

INTERNATIONAL STANDARD

**Radio data system (RDS) – VHF/FM sound broadcasting in the frequency range
from 64,0 MHz to 108,0 MHz –
Part 3: Usage and registration of Open Data Applications (ODAs)**



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Part 3: Usage and registration of Open Data Applications (ODAs)**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RADIO DATA SYSTEM (RDS) –
VHF/FM SOUND BROADCASTING IN THE FREQUENCY
RANGE FROM 64,0 MHz TO 108,0 MHz –****Part 3: Usage and registration of Open Data Applications (ODAs)****FOREWORD**

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International Standard IEC 62106-3 has been prepared by technical area 1: Terminals for audio, video and data services and contents, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition, together with IEC 62106-1, IEC 62106-2, IEC 62106-4, IEC 62106-5 and IEC 62106-6, cancels and replaces IEC 62106:2015, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62106:2015:

- Provision has been made to carry RDS on multiple data-streams (RDS2).
- For Open Data Applications, in addition to the already existing 37-bit and 21-bit data group structures a new 56-bit or 7-byte data group structure has been added.

- New are AF coding below 87,6 MHz (down to 64,1 MHz) using ODA-AID. RT+ can now be used with RT and eRT, 0x6365, see IEC 62106-6.

The text of this standard is based on the following documents:

CDV	Report on voting
100/2911/CDV	100/3057/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62106 series, published under the general title *Radio data system (RDS) – VHF/FM sound broadcasting in the frequency range from 64,0 MHz to 108,0 MHz*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Since the mid-1980s a fascinating development has taken place. Most of the multimedia applications and standards have been created or redefined significantly. Hardware has become extremely powerful with dedicated software and middleware. In the mid-1980s, Internet as well as its protocols did not exist. Navigation systems became affordable in the late 1990s, and a full range of attractive smartphones now exist. The computing power of all these new products is comparable with that of the mainframe installations in that era.

Listener expectations have grown faster than the technology. Visual experience is now very important, like the Internet look and feel. Scrolling text or delivering just audio is nowadays perceived as insufficient for FM radio, specifically for smartphone users. New types of radio receivers with added value features are therefore required. RDS has so far proven to be very successful.

FM radio with RDS is an analogue-digital hybrid system, which is still a valid data transmission technology and only the applications need adaptation. Now the time has come to solve the only disadvantage, the lack of sufficient data capacity. With RDS2, the need to increase the data capacity can be fulfilled.

RDS was introduced in the early 1980s. During the introductory phase in Europe, the car industry became very involved and that was the start of an extremely successful roll-out. Shortly afterwards, RDS (RBDS) was launched in the USA [1, 2, 3, 4, 5]¹.

The RDS Forum has investigated a solution to the issue of limited data capacity. For RDS2, both sidebands around the RDS 57 kHz subcarrier can be repeated a few times, up to three, centred on additional subcarriers higher up in the FM multiplex while still remaining compatible with the ITU Recommendations.

The core elements of RDS2 are the additional subcarriers, which will enable a significant increase of RDS data capacity to be achieved, and then only new additional data applications will have to be created, using the RDS-ODA feature, which has been part of the RDS standard for many years.

In order to update IEC 62106:2015 to the specifications of RDS2, IEC 62106 has been restructured as follows:

Part 1: Modulation characteristics and baseband coding

Part 2: RDS message format, coding and definition of RDS features

Part 3: Coding and registration of Open Data Applications ODAs

Part 4: Registered code tables

Part 5: Marking of RDS and RDS2 devices

Part 6: Compilation of technical specifications for Open Data Applications in the public domain

The following future parts are planned:

Part 7: RBDS

Part 8: Universal Encoder Communication Protocol UECP

¹ Numbers in square brackets refer to the Bibliography.

The original specifications of the RDS system have been maintained and the extra functionalities of RDS2 have been added.

Obsolete or unused functions from the original RDS standard IEC 62106:2015 have been deleted. The presentation in Parts 1, 2 and 3 follows the OSI basic reference model for information processing systems [6].

RADIO DATA SYSTEM (RDS) – VHF/FM SOUND BROADCASTING IN THE FREQUENCY RANGE FROM 64,0 MHz TO 108,0 MHz –

Part 3: Usage and registration of Open Data Applications (ODAs)

1 Scope

This part of IEC 62106 defines the Open Data Application (ODA) feature of the Radio Data System (RDS).

The ODA feature in essence allows raw data to be transmitted via a transparent data channel from a service provider to a suitably equipped receiver without there being any prior knowledge of the data content by the IEC 62106 standard. This document defines the method of packaging the data within the RDS group structure and the identification of the data (using the Application Identification, AID) such that it can be addressed by an appropriate decoder on the receiver.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62106 (all parts), *Radio Data System (RDS) – VHF/FM sound broadcasting in the frequency range from 64,0 MHz to 108,0 MHz*

3 Terms, definitions, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62106-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in IEC 62106-1 and IEC 62106-2 apply.

3.3 Notation and conventions

The notation and conventions given in IEC 62106-1 apply.

4 ODA usage

4.1 General

ODAs are a very effective and flexible way for adding additional applications to an RDS service.

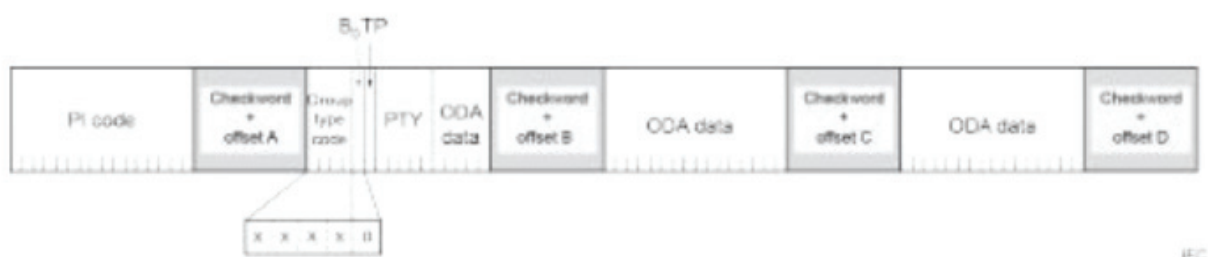
A number of different ODAs may exist on any service, subject to capacity.

ODAs now fall into two categories: legacy 37-bit and 21-bit ODAs using group types A or B and the new higher capacity 56-bit or 7-byte ODA exclusively carried in group type C on data-streams 1, 2 and 3. The legacy 37-bit and 21-bit ODAs use group type 3A to indicate the allocated group carrying the ODA, whereas the new 56-bit or 7-byte ODA uses a special channel allocation mechanism to indicate which channel on data-streams 1, 2 and 3 carries the ODA. Further information on the coding of group types A, B and C used to convey ODAs, as well as the tunnelling mechanism for carrying legacy group types A and B within a group type C on data-streams 1, 2 and 3, can be found in IEC 62106-2.

All ODAs are registered at the appropriate RDS Registration Office and appear in the Open Data Applications Directory (see Annex A). Each ODA needs to be used in accordance with the registration details in the ODA Directory.

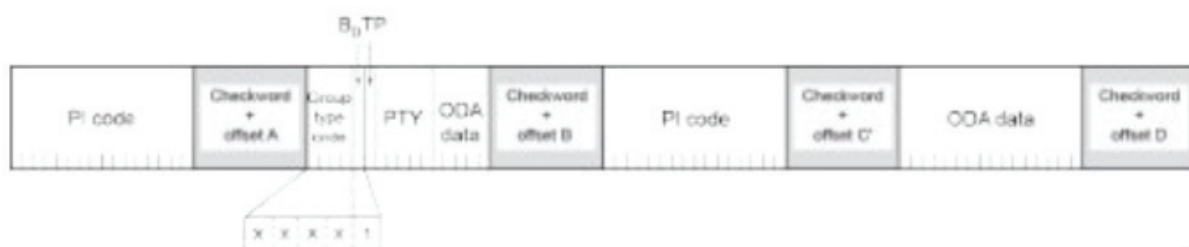
4.2 ODA group structures

Open Data Applications shall use the format shown in Figure 1 for 37-bit ODA group type A, Figure 2 for 21-bit ODA group type B and Figure 3 for 56-bit or 7-byte ODA group type C.



IEC

Figure 1 – 37-bit ODA group type A structure



IEC

Figure 2 – 21-bit ODA group type B structure



IEC

Figure 3 – 56-bit or 7-byte ODA group type C structure

4.3 ODA coding for group type A or B

4.3.1 General

The specific group type used by the ODA (defined by its Application Identification) in any particular transmission is signalled in group type 3A.

Legacy ODAs can use either 37-bit or 21-bit group type A or B structures as shown in Figures 1 and 2.

ODAs shall not be designed to operate with a specific application group type code.

The application group type code for legacy RDS data will be chosen by the transmission operator and will be signalled by the AID group 3A.

A single ODA AID can only be associated with a single application group type code. For example, a single ODA (defined by an AID) may be associated with group type 5A. This means the ODA only uses group type 5A and that group type 5A is exclusively reserved for this ODA.

The 3A group additionally provides 16 bits of application data. ODAs that only require these 16 bits of application data can signal this by setting the application group type code to 3A indicating no other group is referenced by the ODA.

4.3.2 Group type 3A: ODA Application Identification (AID)

Figure 4 shows the format of type 3A groups. These groups are used to identify the Open Data Application in use, on a legacy RDS transmission.

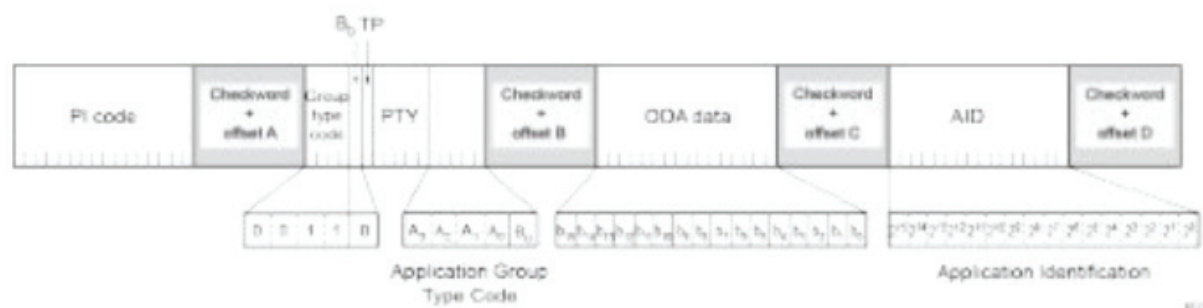


Figure 4 – Group type 3A for Application group type code, AID and 16-bits of ODA data

The group type 3A conveys, to a receiver, information about which Open Data Applications are carried on a particular transmission and in which groups they will be found. Group type 3A comprises three elements: the Application Group Type Code used by that application, 16 bits of application data for that ODA and the Application Identification code (AID).

The Application Group Type Code indicates the group type used in the particular transmission to carry the specified ODA.

Table 1 specifies the permitted group types for legacy data. The Application Group Type Code comprises 5 bits, four for the group type and one for the version A or B. Two special conditions may be indicated:

- binary 00000 – not carried in associated application group;
- binary 11111 – temporary data fault (encoder status) which means that incoming data to the encoder cannot be transmitted.

The AID determines which software handler a receiver needs to use.

This method of allocating and defining Open Data Applications in an RDS transmission allows the addition and subtraction of ODAs, without constraint or the need to await the publication of new standards.

For each group type addressed by the application group type codes of a particular transmission, only one application may be identified as the current user of the group.

Application Identification codes 0x0001 to 0xFFFF in group type 3A indicate applications as specified in the ODA directory (see Annex A).

The AID in group type 3A indicates that a particular ODA is carried in a transmission. Each application will have unique requirements for transmission of its respective AID, in terms of repetition rate and timing. These requirements shall be detailed in the respective ODA specification. The specification shall also detail the AID signalling requirements for such times when an application assumes or ceases the use of a group type channel. Some applications may not allow reconfiguration in this way.

4.3.3 ODA group availability signalled in group type 3A for legacy data

Table 1 shows the group types A and B that may be assigned by the transmission operator to an ODA. Group types not shown in Table 1 are unavailable for ODA usage.

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