Alarm Status |
|----|--------|---------|------------------------|----------|----------------|---------|-------------------------------------|--------------|-----------------|------------|--------------|
| 1  | RS-232 |         | Bi-directional (spont) | 9600 bps | Inactive       |         | <input checked="" type="checkbox"/> | Unknown      | 00:00:00        | 0 / 0      | OK           |
| 2  | RS-232 |         | Bi-directional (spont) | 9600 bps | Inactive       |         | <input checked="" type="checkbox"/> | Unknown      | 00:00:00        | 0 / 0      | OK           |
| 3  | USB    |         | Bi-directional (spont) |          | Inactive       |         | <input checked="" type="checkbox"/> | Connected    | 00:02:24        | 445 / 0    | OK           |
| 4  | TCP    | 2401    | Bi-directional (spont) |          | Inactive       |         | <input checked="" type="checkbox"/> | Disconnected | 00:00:00        | 19.6 k / 0 | N/A          |
| 5  | TCP    | 2402    | Bi-directional (spont) |          | Inactive       |         | <input checked="" type="checkbox"/> | Disconnected | 00:00:00        | 0 / 0      | N/A          |
| 6  | UDP    | 5001    | Bi-directional (spont) |          | Inactive       |         | <input checked="" type="checkbox"/> | Unknown      | 00:00:00        | 297 / 0    | N/A          |
| 7  | UDP    | 5002    | Bi-directional (spont) |          | Minutes        | 1 min.  | <input checked="" type="checkbox"/> | Unknown      | 00:00:00        | 71.9 k / 0 | N/A          |

**Network Settings** – The network addresses could be set manually (static IP) or automatically via a DHCP server. To set a static IP, Netmask, Gateway, DNS addresses and WAN IP, the DHCP should be disabled. In order for the built-in DHCP client to be activated, the function should be enabled. When the DHCP client is activated, all assigned values will be shown in the relevant fields.

**NOTE:** Because of your IP private configuration some modifications and customizations to the settings of your Router and Firewall might be needed in order for all the communication core requirements to be met.

**UECP Communication Ports** – here are listed all available communication ports. Have in mind that the different ports have some limitations as regards the settings to be applied. Columns Connection Status, Connected Since, Frames OK/ERR and Alarm Status have informative characteristics only.

Please note the following information:

- The TCP/IP ports cannot be duplicated;
- The ‘Mode’ can be changed, but it is recommended, unless you are an experienced broadcaster, the Bi-directional (spont) mode to be used;
- Timeout action – the following actions are available – Inactive, No Action, Minutes. In order for Timeout to be undertaken, “Minutes” should be set as Timeout Action;
- Echo – This option enables/disables the local echo for the corresponding port. It is applicable only for SmartGen 6.0.

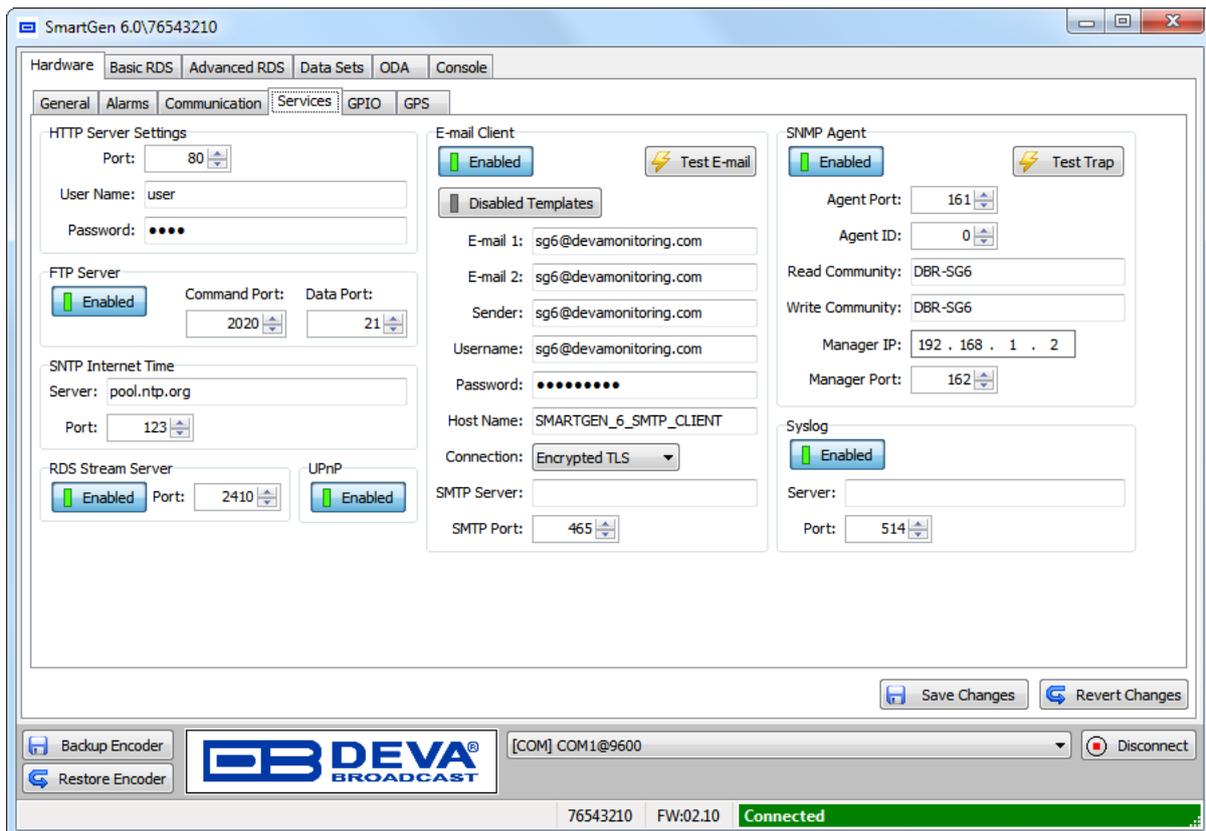
Below is a table indicating the settings to be applied for each of the communication ports.

| UECP Communication Ports | Settings |       |                |         |      |
|--------------------------|----------|-------|----------------|---------|------|
|                          | IP Port  | Speed | Timeout action | Timeout | Echo |
| RS-232                   | ✗        | ✓     | ✓              | ✓       | ✓    |
| USB                      | ✗        | ✗     | ✓              | ✓       | ✓    |
| TCP                      | ✓        | ✗     | ✓              | ✓       | ✓    |
| UDP                      | ✓        | ✗     | ✓              | ✓       | ✓    |

## Services

For the RDS/RBDS Encoders listed below, only the HTTP Server setting section will be visible. All other functionalities are supported only by SmartGen 6.0

- SmartGen 5.0 - Professional Dynamic RDS/RBDS Encoder, RS-232, USB & TCP-IP Ports, UECP Compatible
- SmartGen 4.1 - UECP Compatible RDS/RBDS Encoder with LAN & USB Connectivity
- SmartGen Mini - UECP Compatible, Compact RDS/RBDS Encoder with LAN & USB Connectivity



**HTTP Server** – Enable/Disable the HTTP Server. Specify the Server Port and session timeout.

**FTP Server** – Enable/Disable the FTP Server. Specify the Command and Data Ports to be used.

**SNTP Internet Time** – Synchronizes automatically SmartGen’s clock to a millisecond with the Internet time server. This function can be enabled in the ‘Advanced RDS’ tab and will be active only if Internet is chosen as a preferred ‘Sync Source’. (Specifying the server closest to your location will improve the accuracy).

**RDS Stream Server** – In order to use the RDS stream Server, enable this function and specify server port.

**UPnP** – Enable this function in order for the SmartGen to be accessible through the UPnP.

**E-mail Client** – Enter the desired alarm recipients in e-mail 1 and/or e-mail 2 fields. Fill in your e-mail account settings: Sender, Username and Password, Server, SMTP port and connection type.

We recommend you to use the [Test] button and generate a test e-mail, which upon success will be delivered to the specified E-mail 1 and/or E-mail 2.

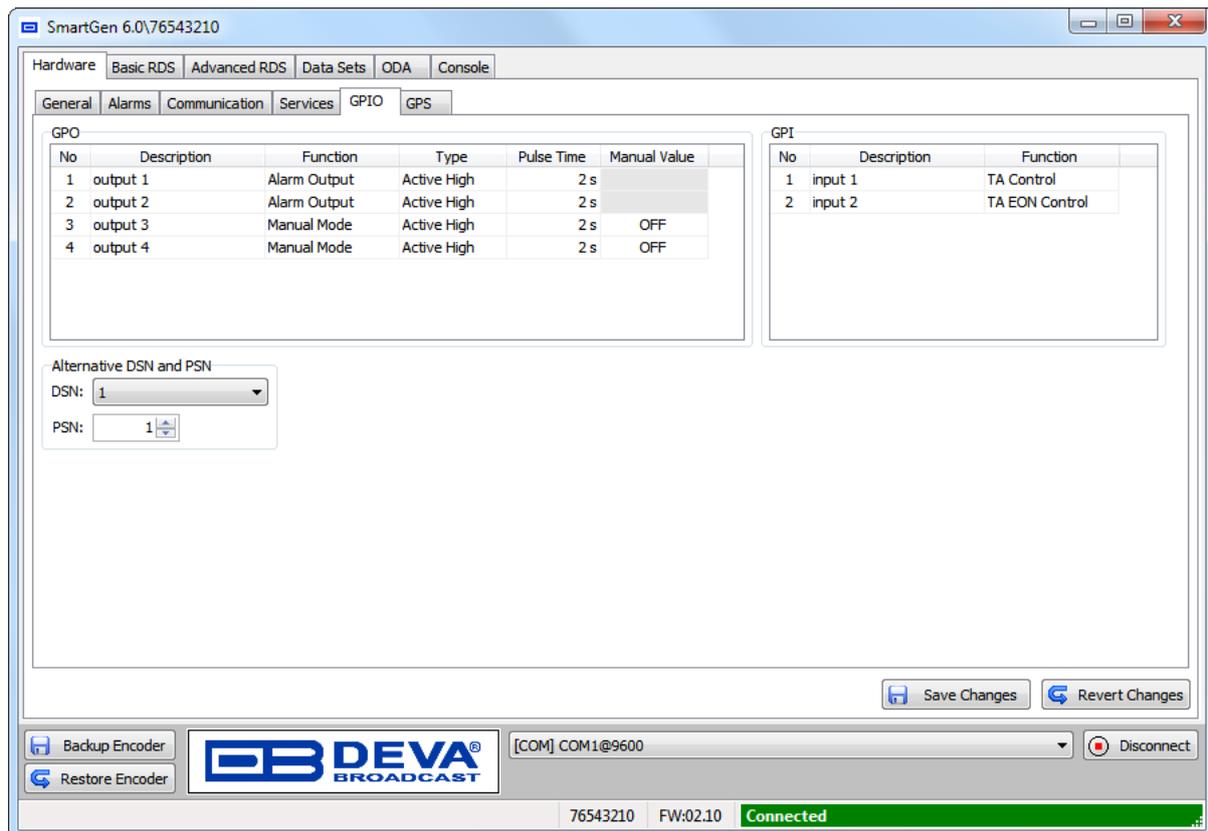
**SNMP Agent** – Enable the function in order to use it, and then specify Agent ID, Agent Port, Read/Write Communities, Manager IP, Manager Port and session timeout. Agent ID is used for identification of the device among others, when an SNMP notification is being sent. Once all needed settings are applied, use the [Test] button to generate a test notification, which upon success will be received by the SNMP Manager.

**Syslog** – Enable or disable the Syslog feature. Specify Server address and port to be used.

## GPIO

Only the GPO section will be visible for the RDS/RBDS Encoders listed below. All other functionalities are supported only by SmartGen 6.0

- SmartGen 5.0 - Professional Dynamic RDS/RBDS Encoder, RS-232, USB & TCP-IP Ports, UECP Compatible
- SmartGen 4.1 - UECP Compatible RDS/RBDS Encoder with LAN & USB Connectivity
- SmartGen Mini - UECP Compatible, Compact RDS/RBDS Encoder with LAN & USB Connectivity



The general purpose outputs/inputs settings are applied through this page.

Function, type and pulse time for each of the GPOs could be set individually. You can choose between the following functions: Alarm Output, Manual mode, RDS Lock, TA Flag, TA EON Flag and TP Flag. 'Type' is used for specifying of the active level. When an alarm is generated the output can change the level to Active High/Low or to generate Pulse High/Low.

**NOTE:** if the GPO's function is not assigned as "Alarm GPO" and the same is chosen as a preferred alarm, notifications will not be indicated, nevertheless one is being generated.

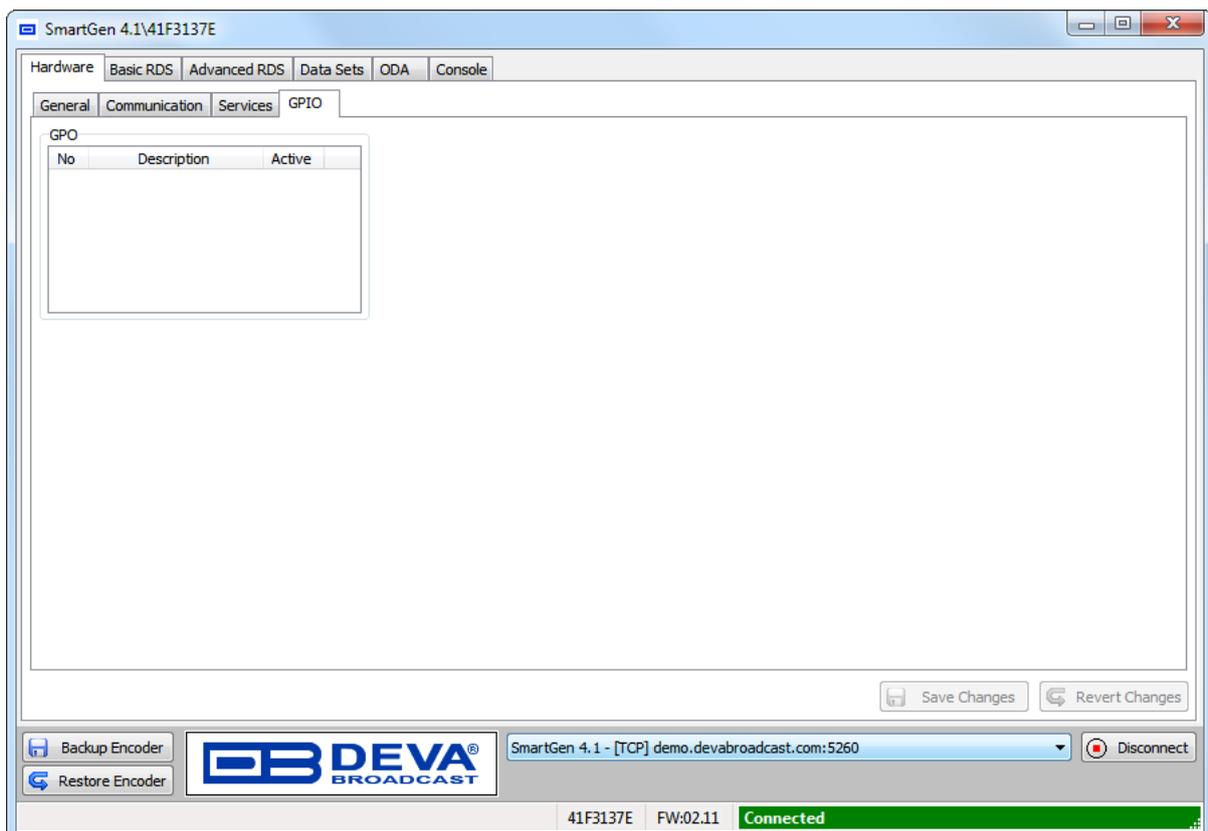
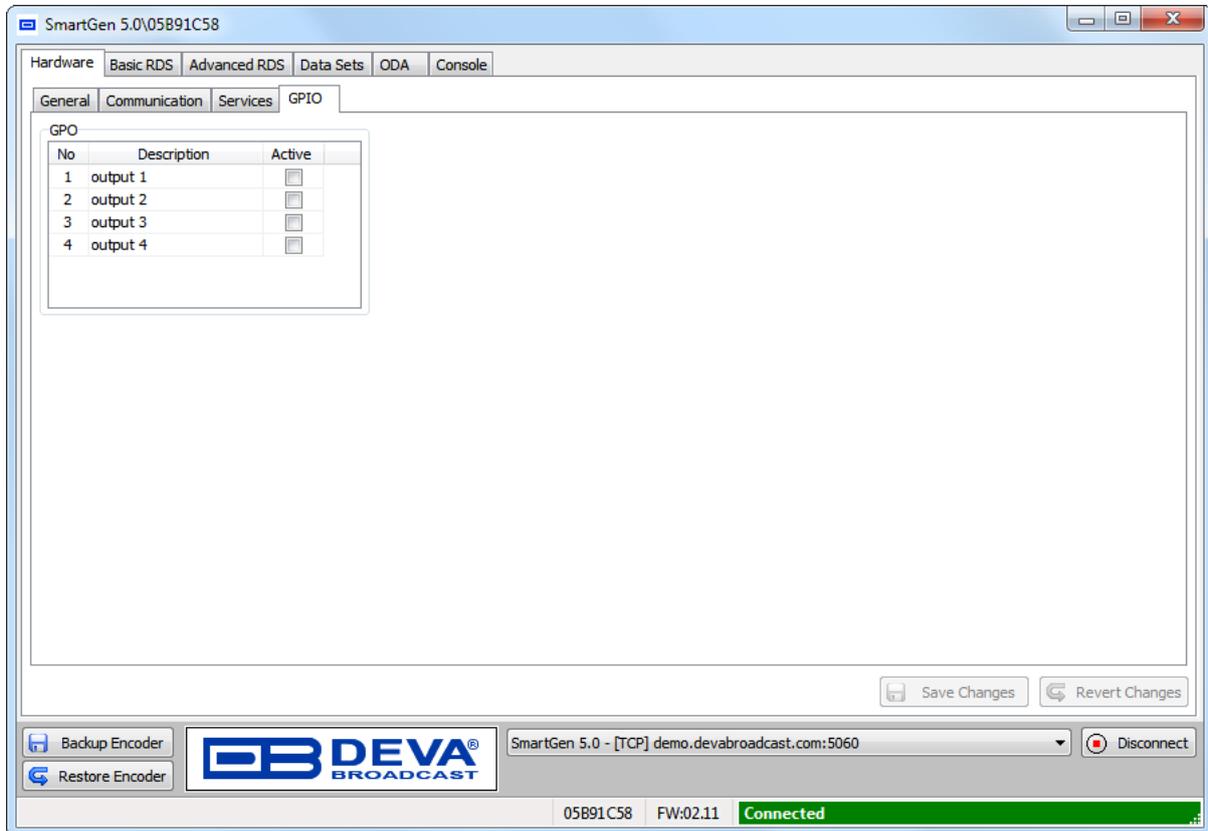
Port Description and Function for each of the GPIs could also be set individually. You can choose between the following functions: Not assigned, DSN Selection, PSN Selection, TA control, TA EON Control.

Alternative DSN and PSN can also be specified. They are used when DSN Selection, PSN Selection functions are selected.

Alternative DSN can be assigned with values from 1 to 6 (6 DSNs are available in SmartGen 6.0) and when GPI with DSN selection is activated, the DSN will become current, and Main PSN will be selected for this (alternative) DSN.

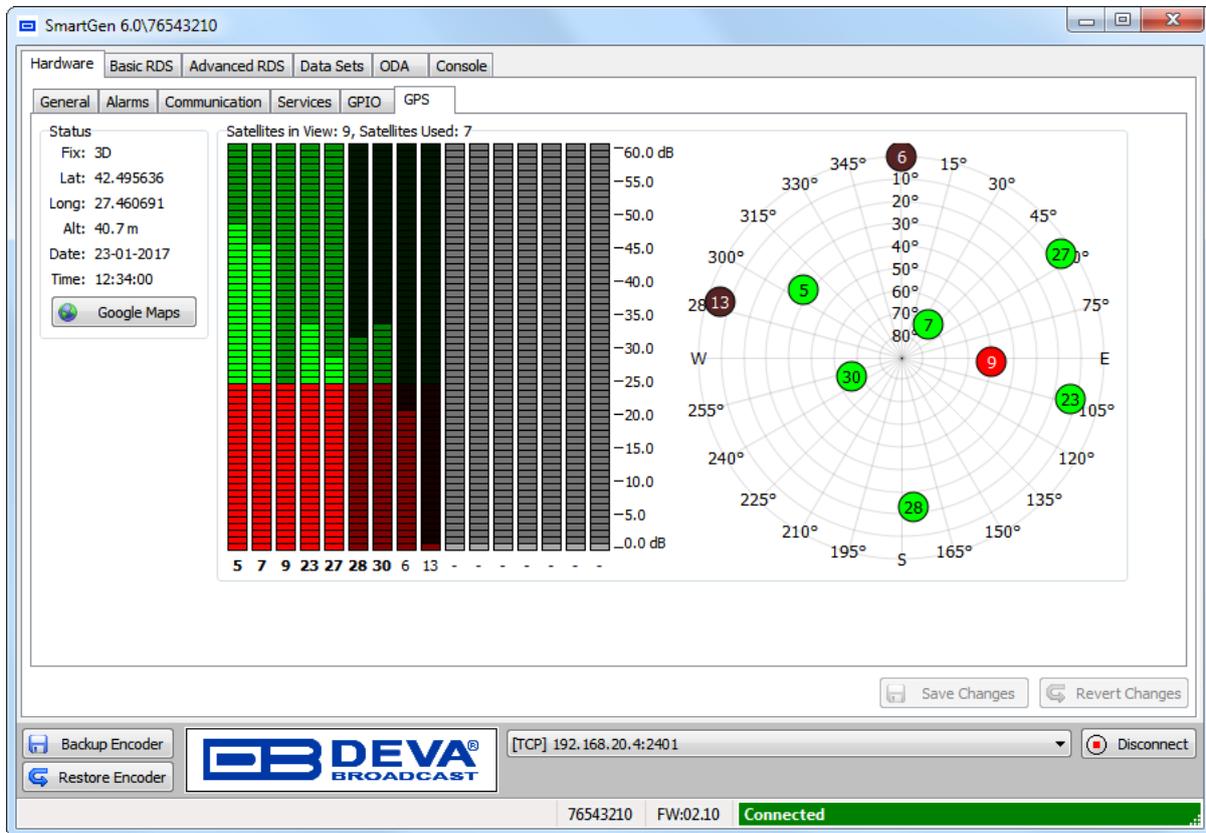
Alternative PSN – can be assigned with values from 1 to 255 and activation of the GPI with PSN selection. This PSN (if available) will become main PSN for the current DSN.

This is how the GPIO section for the RDS/RBDS Encoders models different than SmartGen 6 will look like:



## GPS

*This function is supported only by SmartGen 6.0. Thus, the tab will not be active for the others RDS/RBDS Encoders.*



GPS should be chosen as ‘Sync Source’ in order for the GPS to be available. The ‘Sync Source’ is set in the Advanced RDS tab.

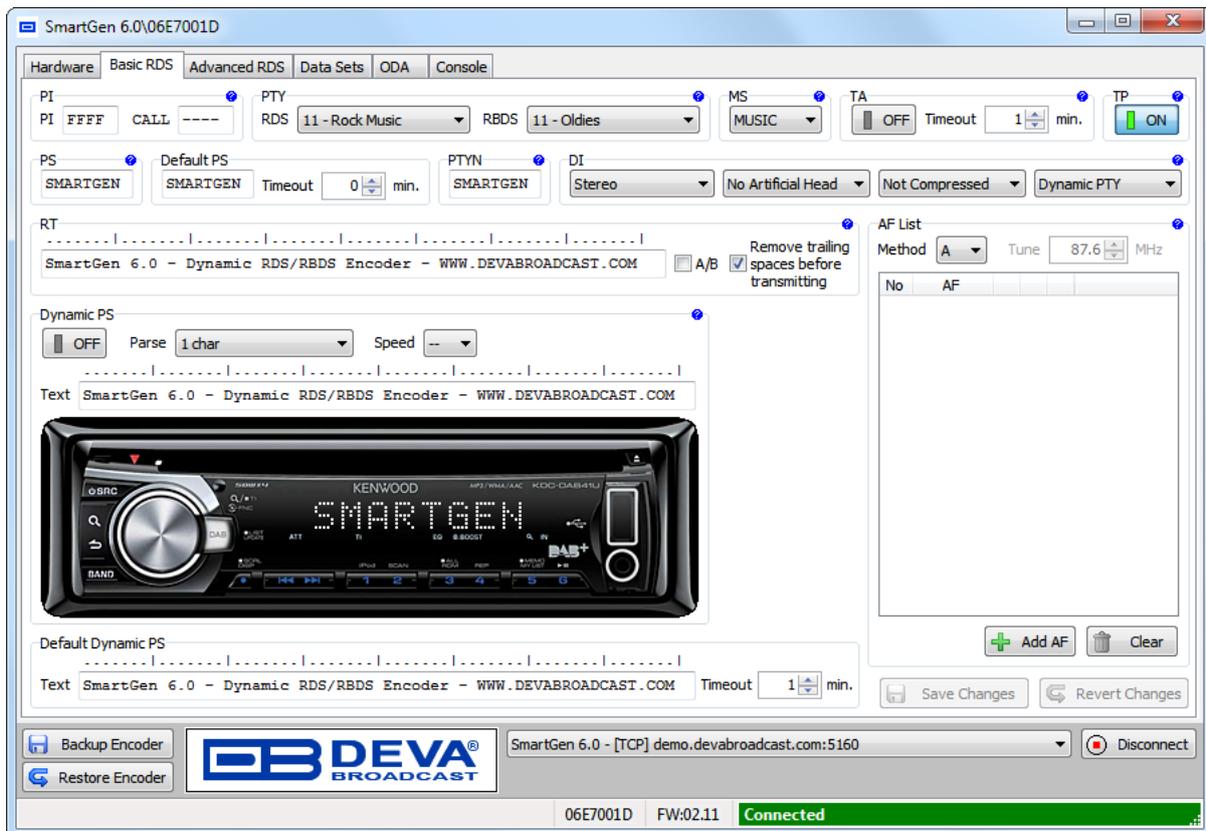
**Status** – This section contains information about the GPS attributes – Fix, Latitude, Longitude, Altitude, Date, Time. ‘View on Google Maps’ option is also available.

**Satellites in View** – This section contains information about satellites in view. The LED indicators show the reception quality for every satellite. The number beneath every LED is Satellite ID.

**Sky View** is an alternative representation of “Satellites in View”. Every satellite is represented as a 2D point in space, according to Elevation, Azimuth and signal quality of the satellite.

## BASIC RDS

*These functionalities are supported by all RDS/RBDS Encoders.*



In this tab you will find all the essential RDS parameters needed for the Basic RDS applications. Explanation of the most important basic RDS/RBDS parameters can be found below. For all other RDS/RBDS applications supported, please [refer to “APPENDIX B.1” on page 68](#).

**NOTE:** The question mark placed on the top right corner of each section is intended to provide you with details as regards the parameter. A click with the mouse will open an information balloon.

### PI Code Calculator

The PI code is your station’s ‘digital address’. This is a hexadecimal code that is assigned by an appropriate broadcasting authority in most countries, but in the United States the PI code is numerically calculated from the station’s call sign. We have provided a calculator utility within the SmartGen Encoders Manager. An in-depth discussion of the mathematical calculation is given in RDS/RBDS Standard.

To use the PI calculator for US ‘K’ and ‘W’ call signs, simply enter call letters into the CALL box. The hexadecimal code will automatically be calculated into PI box. If the hexadecimal code for a US station is known, you may enter it under PI, and then the Callsign will be calculated automatically into CALL box.

When PI calculator fails to calculate PI or CALL the corresponding box will be filled with ‘----’.

**Program Type (PTY)** Selection identifies the station’s programming format from a list. There are two lists, one for the European RDS system and one for the American RBDS specification, hence, open the appropriate drop-down list and select suitable PTY.

### **TA Timeout**

An optional safety feature is built into the SmartGen to guard against an extended software activated TA flag. For example, presuming that the TA flag has been activated via software command and the data link is suddenly lost. A command that deactivates TA flag would not be received, and the TA flag would remain raised indefinitely. As this is not acceptable, an automatic timeout option has been included for software-activated TA flags.

In order for this function to be used – the interactive TA button should be enabled. The timeout can be set from 1 to 255 minutes. This will automatically deactivate the TA flag after the programmed time has elapsed.

**NOTE:** The Timeout should not be used to define the actual period that the TA flag is raised. The TA flag must be reset to zero immediately following a traffic announcement. Again, it's best to use the manual switch option for this command as described in section “ACTIVATING THE TA FLAG” in the complete user manual.

### **Dynamic PS**

DPS is proprietary setting, which not conform with RDS/RBDS Standard. Because of driving safety considerations, broadcasters have, from the start, been discouraged from making the PS “dynamic”; that is, to send long messages in a succession of 8-character frames. As a matter of note, it remains a violation of both the CENELEC and the NRSC standards to flash or scroll the PS display. Nevertheless, this nefarious practice of “Scrolling-PS” has become very common, both in the US and abroad.

The Dynamic PS can hold up to 64 characters of text, which can be made to scroll across the RDS radio faceplate. Left undisturbed, the encoder will scroll the same message endlessly.

**Parsing** is the encoder’s “smart” mode of message transmission. Parsing breaks messages down into meaningful character groups for efficient display on the 8-character alphanumeric readout common to all RDS receivers.

When **Parse** is set to 0 (words centered) or 9 (words left justified) parsing sends short words together. Longer words, up to and including 8 characters, are sent individually. Words that exceed 8 characters are “sidestepped” through two or more consecutive displays.

When **Parse** is set between 1 and 8 the message is scrolled 1 to 8 characters at a time without divisions into word groups.

Immediate preview of Dynamic PS could be seen on virtual Radio faceplate. Feel free to experiment with different Text and Parse values.

**NOTE:** When the Dynamic PS is turned OFF, the Preview will show the PS instead.

**PLEASE HAVE IN MIND** that changing the ‘Speed’ is not a permanent setting and will not be saved. Upon next log-in the value will be as per default.

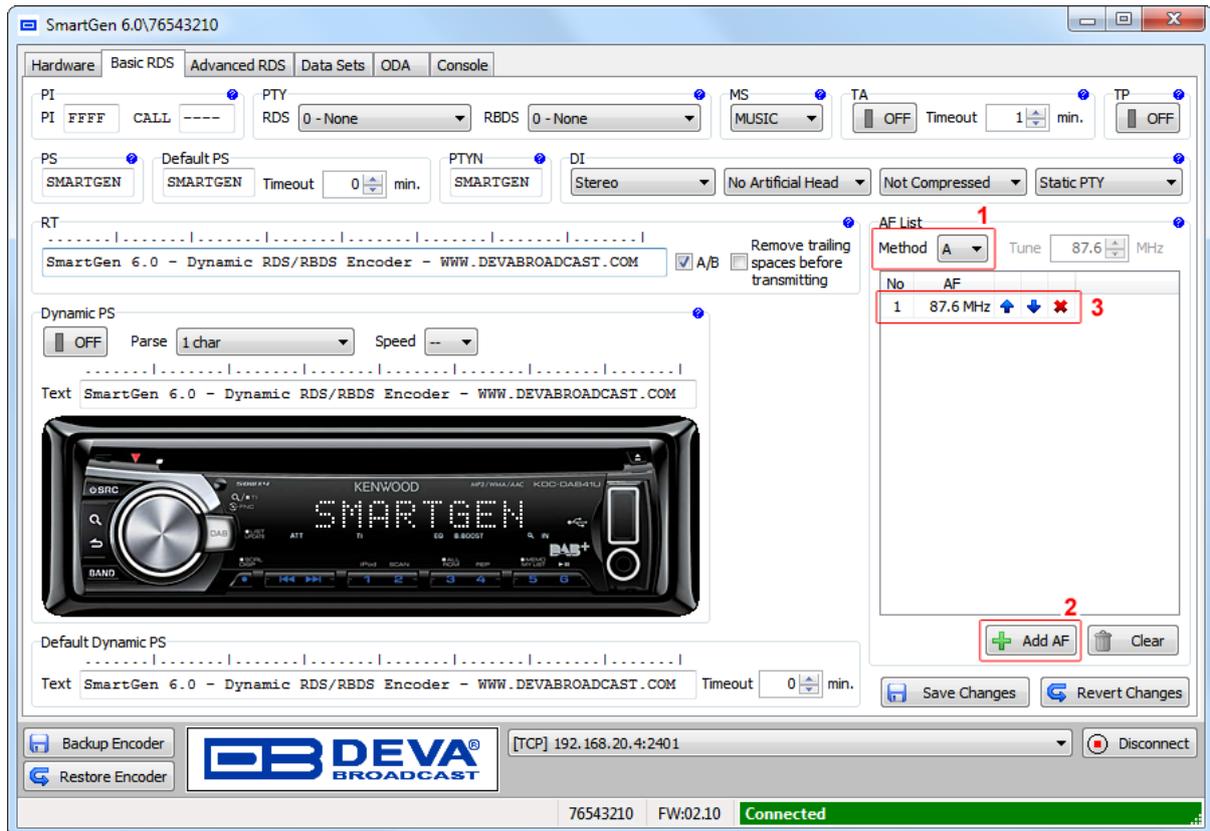
*These functions are supported only by SmartGen 6.0. Thus, they will not be active for the others RDS/RBDS Encoders.*

**Remove trailing spaces before transmitting** - Trims the radio text trailing spaces with carriage return symbol (\$0D), when the radio text is shorter than 64 symbols.

**Default PS / Default Dynamic PS** – replaces the broadcasted PS string with the specified Default PS, when the option is enabled, and the timeout expired. This option is very convenient when the PS is set by an automation software as it prevents transmission of outdated PS string, in case of connection loss between the SmartGen and the automation software.

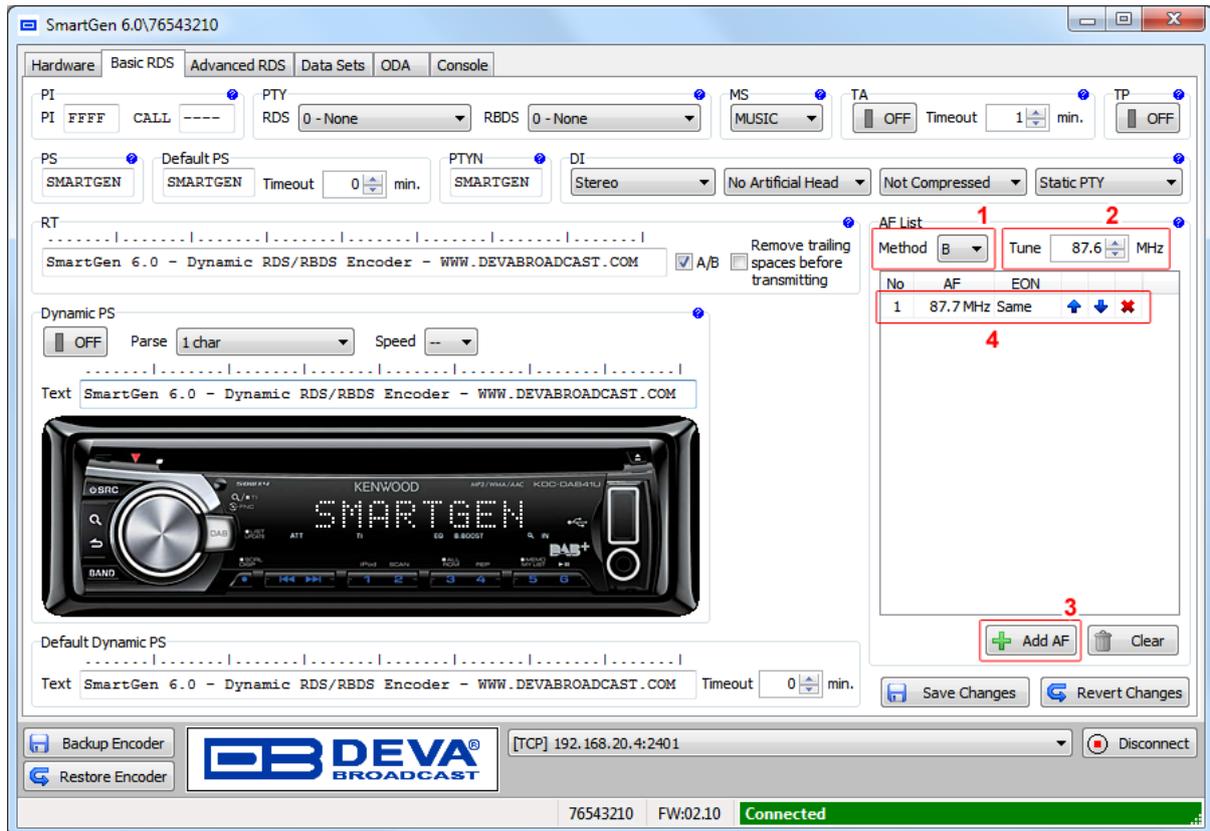
**Default PS Timeout / Default Dynamic PS Timeout** – Enables and sets the Default PS/DPS timeout in minutes. When the timeout is set to 0 (Timeout=0) the function is disabled.

## How to add a new AF by Method A



1. Select Method A;
2. Press [+Add AF];
3. Specify frequency by typing it in the relevant field, or via the [Up] and [Down] buttons, placed on the right of the frequency box (spin control);
4. Repeat steps from 2 to 3 for all AF Method A to be added;
5. Press [Save Changes].

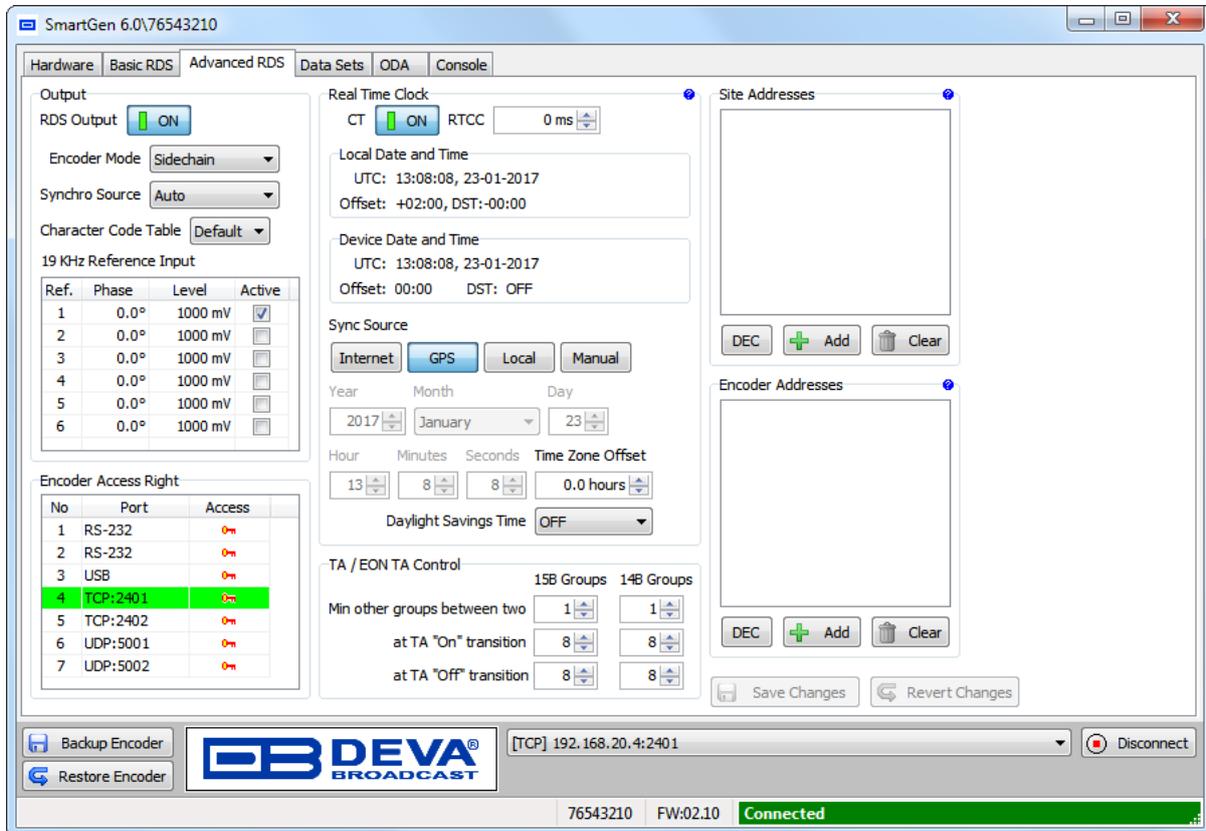
## How to add a new AF by Method B



1. Select Method B;
2. Specify tuning frequency (Tune);
3. Press [+Add AF];
4. If not already done that, specify frequency by typing it in the relevant field, or via the [Up] and [Down] buttons, placed on the right of the frequency box. Then from the drop-down menu specify Same or Regional;
5. Repeat steps from 3 to 4 for all AF Method B to be added;
6. Press [Save Changes].

## ADVANCED RDS

*These functionalities are supported by all RDS/RBDS Encoders. Except for the GPS ‘Sync source’ function, enabled for SmartGen 6.0 only.*



This screen reads the parameters for control and adjustment of the SmartGen. The unit should be properly configured for the preferred operating mode (sidechain or loop-through) before it is installed in the signal path. All the needed settings are applied in section ‘**Output**’.

The “**Real Time Clock**” function provides several types of Sync sources that you can choose from. The need of highly-accurate time source is satisfied not only by the supported SNTP (Simple Network Time Protocol), but for SmartGen 6.0 also by the built-in GPS Module. The used GPS technology provides a means for synchronizing the unit with UTC. Once the preferred ‘Sync Source’ is selected, the Time Zone Offset should be set manually (Local time excluded, as the values will be automatically assigned from the computer’s time).

The **Daylight Saving Time** mechanism operates in four modes:

- **Auto USA** – will apply the rules used in the US and Canada (as of 2007);
- **Auto EU** – will apply the rules used in the European Union;
- **+1** – will apply constant DST (one hour);
- **OFF** – will not apply DST.

All needed settings for the **TA and EON TA Control** are also applied through this tab of the Software.

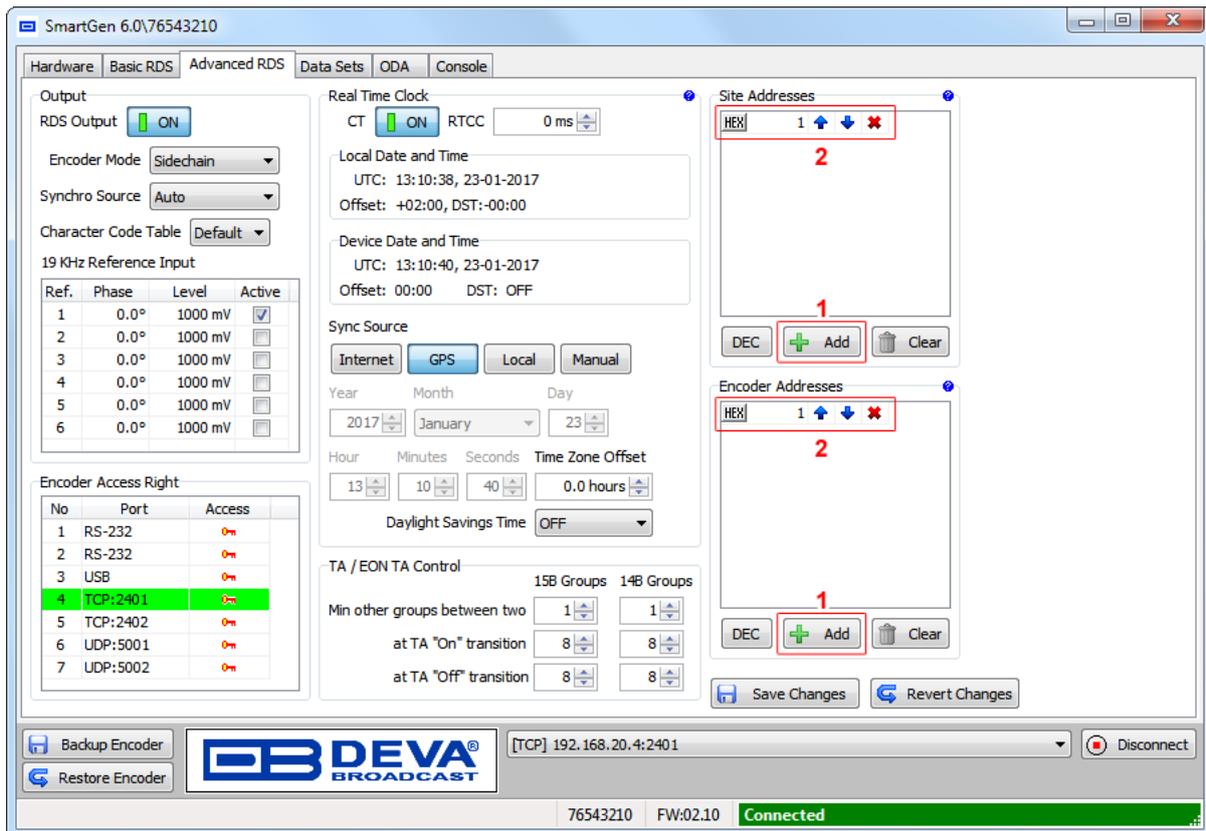
**Site Address & Encoder Address** – Each encoder has two address lists, one of acceptable site addresses and the other of acceptable encoder addresses. The site address list includes “0” (the global site address), the unique site address and any additional site group addresses. The

encoder address list includes “0” (the global encoder address), the unique encoder address and any additional encoder group addresses. See UECP Specification for detailed explanation about Encoder Addressing.

To add new Site/Encoder Addresses, press the [DEC]/[HEX] button to select the proper value, then press [+ Add] and specify number from the drop-down menu, or just type it in the field.

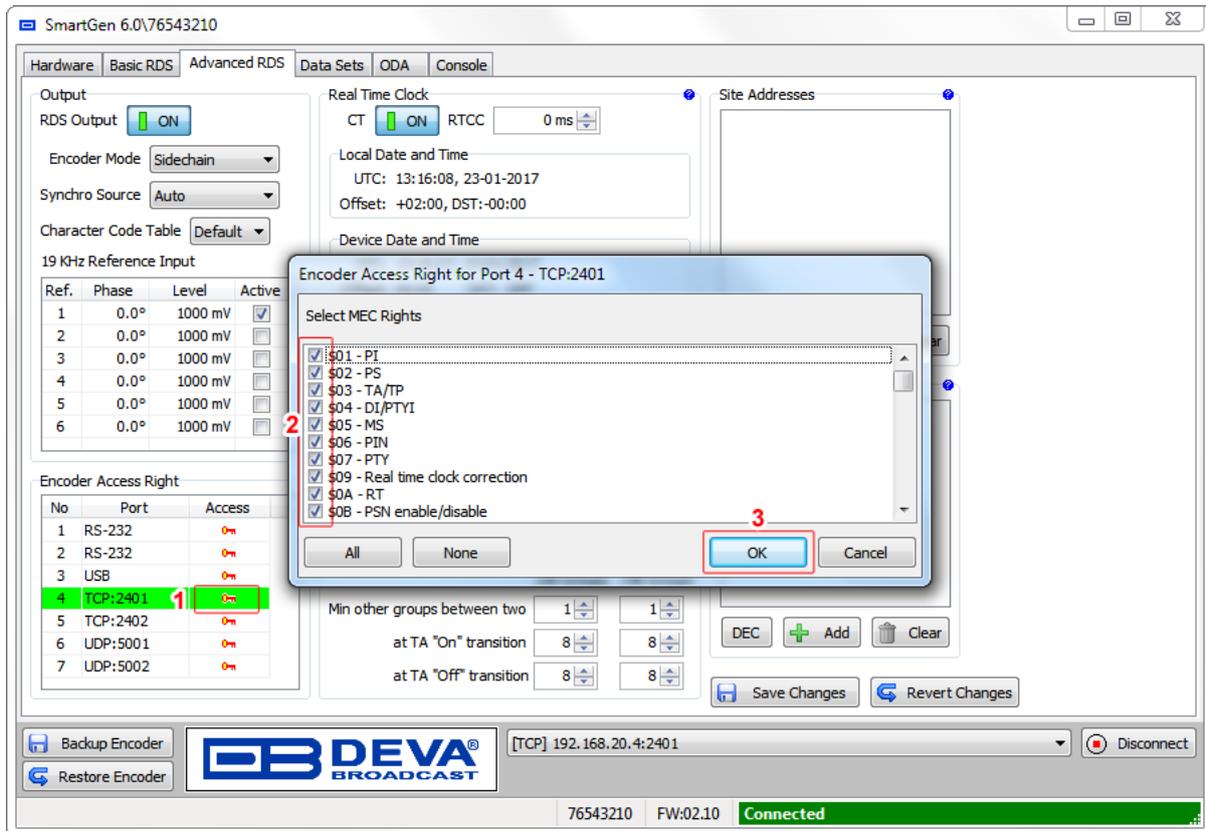
## How to add Site/Encoder address

The procedure is identical and explained in details below



1. Press [+Add];
2. Specify Address by typing it in the relevant field, or via the [Up] and [Down] buttons, placed on the right of the address box
3. Repeat steps from 1 to 2 for all addresses to be added;
4. Press [Save Changes].

## How to manage the Encoder Access rights



1. Click on the key icon, placed right next to the Port you would like to manage;
2. Select the MEC rights for the port.
3. Once ready, press [OK];
4. Repeat steps from 1 to 3 for all Ports to be managed;
5. Press [Save Changes].

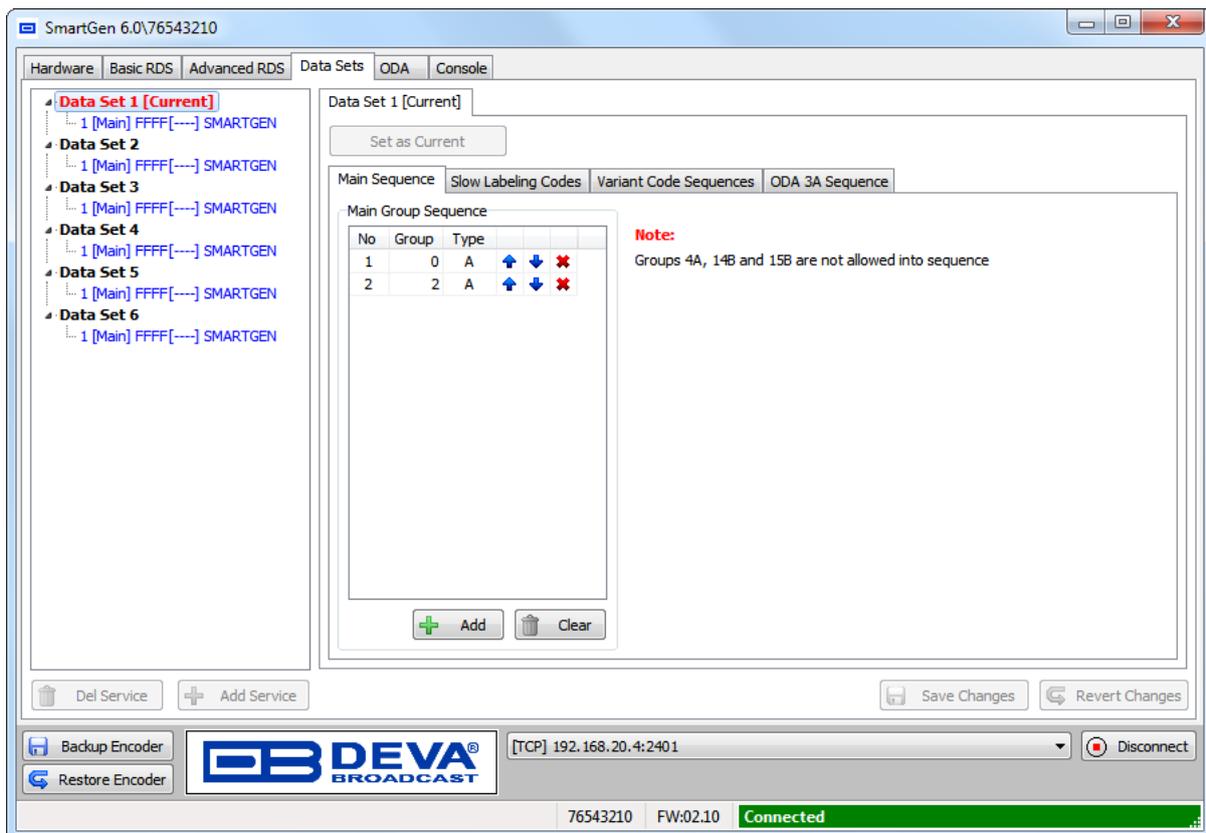
## DATA SETS

An encoder has one or more data sets, and each of them results in a particular RDS output. Each data set may refer to many Program Services using the RDS EON feature. Only one data set is responsible at any one time for the encoder's output and is known as the Current Data Set.

On the left side are visible the currently available Data Sets with their respective Program Services. The Current Data Set is colored in red.

### Main Group Sequence

*These functionalities are supported by all RDS/RBDS Encoders.*

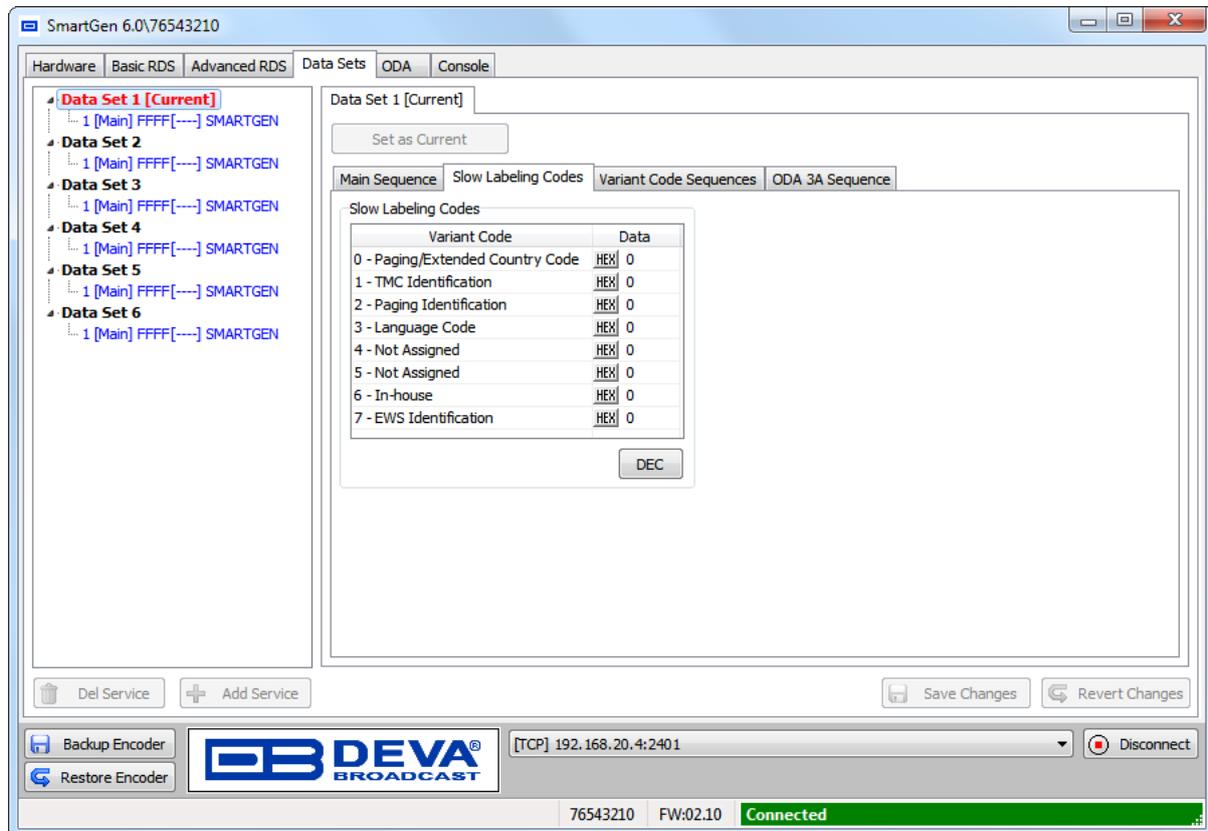


The **Main Group Sequence** has direct influence over the transmission of RDS groups, their succession and repetition rate. Unless there are any special conditions, it is recommended at least 0A and 2A groups to be included in the sequence, because they carry the basic RDS information - PS, TA, MS, DI, AF and RT.

**NOTE:** The Group Sequence cannot be left empty. Groups 4A, 14B and 15B are not allowed in the Group Sequence, they are generated automatically. Groups 2A and 2B cannot coexist.

## Slow Labeling Codes

*These functionalities are supported by all RDS/RBDS Encoders.*

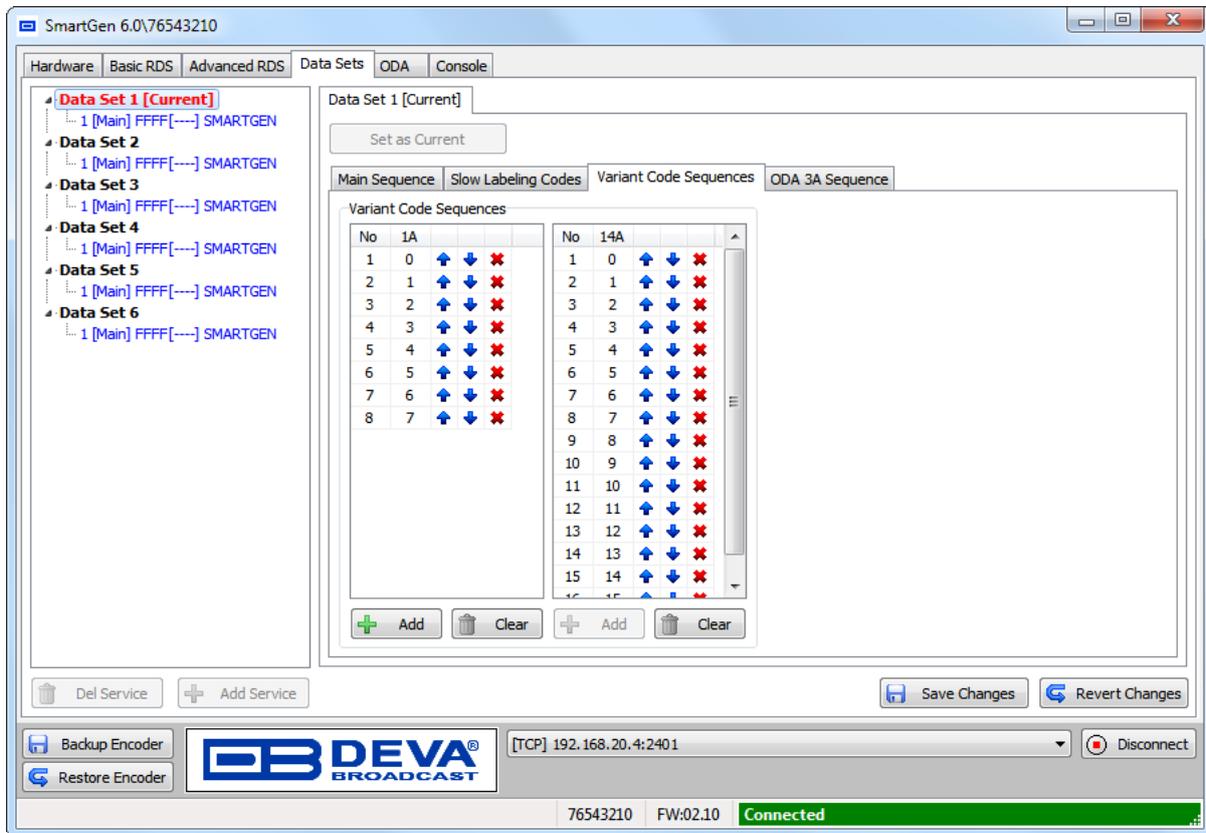


The 'Slow Labeling Codes' are transmitted along with 1A group and their SLC values can be defined through this section of the software. Please have in mind that the transmission of SLC depends on Variant Code Sequence and some of the Variant Codes are dynamic (e.g. TMC, EWS). For further information refer to RDS/RBDS standard and UECP Specification for detailed information.

**NOTE:** To edit the data, click on the row to be edited, then on the Data field.

## Variant Code Sequence

*These functionalities are supported by all RDS/RBDS Encoders.*

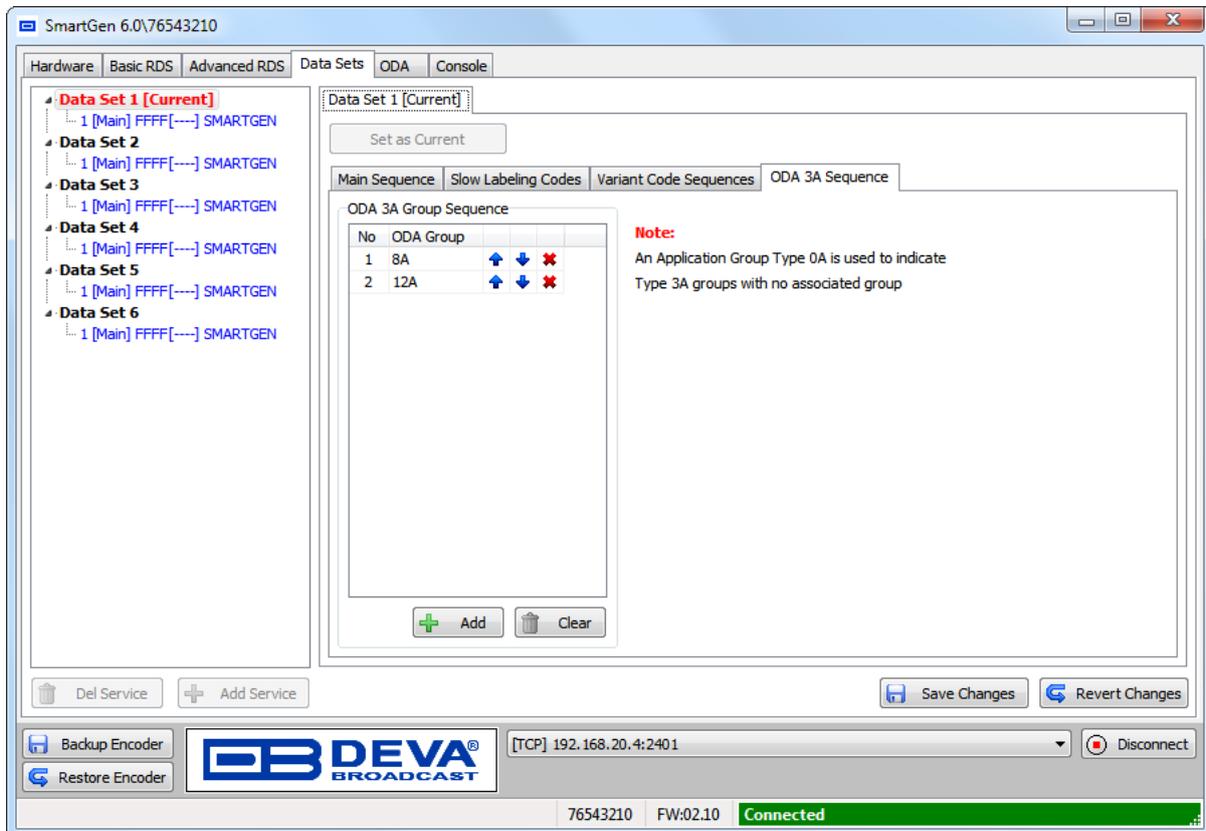


There are two Variant Code Sequences. One for transmission of VC carried in group 1A and one for group 14A.

**ATTENTION:** It is important that the Variant Codes in group 1A, which denotes Slow Labeling Codes, not to be confused with Variant Codes in group 14A, which carry the EON information.

## ODA 3A Sequence

*These functionalities are supported by all RDS/RBDS Encoders.*



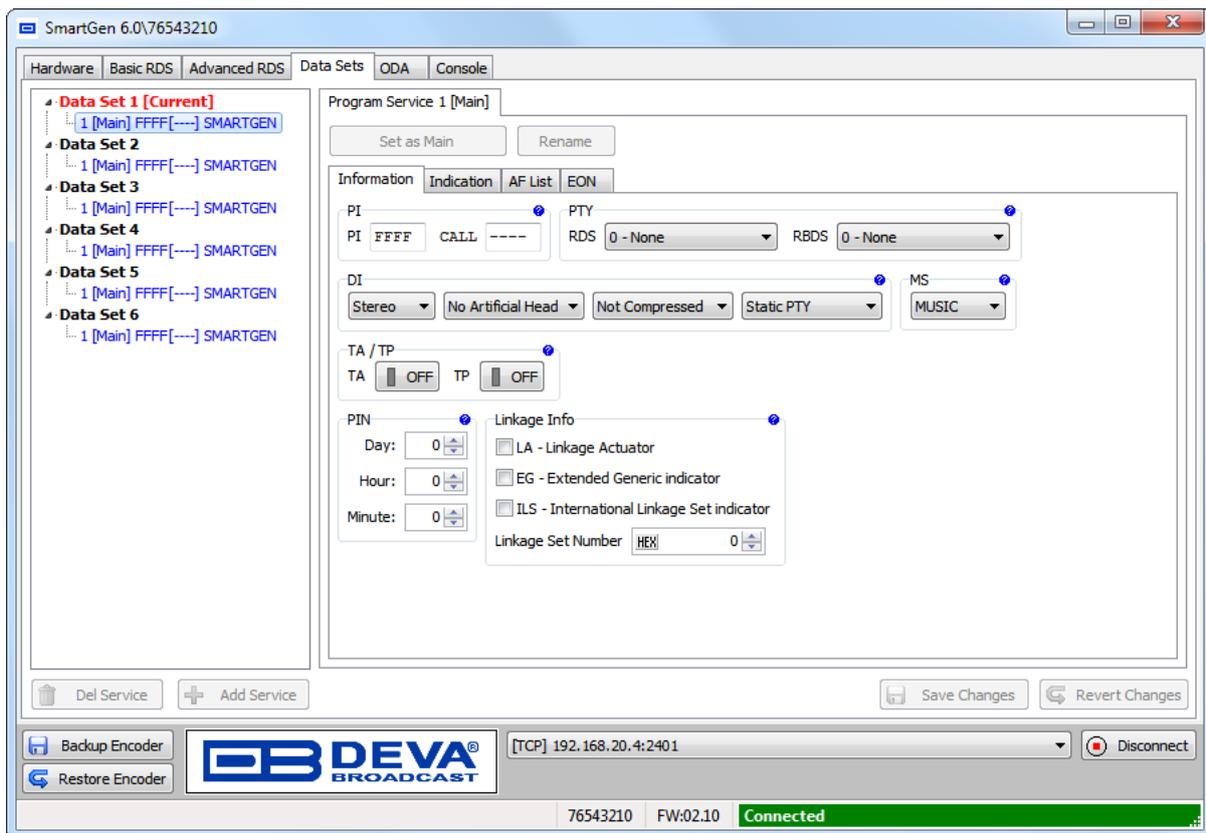
This sequence is responsible for succession of the ODA Identification, which is transmitted with group 3A. For further information, please refer to the RDS/RBDS standard.

## PROGRAM SERVICES

The Program Service can be set to Main or EON. Only one Main Program Service at a time can be active. The Main and EON information do not mutually restrict the editing, but the encoder decides which information to use with reference to the Service role (i.e. Main or EON). Service may become Main or EON every moment without need the information to be edited.

### Information

*These functionalities are supported by all RDS/RBDS Encoders.*



PI and PS are used as identifiers to distinguish every Program Service when looking at the left-side Data Set tree-view. If Program Service is not designated as Main, there is an option to be disabled at all (from the EON tab).

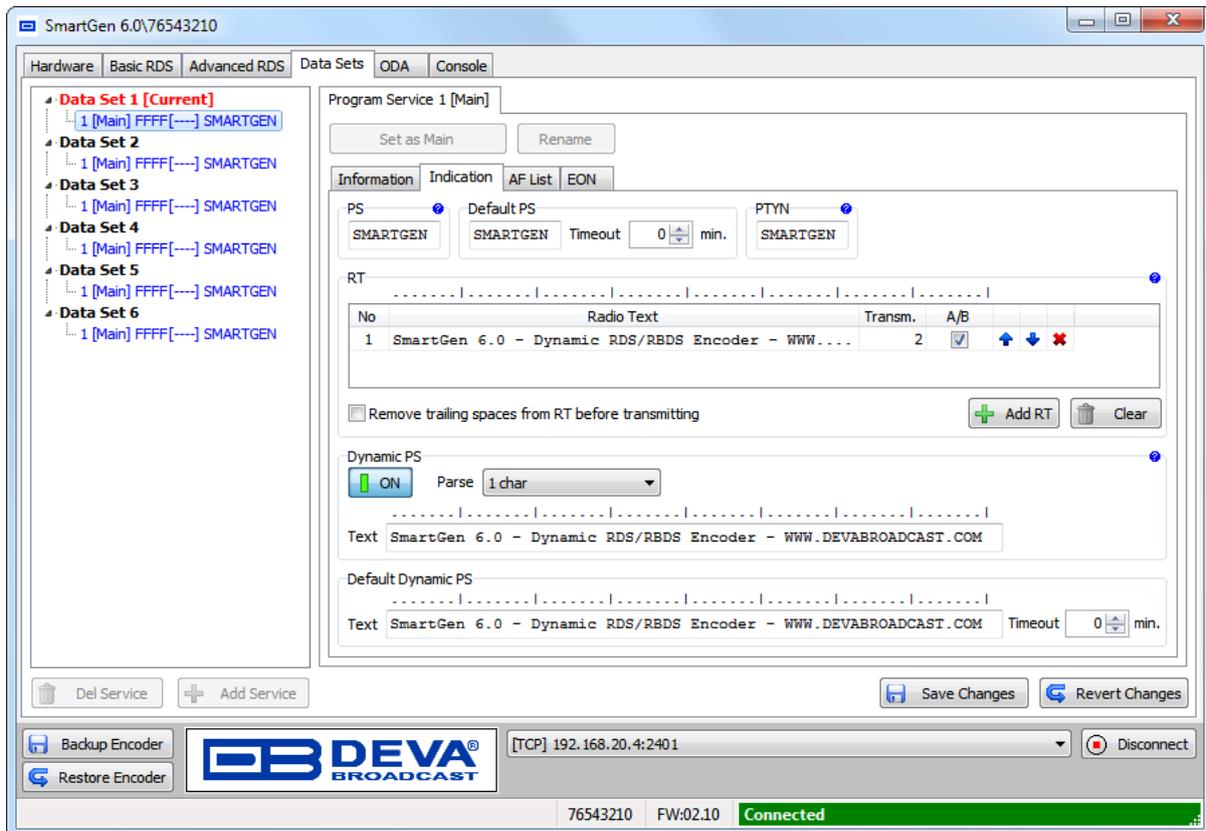
**NOTE:** The Program Service could be set as Main only when the Data Set to which it belongs is not the Current.

Each Main Program Service will utilize the following parameters: PI, PTY, DI, MS, TA, TP, PIN, LI, PS, RT, PTYN, AF.

Each EON Program Service will utilize the following EON parameters: PS, AF, PTY, LI, PIN. When signalled for usage, each EON parameter will be taken from Main fields, but will be transmitted through EON groups. The AF List has specific limitations for EON transmission, thus having independent editing.

## Indication

*These functionalities are supported by all RDS/RBDS Encoders.*

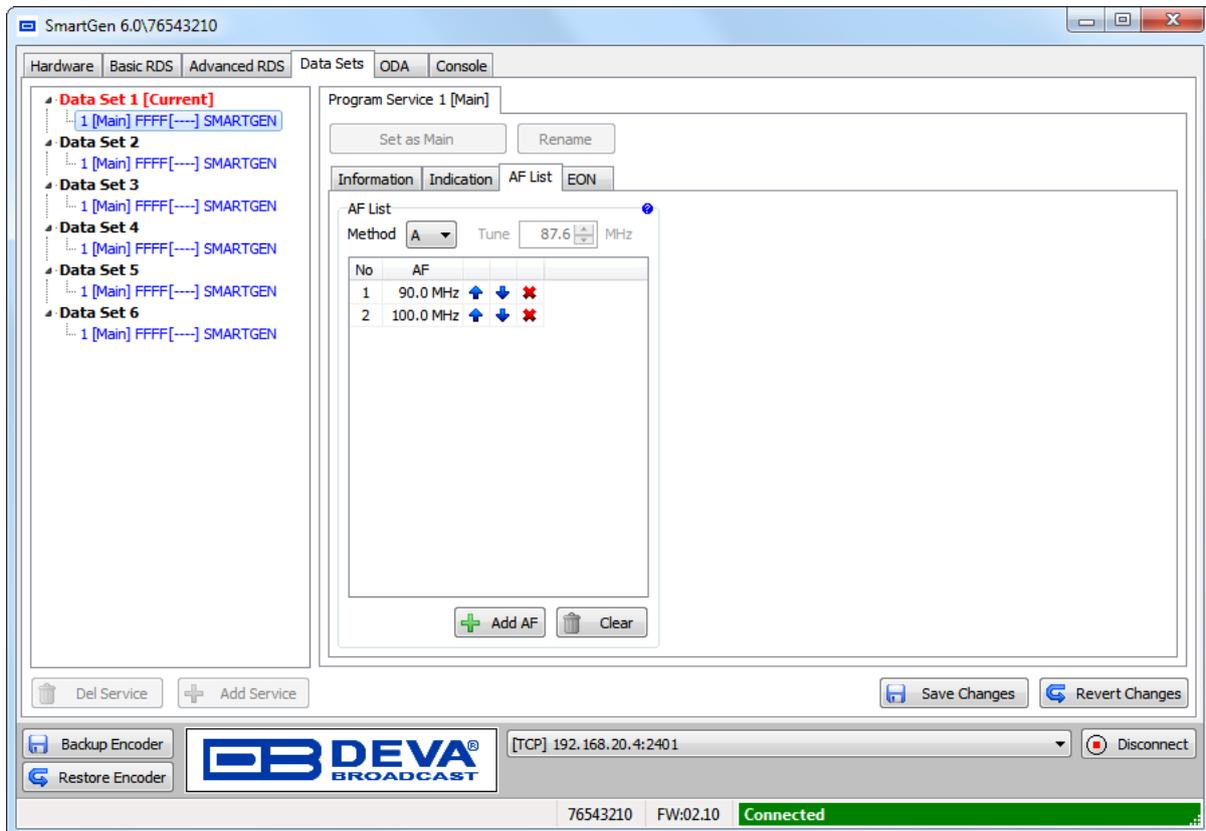


The PS, Default PS, PTYN and RT display the currently assigned text. The table below contains a list with all the broadcasted radio texts. You can change the broadcasting priority using the interactive arrow buttons and delete RT with the ‘X’ button. A new text is added via the relevant button. Of course, ‘Clear’ will delete the entire content.

For information on the Dynamic PS, Default Dynamic PS and Default PS please refer to the ‘Basic RDS’ tab. ([see “Basic RDS” on page 45](#))

## AF List

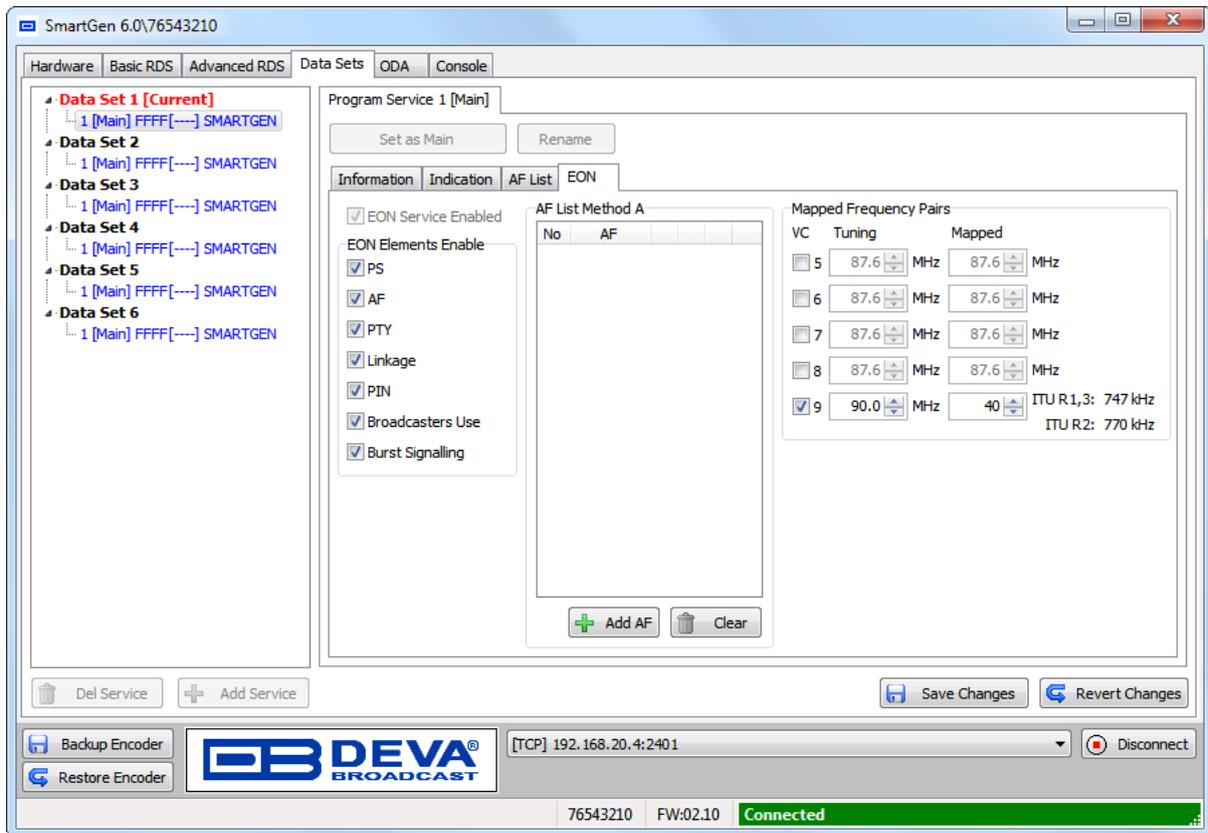
*These functionalities are supported by all RDS/RBDS Encoders.*



List of the alternative frequencies is found here. You can change the priority of the AFs using the interactive arrow buttons and delete the unneeded with the [X] button. A new AF is added via the [+Add AF] button. Use the drop-down menu options to change the Method from A to B and vice-versa. Of course, [Clear] will delete the table's entire content.

## EON

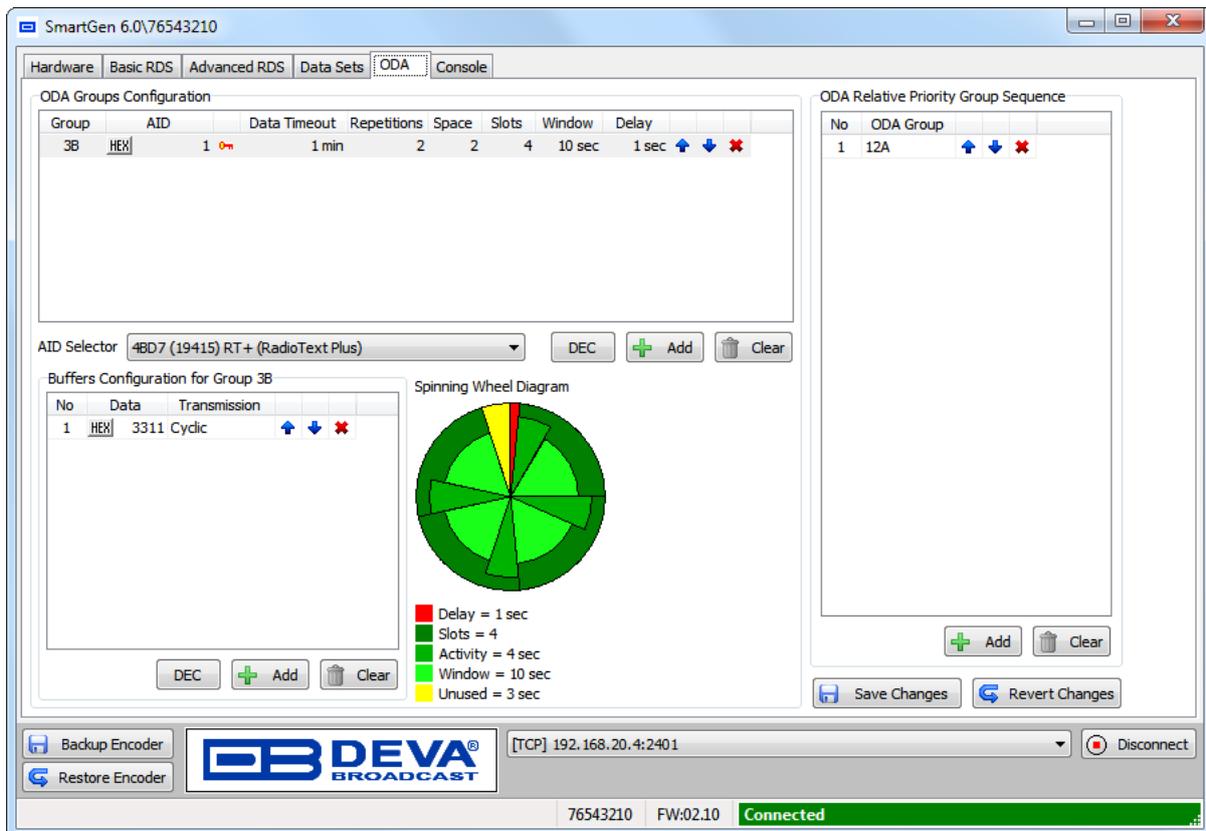
*These functionalities are supported by all RDS/RBDS Encoders.*



In this tab you can generally enable the EON service and enable or disable the transmitted EON Elements. The ones that are not needed can be disabled.

## ODA

*These functionalities are supported by all RDS/RBDS Encoders.*



This screen visualizes the essential parameters needed for every ODA RDS applications.

ODA Group Configuration contains different aspects of the ODA Group parameters. The groups listed here are closely connected with the transmission of group 3A. For further information refer to the UECP standard.

Application identification for Open data (AID) Selector is unique identification associated with one ODA group, and is used to identify which application data is carried with ODA group. AID could be edited manually or changed by using AID selector. To facilitate AID usage software offers predefined AIDs for commonly used ODA Application, as well opportunity to append custom defined. Use AID section from the Software Settings ([see “AIDs” on page 30](#)).

**ATTENTION:** The ‘key’ image appearing next to AID defines the ODA Data command access rights, which is different from Encoder Access Rights. The yellow background color of the ‘key’ indicates that the Access Rights for this ODA are disabled and the transmission of this ODA can be stopped.

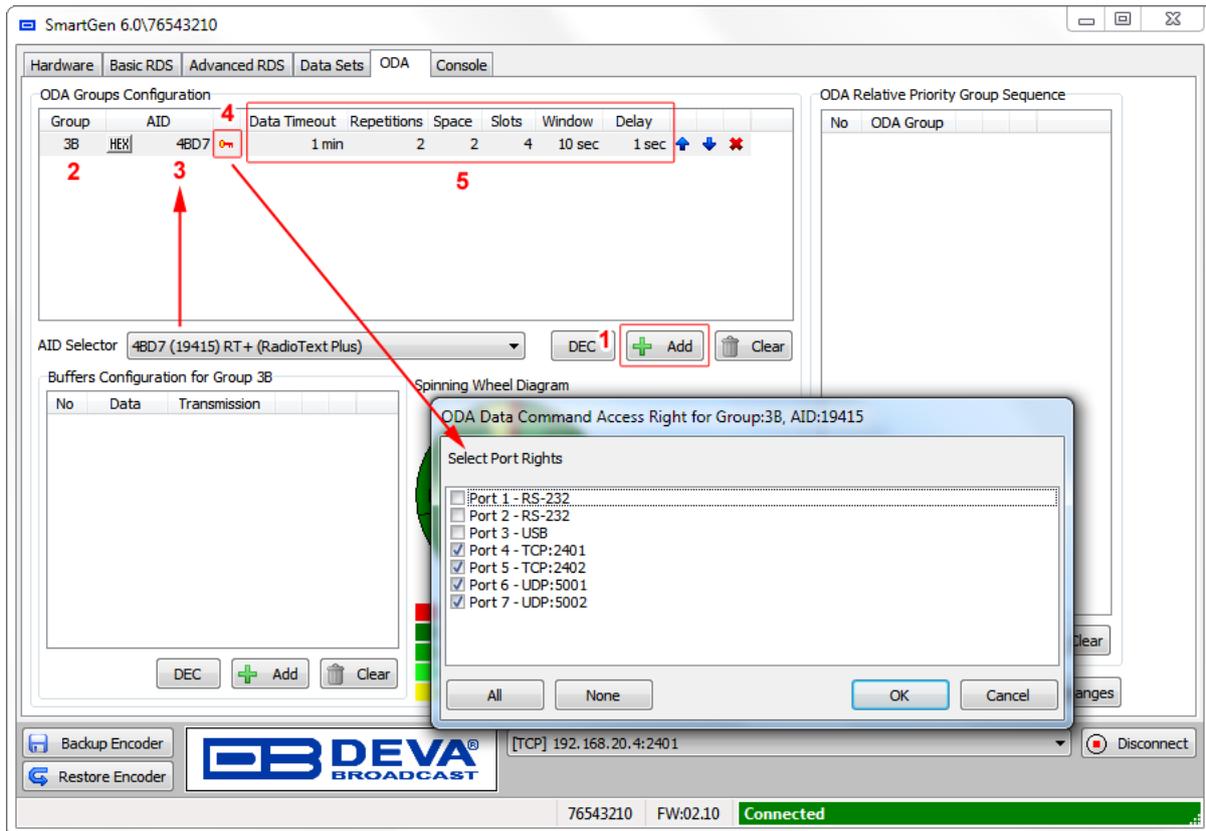
ODA Buffers Configuration is bound with the selected ODA group and is used for adding short messages, which are transmitted within the 3A groups.

Space, Time Slots, Window Time and Delay Time are the parameters which envelop the Spinning Wheel mode of transmission. A graphical representation is also at one’s disposal.

ODA Relative Priority Group Sequence is used to set the relative priority level for the groups transmitted using the ODA free format command with “immediate” priority.

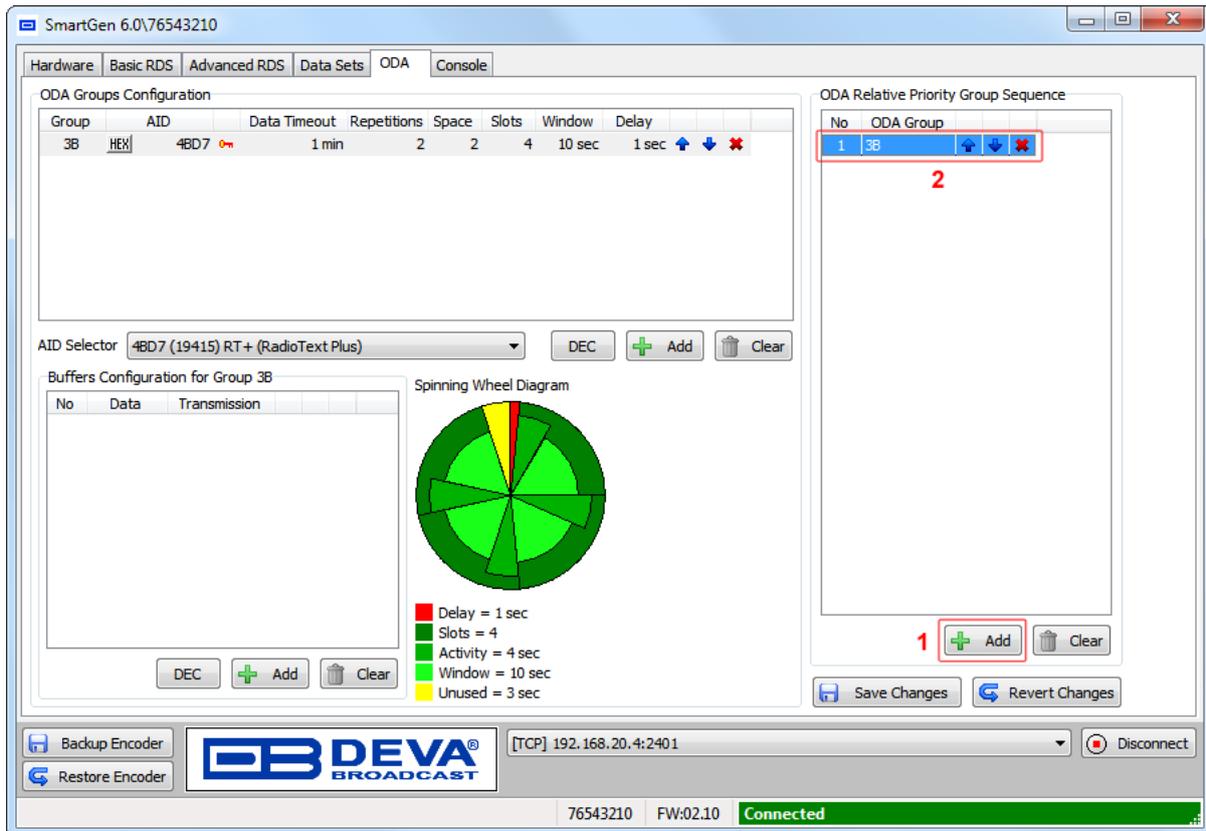
**NOTE:** The SmartGen Encoders Manager software only configures the ODA groups and is not capable of feeding the encoder with streamed custom data.

## How to create an ODA Groups Configuration



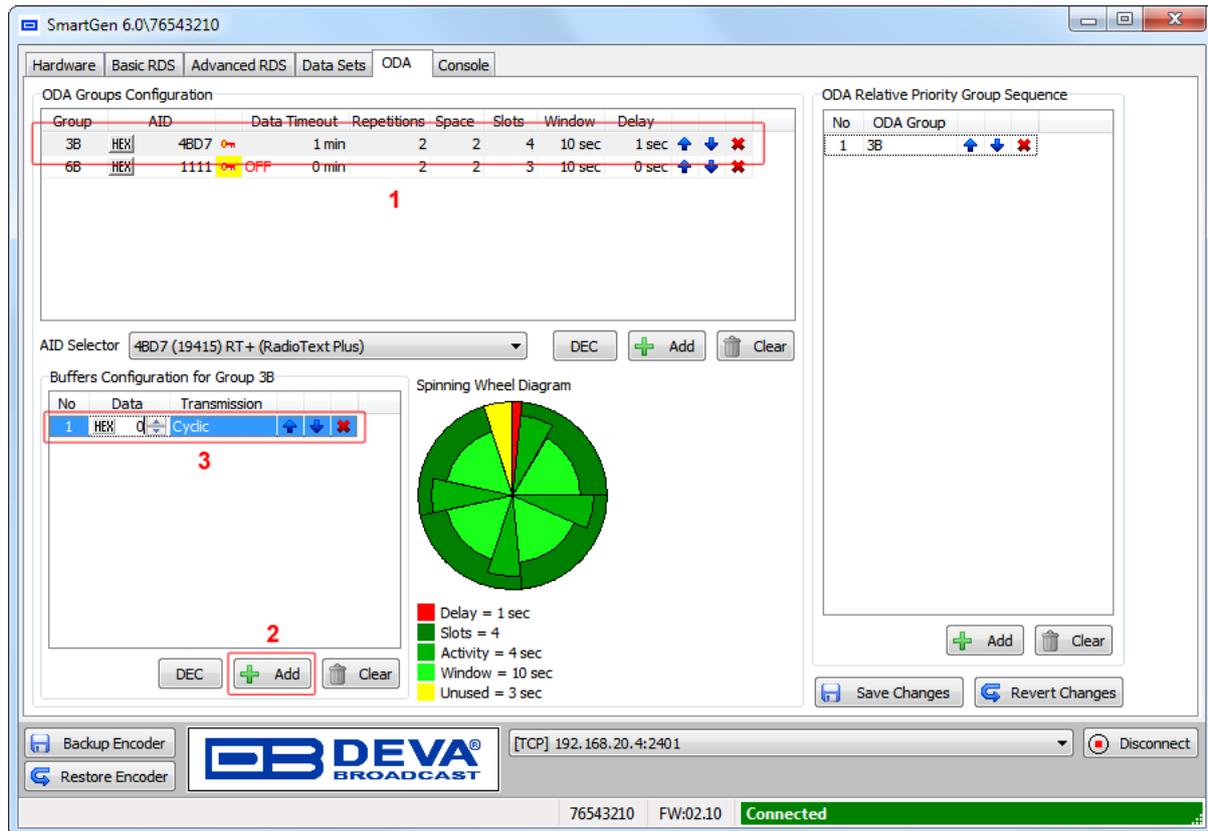
1. Press [+Add];
2. Select the Group number;
3. Specify AID;
4. Select Port Rights and press [OK];
5. Specify Data Timeout, Repetitions, Space, Slots, Window and Delay;
6. Repeat steps from 1 to 5 for all ODA groups to be added;
7. Press [Save Changes].

## How to create an ODA Relative Priority Group Sequence List



1. Press [+Add];
2. Select the group number from the drop-down menu;
3. Repeat steps from 1 to 2 for all ODA groups to be added;
4. Press [Save Changes].

## How to create a Buffers Configuration for ODA Group



The screenshot shows the SmartGen 6.0 interface with the ODA configuration window. The 'ODA Groups Configuration' table is as follows:

| Group | AID       | Data-Timeout | Repetitions | Space | Slots | Window | Delay |
|-------|-----------|--------------|-------------|-------|-------|--------|-------|
| 3B    | HEX  4BD7 | 1 min        | 2           | 2     | 4     | 10 sec | 1 sec |
| 6B    | HEX  1111 | OFF          | 2           | 2     | 3     | 10 sec | 0 sec |

The 'ODA Relative Priority Group Sequence' table is:

| No | ODA Group |
|----|-----------|
| 1  | 3B        |

The 'Buffers Configuration for Group 3B' table is:

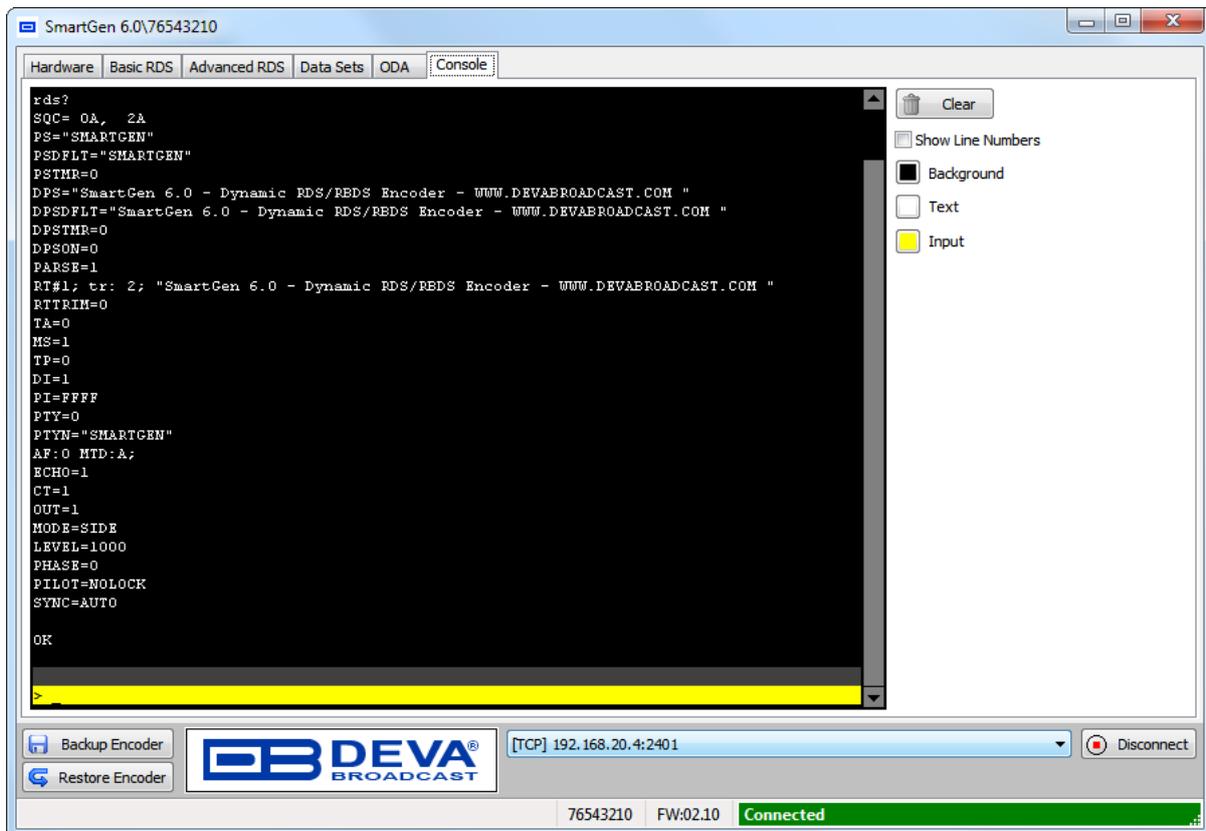
| No | Data   | Transmission |
|----|--------|--------------|
| 1  | HEX  0 | Cyclic       |

The 'Spinning Wheel Diagram' shows a circular chart with segments for Delay (red), Slots (green), Activity (green), Window (green), and Unused (yellow). A legend below the diagram specifies: Delay = 1 sec, Slots = 4, Activity = 4 sec, Window = 10 sec, Unused = 3 sec.

1. Select ODA Group;
2. Press [+Add];
3. Click on HEX/DEC and specify number. Then select Transmission type from the drop-down menu;
4. Repeat steps from 2 to 3 for all Buffers to be added;
5. Press [Save Changes].

## CONSOLE

*These functionalities are supported by all RDS/RBDS Encoders.*



This is a simplified terminal, which allows ASCII commands to be sent to SmartGen encoder. The Console is mainly used for test purposes and for possible adjustments to the arbitrary Automation System.

Please refer to the complete User manual for detailed information on the encoder commands and prompts.

## PRODUCT REGISTRATION CARD

- All fields are required, or warranty registration is invalid and void

Your Company Name \_\_\_\_\_

Contact \_\_\_\_\_

Address Line 1 \_\_\_\_\_

Address Line 2 \_\_\_\_\_

City \_\_\_\_\_

State/Province \_\_\_\_\_ ZIP/Postal Code \_\_\_\_\_

Country \_\_\_\_\_

E-mail \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

Which DEVA Broadcast Ltd. product did you purchase? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Product Serial # \_\_\_\_\_

Purchase date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Installation date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

\_\_\_\_\_  
Your signature\*

\*Signing this warranty registration form you are stating that all the information provided to DEVA Broadcast Ltd. are truth and correct. DEVA Broadcast Ltd. declines any responsibility for the provided information that could result in an immediate loss of warranty for the above specified product(s).

**Privacy statement: DEVA Broadcast Ltd. will not share the personal information you provide on this card with any other parties.**

## WARRANTY TERMS AND CONDITIONS

**I. TERMS OF SALE:** DEVA Broadcast Ltd. products are sold with an understanding of “full satisfaction”; that is, full credit or refund will be issued for products sold as new if returned to the point of purchase within 30 days following their receipt, provided that they are returned complete and in an “as received” condition.

**II. CONDITIONS OF WARRANTY:** The following terms apply unless amended in writing by DEVA Broadcast Ltd.

**A.** The Warranty Registration Card supplied with this product must be completed and returned to DEVA Broadcast Ltd. within 10 days of delivery.

**B.** This Warranty applies only to products sold “as new.” It is extended only to the original end-user and may not be transferred or assigned without prior written approval by DEVA Broadcast Ltd.

**C.** This Warranty does not apply to damage caused by improper mains settings and/or power supply.

**D.** This Warranty does not apply to damage caused by misuse, abuse, accident or neglect. This Warranty is voided by unauthorized attempts at repair or modification, or if the serial identification label has been removed or altered.

**III. TERMS OF WARRANTY:** DEVA Broadcast Ltd. products are warranted to be free from defects in materials and workmanship.

**A.** Any discrepancies noted within TWO YEARS of the date of delivery will be repaired free of charge, or the equipment will be replaced with a new or remanufactured product at DEVA Broadcast Ltd. option.

**B.** Parts and labor for factory repair required after the two-year Warranty period will be billed at prevailing prices and rates.

### **IV. RETURNING GOODS FOR FACTORY REPAIR:**

**A.** Equipment will not be accepted for Warranty or other repair without a Return Authorization (RA) number issued by DEVA Broadcast Ltd. prior to its return. An RA number may be obtained by calling the factory. The number should be prominently marked on the outside of the shipping carton.

**B.** Equipment must be shipped prepaid to DEVA Broadcast Ltd.. Shipping charges will be reimbursed for valid Warranty claims. Damage sustained as a result of improper packing for return to the factory is not covered under terms of the Warranty and may occasion additional charges.

## APPENDIX A

### RDS: EUROPE VS AMERICA

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The European Broadcasting Union (EBU) and its member countries originated the concept of “Radio Data” transmission. The European RDS specification, CENELEC Standard EN50067, was first published in 1984. It was revised in 1986, 1990, 1991 and 1992.

European RDS has grown in use following initial adoption of the Standard. RDS is nearly universal throughout Europe; it is almost impossible to find a European FM broadcasting station that does not carry a radio data subcarrier.

The popularity of RDS in Europe is very much in contrast with initial reluctance on the part of US broadcasters to embrace this technology. This can be ascribed to material differences in broadcasting practices.

Almost without exception, FM broadcasting in the United States is ‘detached’ and independent - each station originates its own programming. America’s National Public Radio might be considered as an exception, though for most of the broadcast day even NPR stations originate, or at least schedule, their own programs.

Most of European broadcasting is similar to the concept of network radio that was common in the US prior to the 1950s. In Europe, a central program originator may have many transmitting facilities of modest power situated throughout the country, at several different frequencies to blanket a designated service area. The European disposition, toward lower-power transmitters can be found on the “local radio” level, as well.

The European concept of a service area equates to the US broadcaster’s market. The subtle difference between these designations further characterizes broadcasting practices and ethics. RDS benefits the European broadcaster through almost an altruistic endeavor to be of service to his listeners. The US broadcaster is marketing his programming and is primarily interested in how he can create additional revenue from RDS.

### THE RDS SYSTEM

---

RDS is a digital data channel, transmitted as a low-level subcarrier above the range of the composite stereo program signal in the FM baseband. The data transmission (baud) rate is comparatively low, yet it is quite robust because of data redundancy and effective error correction.

It is not within the scope of this Manual to cover the details of RDS subcarrier coding and modulation. For this, the reader is directed to the Specification appropriate to his location either the CENELEC EN50067 Specification for Europe or the United States NRSC Specification. Since the Manual will deal with specific implication of RDS implemented with the SmartGen Encoders Manager, it is assumed that the user is familiar with the RDS concept.

## APPENDIX B.1

### RDS APPLICATIONS SUPPORTED

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Following is an alphabetical list of the RDS applications supported by SmartGen Encoders Manager. The standardized RDS application abbreviation is followed by an expansion of the application name and a short explanation of the function.

#### **AF**

---

List of Alternative Frequencies: In order holes in the coverage area to be filled, list of all frequencies where identical program could be heard simultaneously can be included by the network broadcaster or one with low-power rebroadcast transmitters (translators). The RDS receiver (particularly the upscale car radio) constantly searches for the best signal that carries the same program. The radio will re-tune without noticeable interruption, when a better signal is found. The principal utility of this RDS function is with European radio networks and US stations with 'translators.'

#### **CT**

---

Clock Time and date: Time and date codes should use Coordinated Universal Time (UTC) and Modified Julian Day (MJD). If MJD = 0, the receiver should not be updated. The listener, however, will not use this information directly and the conversion to local time and date will be made in the receiver's circuitry. CT is used as time stamp by various RDS applications and thus it must be accurate.

#### **DI**

---

Decoder Information: This is one of several 'flags' that convey yes/no or other very basic data. This flag helps the receiver to indicate whether the broadcast is monaural or is transmitted in any of several methods of stereo or binaural broadcasting. As many as 16 encoding options may be accommodated! This is a rather esoteric function and, thus far, remains unused both in Europe and in the US.

#### **ECC**

---

Extended Country Code: RDS uses its own country codes. The first most significant bits of the PI code carry the RDS country code. The four bit coding structure only permits the definition of 15 different codes, 1 to F (hex). Since there are much more countries to be identified, some countries have to share the same code which does not permit unique identification. Hence there is the need to use the Extended Country Code which is transmitted in Variant 0 of Block 3 in type 1A groups and together with the country identification in bits b15 to b12 of the PI code render a unique combination. The ECC consists of eight bits.

## **EON**

---

Enhanced Other Networks information: This feature can be used to update the information stored in a receiver about program services other than the one received. The alternative frequencies-PS name, Traffic Program and Traffic Announcement identification as well as Program Type and Program Item Number information can be transmitted for each other service. The relation to the corresponding program is established by means of the relevant Program Identification. Linkage information, consisting of four data elements, provides the means by which several program services may be treated by the receiver as a single service during times a common program is carried. Linkage information also provides a mechanism to signal an extended set of related services.

## **EWS**

---

Emergency Warning System: The EWS is intended to provide coding for warning messages. These messages will be broadcasted only in case of emergency and will be evaluated by special receivers.

## **IH**

---

In House application: This refers to data to be decoded only by the operator. Some examples noted are identification of transmission origin, remote switching of networks and paging of staff. The applications of coding may be decided by each operator itself.

## **M/S**

---

Music / Speech Switch: This flag simply indicates whether music or speech is the primary broadcast programming. The purpose of this function is not well explained in the respective Standards; hence it comes as no surprise that it is not widely used.

## **ODA**

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Open Data Applications: The Open Data Applications feature allows data applications, not previously specified in EN 50067, to be conveyed in a number of allocated groups in an RDS transmission. The allocated groups are indicated by using type 3A group which is used to identify to a receiver the data application in use in accordance with the registration details in the EBU/RDS Forum - Open Data Applications Directory and the NRSC Open Data Applications Directory.

## **PI**

---

Program Identification: This block of data identifies the broadcast station with a hexadecimal numerical code, which becomes the “digital signature” of the station. The code is assigned by the broadcasting authorities in most countries, but in the US it is calculated from a numerical encoding of station call letters. The receiver processes the PI code to assist automatic tuning features (station memories), and to prevent false switching to alternative frequencies that might be shared by broadcasters in nearby regions.

## **PIN**

---

Program Item Number: The code enables the designed to use this feature receivers and recorders to respond to the preselected by the user program item(s). This feature is used via scheduled program time, to which in order to avoid ambiguity is added the day of the month.

## **PS**

**Program Service Name:** This is the station’s “street name” that will appear on the receiver faceplate display. The PS can be up to eight characters in length (including spaces) and can be as simple as the station’s call letters: KWOW or KWOW FM, or a slogan: NEWSTALK or LIVE 95. The Program Service Name is automatically displayed, even on the automobile receivers. Because of driving safety considerations broadcasters are generally discouraged from scrolling messages in this field. As a matter of fact, it is a violation of both the CENELEC and the NRSC standards to scroll the PS display, although the practice has become universally common.

## **PTY**

**Program Type:** The PTY data flag identifies the station format from a collection of pre-defined categories. Many RDS receivers are able to seek the listener’s preferred format automatically. This means that a car radio can switch from a fading station to a stronger one that carries the same variety of music, though not the very same program, as provided by AF switching. The PTY function of RDS helps a broadcaster catch ‘transient audience’ share. A listing of the PTY categories is given in [“APPENDIX C.1” on page 72](#) and [“APPENDIX C.2” on page 73](#).

Under some programming circumstances, the PTY identifier may be made ‘dynamic,’ changing between categories for a station that “dayparts” (changes its format for specific time periods). The PTY code is not meant to change from song to song or to accommodate a top-of-the-hour newscast, however.

## **PTYN**

**Program TYPe Name:** The PTYN feature allows the predefined by the RDS/RBDS Standard PTY to be further described using user-defined text (e.g. PTY=4: Sport and PTY=8: Football). The PTYN is not intended to change the default eight characters of PTY which will be used during search or wait modes. Its purpose is to show in details the program type once tuned to a program. If the broadcaster is satisfied with the default PTY name, it is not necessary to use additional data capacity for PTYN. The Program Type Name is not intended to be used for automatic PTY selection and must not be used for giving sequential information.

## **RT**

**RadioText:** This is a 64-character block of plain text that the listener can select for visual display on the faceplate of the radio by pressing an INFO button on the receiver. This function is not available on many automobile radios for safety reasons, which has precipitated the frowned-upon practice of scrolling the PS field instead.

Most radios have limited alphanumeric display capability, so the 64 characters of RadioText march across the front panel, much akin those annoying LED advertising signs found in airport buses or fast food emporia. Like the scrolling-PS implementation, RadioText can announce song titles and performers, run special promotions or contests, or broadcast sponsors’ messages.

## **RT+**

---

RadioText Plus is “semantic analogue radio”. It allows the RDS feature RadioText (RT) to be read by the FM RDS receiving terminals. Based on the RDS RT messages, RT+ is completely backwards compatible with RT. The usage of RT+ allows the listener/user to derive additional benefits from the RDS Radio Text service. It enables FM RDS receivers to “read” Radio Text (to recognize designated objects and make them manageable) by user’s direct access to specific elements of the Radio Text messages. For example, that element could be programme associated metadata like Title and Artist of the currently playing song or a news headlines. This provides the listener with an “mp3-player feeling” while listening to analogue FM radio. The elements can also carry additional service messages or information about the Radio Station such as the telephone number or the web address of the Radio Station’s hotline. These objects, or more accurately RT+ information elements carried in the RDS RadioText (RT) messages, are identified by their location within the RT messages and by the class code of their content type. Once an information element is received and understood, a receiver is able to, for example, store the different RT+ information elements and the listener may then select and request a specific content type from the radio’s memory at an instant in time that suits the listener’s needs. Thus the listener is no longer forced to watch the RT information passing (scrolling) by. Moreover, RT+ offers selected RT message elements to car drivers on a static display, without risk of distracting the attention of the driver. Furthermore, RT+ is well suited for mobile phones with built-in FM receivers: telephone numbers can be directly used to initiate calls, and web addresses can be used to start browsing the web content offered by the radio programme provider. Last but not least, RT+ is also used for satellite radio broadcasting via DVB-S. It may be adopted by DRM and DAB in the future, too.

## **TA**

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Traffic Announcement: This is a temporary flag added to the RDS data stream only as a traffic bulletin is being aired. Some RDS car radios can be set to search for traffic bulletins among various TP stations (see TP below) while tuned to a listener’s preferred program, or even while playing a tape or CD. As soon as any TP station broadcasts a traffic bulletin, the receiver temporarily switches-over to receive it. When the bulletin is finished, the receiver switches back to the original program, tape or CD.

## **TDC**

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Transparent Data Channels: The transparent data channels consist of 32 channels, which may be used to send any type of data.

## **TMC**

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Traffic Message Channel: This feature is intended to be used for the coded transmission of traffic information.

## **TP**

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Traffic Program Identification: The TP flag identifies the station as one that routinely broadcasts traffic bulletins for motorists as part of its normal, everyday programming. When the TP flag is displayed on the receiver faceplate, the radio is searching for traffic announcements. The radio keeps track of TP stations offering this service to speed up the search-and-switch process.

## APPENDIX C.1

### PTY Code Description Used in RBDS Mode – North America

| PTY   | Short Name       | Description   |
|-------|------------------|---|
| 1     | News             | News reports, either local or network in origin.  |
| 2     | Information      | Programming that is intended to impart advice.  |
| 3     | Sports           | Sports reporting, commentary, and/or live event coverage, either local or network in origin.  |
| 4     | Talk             | Call-in and/or interview talk shows either local or national in origin.   |
| 5     | Rock             | Album cuts.   |
| 6     | Classic Rock     | Rock oriented oldies, often mixed with hit oldies, from a decade or more ago.   |
| 7     | Adult Hits       | An up-tempo contemporary hits format with no hard rock and no rap.  |
| 8     | Soft Rock        | Album cuts with a generally soft tempo.   |
| 9     | Top 40           | Current hits, often encompassing a variety of rock styles.  |
| 10    | Country          | Country music, including contemporary and traditional styles.   |
| 11    | Oldies           | Popular music, usually rock, with 80% or greater non-current music.   |
| 12    | Soft             | A cross between adult hits and classical, primarily non-current softrock originals.   |
| 13    | Nostalgia        | Big-band music.   |
| 14    | Jazz             | Mostly instrumental, includes both traditional jazz and more modern “smooth jazz.”  |
| 15    | Classical        | Mostly instrumentals, usually orchestral or symphonic music.  |
| 16    | Rhythm and Blues | A wide range of musical styles, often called “urban contemporary.”  |
| 17    | Soft R and B     | Rhythm and blues with a generally soft tempo.   |
| 18    | Foreign Language | Any programming format in a language other than English.  |
| 19    | Religious Music  | Music programming with religious lyrics.  |
| 20    | Religious Talk   | Call-in shows, interview programs, etc. with a religious theme.   |
| 21    | Personality      | A radio show where the on-air personality is the main attraction.   |
| 22    | Public           | Programming that is supported by listeners and/or corporate sponsors instead of advertising.  |
| 23    | College          | Programming produced by a college or university radio station.  |
| 24    | Spanish Talk     | Call-in shows, interview programs, etc. in the Spanish language   |
| 25    | Spanish Music    | Music programming in the Spanish language   |
| 26    | Hip-Hop          | Popular music incorporating elements of rap, rhythm-and-blues, funk, and soul   |
| 27-28 | Unassigned       |   |
| 29    | Weather          | Weather forecasts or bulletins that are non-emergency in nature.  |
| 30    | Emergency Test   | Broadcast when testing emergency broadcast equipment or receivers. Not intended for searching or dynamic switching for consumer receivers. Receivers may, if desired, display “TEST” or “Emergency Test”. |
| 31    | Emergency        | Emergency announcement made under exceptional circumstances to give warning of events causing danger of a general nature. Not to be used for searching - only used in a receiver for dynamic switching.   |

**NOTE:** These definitions can differ slightly between various language versions.

## APPENDIX C.2

### PTY Code Description Used in RDS Mode – Europe, Asia

| PTY | Short Name          | Description  |
|-----|---------------------|--|
| 1   | News                | Short accounts of facts, events and publicly expressed views, reportage and actuality.   |
| 2   | Current affairs     | Topical program expanding or enlarging upon the news, generally in different presentation style or concept, including debate, or analysis.   |
| 3   | Information         | Program the purpose of which is to impart advice in the widest sense.  |
| 4   | Sport               | Program concerned with any aspect of sport.  |
| 5   | Education           | Program intended primarily to educate, of which the formal element is fundamental.   |
| 6   | Drama               | All radio plays and serials.   |
| 7   | Culture             | Programs concerned with any aspect of national or regional culture.  |
| 8   | Science             | Programs about the natural sciences and technology.  |
| 9   | Varied              | Used for mainly speech-based programs usually of light-entertainment nature, not covered by other categories. Examples include: quizzes, games, personality interviews.  |
| 10  | Pop                 | Commercial music, which would generally be considered to be of current popular appeal, often featuring in current or recent record sales charts.   |
| 11  | Rock                | Contemporary modern music, usually written and performed by young musicians.   |
| 12  | Easy Listening      | Current contemporary music considered to be “easy-listening”, as opposed to Pop, Rock or Classical, or one of the specialized music styles, Jazz, Folk or Country. Music in this category is often but not always, vocal, and usually of short duration. |
| 13  | Light classics      | Classical Musical for general, rather than specialist appreciation. Examples of music in this category are instrumental music, and vocal or choral works.  |
| 14  | Serious classics    | Performances of major orchestral works, symphonies, chamber music etc., and including Grand Opera.   |
| 15  | Other music         | Musical styles not fitting into any of the other categories. Particularly used for specialist music of which Rhythm & Blues and Reggae are examples.   |
| 16  | Weather             | Weather reports and forecasts and Meteorological information.  |
| 17  | Finance             | Stock Market reports, commerce, trading etc.   |
| 18  | Children’s programs | For programs targeted at a young audience, primarily for entertainment and interest, rather than where the objective is to educate.  |
| 19  | Social Affairs      | Programs about people and things that influence them individually or in groups. Includes: sociology, history, geography, psychology and society.   |
| 20  | Religion            | Any aspect of beliefs and faiths, involving a God or Gods, the nature of existence and ethics.   |
| 21  | Phone In            | Involving members of the public expressing their views either by phone or at a public forum.   |
| 22  | Travel              | Features and programs concerned with travel to near and far destinations, package tours and travel ideas and opportunities. Not for use for Announcements about problems, delays, or roadworks affecting immediate travel where TP/TA should be used.    |
| 23  | Leisure             | Programs concerned with recreational activities in which the listener might participate. Examples include, Gardening, Fishing, Antique collecting, Cooking, Food & Wine etc.   |
| 24  | Jazz Music          | Polyphonic, syncopated music characterized by improvisation.   |
| 25  | Country Music       | Songs which originate from, or continue the musical tradition of the American Southern States. Characterized by a straightforward melody and narrative story line.   |
| 26  | National Music      | Current Popular Music of the Nation or Region in that country’s language, as opposed to International ‘Pop’ which is usually US or UK inspired and in English.   |
| 27  | Oldies Music        | Music from the so-called “golden age” of popular music.  |
| 28  | Folk Music          | Music which has its roots in the musical culture of a particular nation, usually played on acoustic instruments. The narrative or story may be based on historical events or people.   |
| 29  | Documentary         | Program concerned with factual matters, presented in an investigative style.   |
| 30  | Alarm Test          | Broadcast when testing emergency broadcast equipment or receivers. Not intended for searching or dynamic switching for consumer receivers.. Receivers may, if desired, display “TEST” or “Alarm Test”.   |
| 31  | Alarm               | Emergency announcement made under exceptional circumstances to give warning of events causing danger of a general nature. Not to be used for searching - only used in a receiver for dynamic switching.  |

## APPENDIX E

### ALARMS

The alarms are fast and reliable reporting mechanism in case of change in pre-defined parameters. Below you will find an explanation of the types of event that might trigger an alarm, the settings that should be applied and their properties.

| Type of event              | Enable | Trigger & Release | Thresholds | Description   | NOTE   |
|----------------------------|--------|-------------------|------------|---|--|
| UECP data port timeout     | YES    | NO                | NO         | There are NO valid UECP messages for the time determined by UECP port timeout parameter.  | Applicable for all UECP ports (1-7).   |
| RDS loss                   | YES    | YES               | NO         | Loss of the RDS at the output of the encoder.   | Will be also triggered when the RDS signal is stopped, or when the level is manually set to 0mV by the user. |
| High BER                   | YES    | YES               | NO         | Presence of BER in the RDS signal   | If the device is operating normally, this alarm will not be triggered.                                       |
| Pilot synchronization loss | YES    | YES               | NO         | Loss of synchronization with the external pilot tone                                      |  |
| RDS group loss             | NO     | YES               | NO         | Loss (absence) of a specific RDS group/s in the RDS data stream for a pre-defined time    | There is an 'Enable flag' for each of the RDS Group types  |
| DSN change                 | YES    | NO                | NO         | Change of the current DSN   |  |
| PSN change                 | YES    | NO                | NO         | Change of the main PSN  |  |
| Temperature                | NO     | YES               | YES        | The internal temperature of the equipment is lower or higher than the specified threshold | High and Low threshold are enabled/disabled separately   |
| TA timeout                 | YES    | NO                | NO         | TA timeout has occurred   |  |

**NOTE:** The change of DSN and PSN can be a dynamic process, which makes the “Idle” status definition of alarms PSN change and DSN change impossible. Therefore, in case PSN and/or DSN alarm occurs and is finalized through one of the authorized channels (E-mail, SNMP), the alarm status will remain OK, and the GPO will not be triggered through these alarms.

Due to the diverse nature of the observed physical alarm events, the alarms cannot be completely unified.