



EUROCONTROL Specification for Surveillance Data Exchange ASTERIX

Part 20 Category 247 Version Number Exchange

Edition: 1.3
Edition date: 31 August 2021
Reference nr: EUROCONTROL-SPEC-0149-20



EUROCONTROL
Specification for Surveillance
Data Exchange
ASTERIX Part 20
Category 247
Version Number Exchange

DOCUMENT IDENTIFIER : EUROCONTROL-SPEC-0149-20

Edition Number	:	1.3
Edition Date	:	31/08/2021
Status	:	Released Edition
Intended for	:	General Public
Category	:	EUROCONTROL Specification

DOCUMENT CHARACTERISTICS

TITLE			
EUROCONTROL Specification for Surveillance Data Exchange – ASTERIX Part 20			
Category 247: Version Number Exchange			
		Publications Reference:	SPEC-0149-20
		ISBN Number:	978-2-87497-028-3
Document Identifier		Edition Number:	1.3
EUROCONTROL-SPEC-0149-20		Edition Date:	31/08/2021
Abstract			
This document specifies the contents of ASTERIX Category 247 messages used for the transmission of category version numbers implemented in a system.			
Keywords			
Data Exchange	Messages	SAC	SIC
Data Category	Data Field	Data Block	Data Item
ASTERIX	UAP	Version Numbers	
Contact Person(s)		Tel	Unit
Alexander Engel		+32-2-729 3355	DECMA/PCS/SCS/STAN

STATUS, AUDIENCE AND ACCESSIBILITY					
Status		Intended for		Accessible via	
Working Draft	<input type="checkbox"/>	General Public	<input checked="" type="checkbox"/>	Intranet	<input type="checkbox"/>
Draft	<input type="checkbox"/>	EUROCONTROL	<input type="checkbox"/>	Extranet	<input type="checkbox"/>
Proposed Issue	<input type="checkbox"/>	Restricted	<input type="checkbox"/>	Internet (www.eurocontrol.int)	<input checked="" type="checkbox"/>
Released Issue	<input checked="" type="checkbox"/>				

DOCUMENT APPROVAL

This document has been approved by the ASTERIX Maintenance Group (AMG).

For management approval of the complete set of ASTERIX documentation refer to Part 1.

DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION	DATE	REASON FOR CHANGE	SECTIONS PAGES AFFECTED
0.10	October 2005	Creation of document	All
0.11	November 2005	Title changed to "Version Number Exchange"	All
1.0	May 2007	Scope updated Document Identification Sheet updated Signature Page updated Status updated to "Released Issue"	1.1.2 ii iii All
1.1	November 2007	Category renumbered to 247 because of conflict with existing category 242	All
1.2	January 2008	Item I247/015 (Service Identification) added	5.2.2
1.3	31/08/2021	Migration to new Template Reference Documents updated Notes added to I247/550	All 2.2 5.2.4

Publications
EUROCONTROL Headquarters
96 Rue de la Fusée
B-1130 BRUSSELS

Tel: +32 (0)2 729 4715
Fax: +32 (0)2 729 5149
E-mail: publications@eurocontrol.int

TABLE OF CONTENTS

DOCUMENT CHARACTERISTICS	ii
DOCUMENT APPROVAL	iii
DOCUMENT CHANGE RECORD	iv
1. INTRODUCTION	1
1.1 Scope	1
2. REFERENCES	2
2.1 General	2
2.2 Reference Documents	2
3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS	4
3.1 Definitions	4
3.2 Acronyms and Abbreviations	5
4. GENERAL PRINCIPLES	6
4.1 General	6
4.2 Time Management	6
4.2.1 Definition	6
4.2.2 Requirements for Time Stamping	6
4.3 Unused Bits in Data Items	6
4.4 Definitions and Addressing Concepts	6
4.4.1 System	6
4.4.2 Addressing Concepts: Assigning SAC/SIC Codes	6
4.5 Service Messages	6
4.6 User Application Profile and Data Blocks	7
4.7 Composition of Messages	7
5. LAYOUT OF MESSAGES	8
5.1 Standard Data Items	8
5.2 Description of Standard Data Items	9
5.2.1 Data Item I247/010, Data Source Identifier	9
5.2.2 Data Item I247/015, Service Identification	9
5.2.3 Data Item I247/140, Time of Day	10
5.2.4 Data Item I247/550, Category Version Number Report	11
5.3 Standard User Application Profile	12

This page is intentionally left blank

1. INTRODUCTION

1.1 Scope

- 1.1.1** This document describes the message structure for the transmission of ASTERIX categories version number reports.
- 1.1.2** The use of intermediate editions of a specific ASTERIX category shall be limited to the test and development phase of a new system and/or a new ASTERIX category. As soon as the status of both is stable, the system shall be migrated to the use of the latest available version of a specific ASTERIX category.

2. REFERENCES

2.1 General

The following Documents and Standards contain provisions which, through references in this text, constitute provisions of this EUROCONTROL Document.

At the time of publication of this EUROCONTROL Document, the editions indicated for the referenced documents and standards were valid.

Any revision of the referenced ICAO Documents shall be immediately taken into account to revise this EUROCONTROL Document.

Revisions of the other referenced documents shall not form part of the provisions of this EUROCONTROL Document until they are formally reviewed and incorporated into this EUROCONTROL Document.

In case of a conflict between the requirements of this EUROCONTROL Document and the contents of the other referenced documents, this EUROCONTROL Document shall take precedence.

2.2 Reference Documents

1. EUROCONTROL Specification SUR.ET1.ST05.2000-STD-01-01. All Purpose Structured EUROCONTROL Surveillance Information Exchange - ASTERIX. Edition 3.0, Released Issue, 07 December 2020.
2. ICAO Annex 5

This page is intentionally left blank

3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

3.1 Definitions

Please refer to ASTERIX Part 1 [2.2], chapter 5.

3.2 Acronyms and Abbreviations

For the purposes of this EUROCONTROL Document the following shall apply:

°	Degree (angle)
ASTERIX	All Purpose S tructured EUROCONTROL su R veillance Information EX change
CAT	Data Category
EATM	European Air Traffic Management
FL	Flight Level, unit of altitude (expressed in 100's of feet)
FRN	Field Reference Number
FSPEC	Field Specification
FX	Field Extension Indicator
ICAO	International Civil Aviation Organization
kt	knot = NM/hour, unit of speed
LEN	Length Indicator
LSB	Least Significant Bit
MLT	Multilateration
NM	Nautical Mile, unit of distance (1852 metres)
PSR	Primary Surveillance Radar
RDE-FG	Radar Data Exchange Focus Group
RE	Reserved Expansion Indicator
REP	Field Repetition Indicator
s	second, unit of time
SAC	System Area Code
SIC	System Identification Code
SMR	Surface Movement Radar
SMS	Surface Movement System
SP	Special Purpose Indicator
SPI	Special Position Identification
SPF	Special Purpose Field
SSR	Secondary Surveillance Radar
SURT	Surveillance Team (EATM)
UAP	User Application Profile (see Definitions)
UTC	Coordinated Universal Time
WAM	Wide Area Multilateration
WGS-84	World Geodetic System 84

4. GENERAL PRINCIPLES

4.1 General

For the transmission of version number of ASTERIX categories the following types of messages have been defined:

- version number(s) report

4.2 Time Management

4.2.1 Definition

The time stamp shall be consistent with the time of report transmission.

4.2.2 Requirements for Time Stamping

The timestamping shall comply with ICAO Annex 5.

4.3 Unused Bits in Data Items.

Please refer to ASTERIX Part 1 [2.2], chapter 5.2.5.2.3.

4.4 Definitions and Addressing Concepts

In order to address sources in an unambiguous way, a simple abstract model for concepts like sensors or systems has been designed.

4.4.1 System

In the framework of category 247 a System is any device delivering ASTERIX data.

4.4.2 Addressing Concepts: Assigning SAC/SIC Codes

By convention a dedicated and unambiguous SAC/SIC code shall be assigned to every System.

4.5 Service Messages

Periodic Status Messages (these messages should be used by systems to indicate their Categories version numbers periodically).

4.6 User Application Profile and Data Blocks

4.8.1 A single User Application Profile (UAP) is defined and shall be used for both target reports and service messages.

4.8.2 Data Blocks shall have the following layout.

CAT = 247	LEN		FSPEC	Items of the first record
------------------	------------	--	--------------	---------------------------

where:

- Data Category (CAT) = 247, is a one-octet field indicating that the Data Block contains Category Version Number reports;
- Length Indicator (LEN) is a two-octet field indicating the total length in octets of the Data Block, including the CAT and LEN fields;
- FSPEC is the Field Specification.

4.7 Composition of Messages

4.9.1 Messages shall be composed of Data Items assembled in the order defined by the Field Reference Number (FRN) in the associated UAP.

4.9.2 When sent, items shall always be transmitted in a record with the corresponding FSPEC bits set to one.

5. LAYOUT OF MESSAGES

5.1 Standard Data Items

The standardised Data Items, which shall be used for the transmission of Category Version numbers are defined in Table 1 and described on the following pages.

Table 1 - Standard Data Items of Category 247

Data Item Ref. No.	Description	Resolution
I247/010	Data Source Identifier	N.A.
I247/015	Service Identification	N.A.
I247/140	Time of Day	1/128 s
I247/550	Category Version Number Report	N.A.

5.2 Description of Standard Data Items

5.2.1 Data Item I247/010, Data Source Identifier

Definition: Identification of the system from which the data are received.

Format: Two-octet fixed length Data Item.

Structure:

Octet no. 1								Octet no. 2							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SAC								SIC							

bits-16/9 (SAC) System Area Code

bits-8/1 (SIC) System Identification Code

Encoding Rule : This item shall be present in each ASTERIX message

5.2.2 Data Item I247/015, Service Identification

Definition : Identification of the service provided to one or more users.

Format : One-Octet fixed length data item.

Structure:

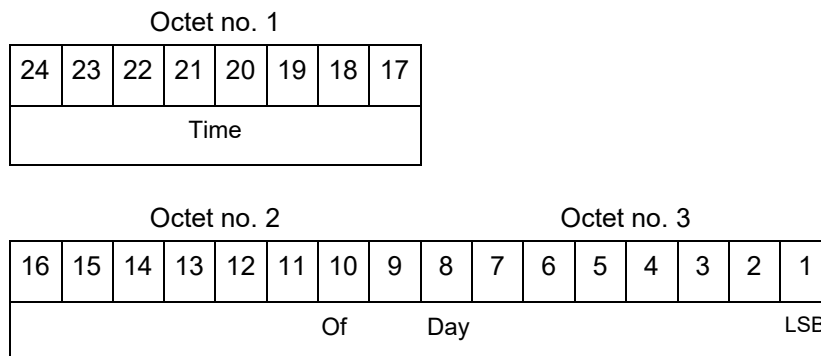
Octet no. 1							
8	7	6	5	4	3	2	1
Service Identification							

bits 8/1 Service Identification

NOTE - The service identification is allocated by the system

Encoding Rule :

This item is optional.

5.2.3 Data Item I247/140, Time of Day**Definition:** Absolute time stamping expressed as UTC.**Format:** Three-octet fixed length Data Item.**Structure:**

bit-1 (LSB) 1/128 s

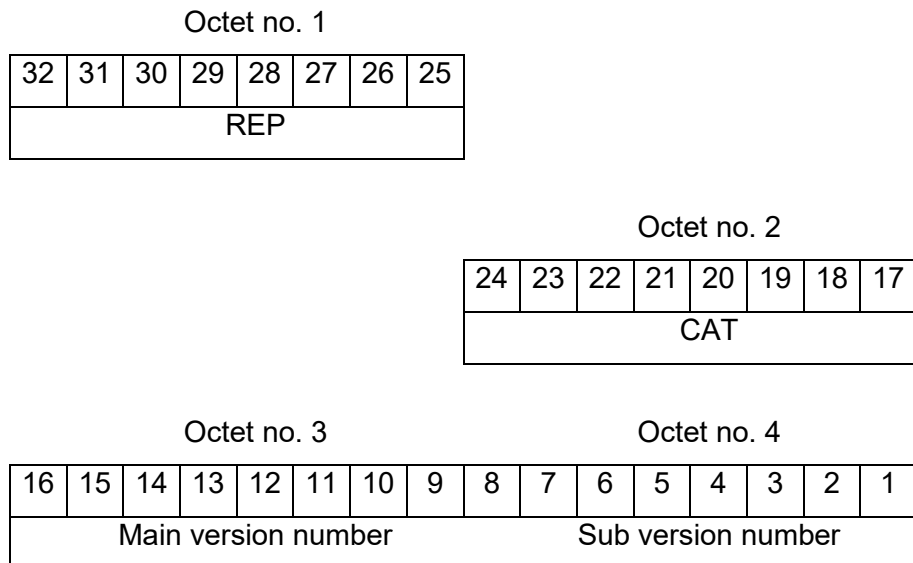
NOTE - The time of day value is reset to zero each day at midnight.**Encoding Rule :** This item shall be present in each ASTERIX message

5.2.4 Data Item I247/550, Category Version Number Report

Definition: Version number of Categories used.

Format: Repetitive Data Item starting with a one-octet Field Repetition Indicator (REP) followed by at least one Version Number report for each Category used. A Version Number report is made of a one octet ASTERIX CAT number and a 2 octets tuple representing the Version Number, further split in the Main version and the Sub version numbers.

Structure:



bits-32/25	(REP)	Repetition factor
bits-24/17	CAT	ASTERIX Category [0..255]
bits-16/9	Main Version Number	[0..99] e.g Vers: <u>1</u> .1
bits-8/1	Sub Version Number	[0..99] e.g Vers: 1. <u>1</u>

NOTE - The Version Number corresponds to the Edition of the ASTERIX Category specification.

NOTE - The version number(s) corresponding to the Edition of the ASTERIX Category Reserved Expansion Field(s) can be specified in the REF.

NOTE - The version number(s) corresponding to the Edition of the ASTERIX Category Special Purpose Field(s) may be specified in the SPF.

Encoding Rule : This item shall be present in each ASTERIX message

5.3 Standard User Application Profile

The following UAP shown in Table 3 shall be used for the transmission of Category 247 reports:

Table 3 - Standard UAP

FRN	Data Item	Information	Length in Octets
1	I247/010	Data Source Identifier	2
2	I247/015	Service Identification	1
3	I247/140	Time of Day	3
4	I247/550	Category Version Number Report	1+3*n
5	-	Spare	-
6	SP	Special Purpose Field	-
7	RE	Reserved Expansion Field	-
FX	-	Field Extension Indicator (set to 0)	-

where:

- the first column indicates the FRN associated to each Data Item used in the UAP;
- the fourth column gives the format and the length of each item. A stand-alone figure indicates the octet count of a fixed-length Data Item, 1+ indicates a variable-length Data Item comprising a first part of one-octet followed by n-octet extents as necessary.

The maximum length of the corresponding FSPEC is one octet.



SUPPORTING EUROPEAN AVIATION



© EUROCONTROL -

This document is published by EUROCONTROL for information purposes. It may be copied in whole or in part, provided that EUROCONTROL is mentioned as the source and it is not used for commercial purposes (i.e. for financial gain). The information in this document may not be modified without prior written permission from EUROCONTROL.

www.eurocontrol.int