Application Note AN112-048

Data Interface Specification Document Asterix CAT048

Title	Description	Version	Date
Asterix Category (CAT) 048 (30_h)	**Mode-S Data**	**1.0**	**August 27, 2017**

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1. General

The usage of this Asterix Category CAT 048 by the PlaneTRack surveillance receiver is to transmit data that are not ADS-B data items made available by CAT 021. The items concerned are Mode-S packets in response to Mode-S radar Elementary (ELS) interrogations UF4 and UF5.

1.1. Disclaimer and Warning

Mode-S data items transmitted by CAT 048 are decoded by using a heuristic method, because the Mode-S UF interrogation packets are not known to the PlaneTRack surveillance receiver and the response aircraft identity is not CRC secured. However, this method yields 99% correct results, but identity and data items cannot be verified and therefore must not be use for operational purposes. Planevision Systems cannot warrant the correctness of the data transmitted, nor can it be held liable for any malfunction or damages by the use of these data. By using these data the user holds harmless Planevision Systems from any claims with regard to the use of these data.

1.2. Purpose

This document provides information about specific usage and deviations for CAT 048 data output from PlaneTRack surveillance receivers.

For detailed information on CAT 048 please refer to the current EUROCONTROL document at:

https://www.eurocontrol.int/publications/cat048-monoradar-target-reports-part-4-next-version-cat-001

2. User Application Profile and Data Blocks

CAT = 048 (30_h)	**LEN**	**FSPEC**	**Items of the first record**		**FSPEC**	**Items of the last record**
1 octet	2 octets	1, 2 or 3 octets			n.a.	n.a.

Note: only 1 record will be sent for each airframe

The below table shows which data items are supported by the PlaneTRack implementation of CAT 048. Green data items are transmitted if received, while red data items are not available.

FRN	Data Item	Data Item Description	Length in Octets
1	I048/010	Data Source Identifier	2
2	I048/140	Time-of-Day	3
3	I048/020	Target Report Descriptor	1+
4	I048/040	Measured Position in Slant Polar Coordinates	4
5	I048/070	Mode-3/A Code in Octal Representation	2
6	I048/090	Flight Level in Binary Representation	2
7	I048/130	Radar Plot Characteristics	1+1+
FX	n.a.	Field Extension Indicator	n.a.
8	I048/220	Aircraft Address	3
9	I048/240	Aircraft Identification	6
10	I048/250	Mode S MB Data	1+8*n
11	I048/161	Track Number	2
12	I048/042	Calculated Position in Cartesian Coordinates	4
13	I048/200	Calculated Track Velocity in Polar Representation	4
14	I048/170	Track Status	1+
FX	n.a.	Field Extension Indicator	n.a.
15	I048/210	Track Quality	4
16	I048/030	Warning/Error Conditions	1+
17	I048/080	Mode-3/A Code Confidence Indicator	2
18	I048/100	Mode-C Code and Confidence Indicator	4
19	I048/110	Height Measured by 3D Radar	2
20	I048/120	Radial Doppler Speed	1+
21	I048/230	Communications / ACAS Capability and Flight Status	2
FX	n.a.	Field Extension Indicator	n.a.
22	I048/260	ACAS Resolution Advisory Report	7
23	I048/055	Mode-1 Code in Octal Representation	1
24	I048/050	Mode-2 Code in Octal Representation	2
25	I048/065	Mode-1 Code Confidence Indicator	1
26	I048/060	Mode-2 Code Confidence Indicator	2
27	SP-Data Item	Special Purpose Field	1+1+
28	RE-Data Item	Reserved Expansion Field	1+1+
FX	n.a.	Field Extension Indicator	n.a.

T-1: Table of available data items

3. Deviations from CAT 048 Standard Data Items

This section lists deviations from CAT 048 standard data items as they are implemented by the PlaneTRack ADS-B receiver output.

3.1 Data Item I048/140, Time of Day

The actual accuracy of this timestamp is 1 second, while the LSB bit 1 is 1/128 seconds.

3.2 Data Item I048/230, Communications/ACAS Capability and Flight Status

This encoding rule of this data item has been altered:

Original CAT-048 encoding rule:

Octet no. 1								Octet no. 2							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
COM			STAT			SI	0	MSSC	ARC	AIC	B1A	B1B			

Altered CAT-048 encoding rule:

Octet no. 1								**Octet No. 2**							
16	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
n.a.			**STAT***			**n.a.**			**ARC***	**n.a.**				**MOPS**	

* no change from original encoding rule
n.a. ignore/non-relevant contents

bits-13/11 (STAT) Flight Status
= 0 No alert, no SPI, aircraft airborne
= 1 No alert, no SPI, aircraft on ground
= 2 Alert, no SPI, aircraft airborne
= 3 Alert, no SPI, aircraft on ground
= 4 Alert, SPI, aircraft airborne or on ground
= 5 No alert, SPI, aircraft airborne or on ground
= 6 Not assigned
= 7 Unknown

bit-7 (ARC) Altitude reporting capability
= 0 100 ft resolution
= 1 25 ft resolution

bits-2/1 (MOPS) Transponder capability
= 0 unknown or DO-260 (Version 0)
= 1 DO-260A (Version 1)
= 2 DO-260B (version 2)

3.3 Data Item I048/240, Aircraft Identification

This data item is derived from DF20/21 MB data responses in BDS2.0.

Record of Revisions

1.0	Aug 27, 2017	Initial issue