

Asterix category 016 - Independent Non-Cooperative Surveillance System Configuration Reports

category: 016

edition: 1.0

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Preamble

Surveillance data exchange.

Description of standard data items

I016/000 - Message Type

Definition: This data item conveys the message type.

Structure:

- 8 bits [.]
- values:
 - 1: System Configuration
 - 2: Transmitter / Receiver Configuration

I016/010 - Data Source Identifier

Definition: Identification of the Ground System from which the data is received.

Structure:

I016/010/SAC - System Area Code

- 8 bits [.]
- raw value

I016/010/SIC - System Identification Code

- 8 bits [.]
- raw value

NOTE - The up-to-date list of SACs is published on the EUROCONTROL Web Site (<http://www.eurocontrol.int/asterix>).

NOTE - The SICs are allocated by the national authority responsible for the surveillance infrastructure.

I016/015 - Service Identification

Definition: Identifies the service being reported.

Structure:

- 8 bits [.]
- raw value

NOTE - The service identification is allocated by the system.

I016/140 - Time of Day

Definition: Absolute time stamping expressed as UTC time.

Structure:

- 24 bits [.]
- unsigned quantity
- scaling factor: 1
- fractional bits: 7
- unit: "s"
- $\text{LSB} = 1/2^7 \text{ s} = 1/128 \text{ s} \approx 7.8125e - 3 \text{ s}$

NOTE - The time of day value is reset to zero each day at midnight.

I016/200 - System Configuration Reporting Period

Definition: Data item to indicate the reporting period of the system configuration messages.

Structure:

- 8 bits [.]
- unsigned quantity
- scaling factor: 1
- fractional bits: 0
- unit: "s"
- $\text{LSB} = 1 \text{ s}$
- value $> 1 \text{ s}$

NOTE - The item will be sent periodically (every SCRP) and each time a value change occurs.

I016/300 - Pair Identification

Definition: The use of a pair identifier in this data item, that is common with its counterpart in ASTERIX Category I015/400, enables direct mapping from the INCS Target Report to the Transmitter/Receiver Pair that contributed to the target report. This is an identifier pointing to a measurement that was created from a specific contributing pair where the Pair Identifier refers to the index that details both the transmitter characteristics (DVB-T, DAB, FM, dedicated etc) and the receiver characteristics.

Structure:

Repetitive item, repetition factor 8 bits.

I016/300/PID - Pair Identification

- 16 bits [.]
- raw value

I016/300/TID - Transmitter Identification

- 16 bits [.]
- raw value

I016/300/RID - Receiver Identification

- 16 bits [.]
- raw value

I016/400 - Position of the System Reference Point

Definition: Position of the system reference point in WGS-84 coordinates.

Structure:

I016/400/LAT - Latitude

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $\text{LSB} = 180/2^{31} \text{ }^\circ = 180/2147483648 \text{ }^\circ \approx 8.381903171539307e-8 \text{ }^\circ$
- value $\geq -90 \text{ }^\circ$
- value $\leq 90 \text{ }^\circ$

I016/400/LON - Longitude

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $\text{LSB} = 180/2^{31} \text{ }^\circ = 180/2147483648 \text{ }^\circ \approx 8.381903171539307e-8 \text{ }^\circ$
- value $\geq -180 \text{ }^\circ$
- value $< 180 \text{ }^\circ$

NOTE - Positive longitude indicates East. Positive latitude indicates North.

NOTE - I016/400 shall only be sent together with item I016/405 "Height of the System Reference Point".

I016/405 - Height of System Reference Point

Definition: Height of the system reference point in Two's Complement form. The height shall use mean sea level as the zero reference level.

Structure:

- 16 bits [.....]
- signed quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m"
- $\text{LSB} = 1/2^2 \text{ m} = 1/4 \text{ m} \approx 0.25 \text{ m}$
- value $> -8192 \text{ m}$
- value $< 8192 \text{ m}$

NOTE - I016/405 shall only be sent together with item I016/400 "Position of the System Reference Point".

I016/410 - Transmitter Properties

Definition: This item provides properties of a transmitter component.

Structure:

Repetitive item, repetition factor 8 bits.

I016/410/TID - Transmitter ID

- 16 bits [.....]
- raw value

I016/410/LAT - *Latitude*

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $\text{LSB} = 180/2^{31} \text{ °} = 180/2147483648 \text{ °} \approx 8.381903171539307e-8 \text{ °}$
- value $\geq -90 \text{ °}$
- value $\leq 90 \text{ °}$

I016/410/LON - *Longitude*

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $\text{LSB} = 180/2^{31} \text{ °} = 180/2147483648 \text{ °} \approx 8.381903171539307e-8 \text{ °}$
- value $\geq -180 \text{ °}$
- value $< 180 \text{ °}$

I016/410/ALT - *Altitude*

- 16 bits [.....]
- signed quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m"
- $\text{LSB} = 1/2^2 \text{ m} = 1/4 \text{ m} \approx 0.25 \text{ m}$
- value $> -8192 \text{ m}$
- value $< 8192 \text{ m}$

I016/410/TTO - *Transmission Time Offset*

- 32 bits [.....]
- signed quantity
- scaling factor: 2
- fractional bits: 0
- unit: "ns"
- $\text{LSB} = 2 \text{ ns}$

I016/410/(spare)

- 4 bits [....]

I016/410/ATO - *Accuracy of Transmission Time Offset*

- 20 bits [.....]
- unsigned quantity
- scaling factor: 1
- fractional bits: 0
- unit: "ns"
- $\text{LSB} = 1 \text{ ns}$

I016/410/PCI - *Parallel Transmitter Index*

- 16 bits [.....]
- unsigned integer

- NOTE - Regarding Transmitter Identification:** a. Individual channels of a transmitter are considered as separate collocated transmitters.
- b. A Transmitter ID may be assigned to individual channels of a compound transmitter. i.e. a single multi-channel transmitter may be assigned several Tx ID.
- c. The Tx ID shall be used in a unique way for a specific SAC/SIC.
- NOTE - Regarding Transmitter Latitude and Longitude and Altitude:** a. The Tx Location and Altitude is the position of the component in WGS-84 coordinates. The vertical distance between the component and the projection of its position on the earth's ellipsoid, as defined by WGS-84, in two's complement form.
- NOTE - Regarding Transmission Time Offset** a. Time offset of transmitter compared to the reference transmitter within the single frequency network (SFN).
- NOTE - Regarding Accuracy of Transmission Time Offset** a. The Accuracy of the Transmission Time Offset is the Standard Deviation of the measurement of the transmission time offset between the transmitter channel compared to the reference transmitter within the single frequency network (SFN).
- NOTE - Regarding Parallel Transmitter Index** a. The Parallel Transmitter Index is the identification of the transmitter via index, which is sent in parallel.
- b. For referring to a one-octet index bits-16/9 shall be set to zero.
- c. This index shall be used in a unique way for a specific SAC/SIC.
- d. In a Single Frequency Network the parallel transmitter index is the index of the reference transmitter.

I016/420 - Receiver Properties

Definition: This item provides properties of the receiver component.

Structure:

Repetitive item, repetition factor 8 bits.

I016/420/RID - Receiver Component ID

- 16 bits [.....]
- raw value

I016/420/LAT - Latitude

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $LSB = 180/2^{31} \text{ °} = 180/2147483648 \text{ °} \approx 8.381903171539307e - 8 \text{ °}$
- value $\geq -90 \text{ °}$
- value $\leq 90 \text{ °}$

I016/420/LON - Longitude

- 32 bits [.....]
- signed quantity
- scaling factor: 180
- fractional bits: 31
- unit: "°"
- $LSB = 180/2^{31} \text{ °} = 180/2147483648 \text{ °} \approx 8.381903171539307e - 8 \text{ °}$
- value $\geq -180 \text{ °}$
- value $< 180 \text{ °}$

I016/420/ALT - Altitude

- 16 bits [.....]
- signed quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m"
- $\text{LSB} = 1/2^2 \text{ m} = 1/4 \text{ m} \approx 0.25 \text{ m}$
- value $> -8192 \text{ m}$
- value $< 8192 \text{ m}$

NOTE - Regarding the Receiver Identification a. The Rx ID shall be used in a unique way for a specific SAC/SIC.

NOTE - Regarding the Receiver Location and Altitude (WGS-84) a. The Rx Location and Altitude is the of the component in WGS-84 coordinates. The vertical distance between the component and the projection of its position on the earth's ellipsoid, as defined by WGS-84, in two's complement form.

I016/SP - Special Purpose Field

Definition: Special Purpose Field

Structure:

Explicit item (SP)

User Application Profile for Category 016

- (1) I016/010 - Data Source Identifier
- (2) I016/015 - Service Identification
- (3) I016/000 - Message Type
- (4) I016/140 - Time of Day
- (5) I016/200 - System Configuration Reporting Period
- (6) I016/300 - Pair Identification
- (7) I016/400 - Position of the System Reference Point
- (FX) - Field extension indicator
- (8) I016/405 - Height of System Reference Point
- (9) I016/410 - Transmitter Properties
- (10) I016/420 - Receiver Properties
- (11) I016/SP - Special Purpose Field
- (12) (spare)
- (13) (spare)
- (14) (spare)
- (FX) - Field extension indicator