
# cat008 category specification

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## Monoradar Derived Weather Information

**2014-08-24**

# CONTENTS:

**category**: 008

**edition**: 1.2

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CHAPTER

# ONE

# PREAMBLE

Surveillance data exchange.

CHAPTER

TWO

# DESCRIPTION OF STANDARD DATA ITEMS

## 2.1 I008/000 - Message Type

*Definition*: This Data Item allows for a more convenient handling of the messages at the receiver side by further defining the type of transaction.

*Structure*:

- 8 bits [. . . . . .]
- values:

  1: Polar vector
  2: Cartesian vector of start point/length
  3: Contour record
  4: Cartesian start point and end point vector
  254: SOP message
  255: EOP message

## 2.2 I008/010 - Data Source Identifier

*Definition*: Identification of the radar station from which the data are received.

*Structure*:

**I008/010/SAC** - *System Area Code*

- 8 bits [. . . . . .]
- raw value

**I008/010/SIC** - *System Identification Code*

- 8 bits [. . . . . .]
- raw value

**Note:** The defined SACs are on the EUROCONTROL ASTERIX website (www.eurocontrol.int/asterix)

## 2.3 I008/020 - Vector Qualifier

*Definition*: Precipitation intensity level, shading orientation of the vectors representing the precipitation area and coordinate system used.

*Structure*:

Extended item with first part `8 bits` long and optional `8 bits` extends.

**I008/020/ORG**

- 1 bit [ . ]
- values:

  0: Local Coordinates
  1: System Coordinates

**I008/020/I** - *Intensity Level*

- 3 bits [ . . . ]
- unsigned integer

**I008/020/S** - *Shading Orientation with Respect to North*

- 3 bits [ . . . ]
- values:

  0: 0°
  1: 22.5°
  2: 45°
  3: 67.5°
  4: 90°
  5: 112.5°
  6: 135°
  7: 157.5°

(FX)

- extension bit

  0: End of data item
  1: Extension into next extent

**I008/020/(spare)**

- 5 bits [ . . . . . ]

**I008/020/TST**

- 1 bit [ . ]
- values:

  0: Default
  1: Test vector

**I008/020/ER**

- 1 bit [ . ]
- values:

  0: Default
  1: Error condition encountered

(FX)

- extension bit

  0: End of data item
  1: Extension into next extent

**Note:** For polar vectors bits-4/2 are meaningless and are set to zero.

## 2.4 I008/034 - Sequence of Polar Vectors in SPF Notation

*Definition*: Sequence of weather vectors in local polar coordinates.

*Structure*:

Repetitive item, repetition factor 8 bits.

**I008/034/STR** - *Start Range*

- 8 bits [. . . . . .]
- raw value

**I008/034/ENDR** - *End Range*

- 8 bits [. . . . . .]
- raw value

**I008/034/AZ** - *Azimuth*

- 16 bits [. . . . . .]
- unsigned quantity
- scaling factor: 360
- fractional bits: 16
- unit: “deg”
- LSB = $360/2^{16}$ deg = $360/65536$ deg $\approx 0.0054931640625$ deg

**Note:** f is a parameter of the SOP message.

## 2.5 I008/036 - Sequence of Cartesian Vectors in SPF Notation

*Definition*: Sequence of weather vectors, in the representation start point/length, in local or in system cartesian coordinates.

*Structure*:

Repetitive item, repetition factor 8 bits.

**I008/036/X** - *X-Component*

- 8 bits [. . . . . .]
- raw value

**I008/036/Y** - *Y-Component*

- 8 bits [. . . . . .]
- raw value

**I008/036/LENGTH** - *Length*

- 8 bits [. . . . . .]

- raw value

**Note:**

1. LSB of [X, Y, L] is calculated as $2^{-6+F}$.
2. F is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bit-24 and bit-16 are set to 0 for positive values and 1 for negative values.

## 2.6 I008/038 - Sequence of Weather Vectors in SPF Notation

*Definition*: Sequence of weather vectors, in the representation start point/ end point, in local or in system cartesian coordinates.

*Structure*:

Repetitive item, repetition factor 8 bits.

**I008/038/X1** - *X1-Component*

- 8 bits [. . . . . .]
- raw value

**I008/038/Y1** - *Y1-Component*

- 8 bits [. . . . . .]
- raw value

**I008/038/X2** - *X2-Component*

- 8 bits [. . . . . .]
- raw value

**I008/038/Y2** - *Y2-Component*

- 8 bits [. . . . . .]
- raw value

**Note:**

1. LSB of [X1, Y1, X2, Y2] is calculated as $2^{-6+f}$.
2. f is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bits-32, 24, 16 and 8 are set to 0 for positive values and 1 for negative values.

## 2.7 I008/040 - Contour Identifier

*Definition*: Contour serial number together with the precipitation intensity levels and the coordinates system used.

*Structure*:

**I008/040/ORG**

- 1 bit [.]
- values:

  0: Local Coordinates

1: System Coordinates

**I008/040/I** - *Intensity Level*

- 3 bits [. . . ]
- raw value

**I008/040/(spare)**

- 2 bits [. . ]

**I008/040/FSTLST**

- 2 bits [. . ]
- values:

  0: Intermediate record of a contour
  1: Last record of a contour of at least two records
  2: First record of a contour of at least two records
  3: First and only record, fully defining a contour

**I008/040/CSN** - *Contour Serial Number*

- 8 bits [. . . . . ]
- raw value

**Note:** The Contour Serial Number provides an unambiguous identification for each contour record. Within one update cycle, a serial number shall never be assigned twice.

## 2.8 I008/050 - Sequence of Contour Points in SPF Notation

*Definition*: Cartesian coordinates of a variable number of points defining a contour.

*Structure*:

Repetitive item, repetition factor 8 bits.

**I008/050/X1**

- 8 bits [. . . . . ]
- raw value

**I008/050/Y1**

- 8 bits [. . . . . ]
- raw value

**Note:**

1. LSB of [X1, Y1] is calculated as $2^{-6+f}$.
2. f is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bit-16 and bit-8 shall be set to 0 for positive values and 1 for negative values.

## 2.9 I008/090 - Time of Day

*Definition*: Absolute time stamping expressed as Coordinated Universal Time (UTC) time.

*Structure*:

- 24 bits [. . . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 7
- unit: "s"
- LSB = $1/2^7$ s = $1/128$ s $\approx 0.0078125$ s

**Notes:**

1. The time of day value is reset to zero each day at midnight.
2. For time management in radar transmission applications, refer to Part 1, paragraph 5.4 [Ref. 1].

## 2.10 I008/100 - Processing Status

*Definition*: Information concerning the scaling factor currently applied, current reduction step in use, etc.

*Structure*:

Extended item with first part `24 bits` long and optional `8 bits` extends.

**I008/100/F** - *Scaling Factor*

- 5 bits [. . . . .]
- signed quantity
- scaling factor: 1
- fractional bits: 0
- LSB = 1

**I008/100/R** - *Current Reduction Stage in Use*

- 3 bits [. . .]
- raw value

**I008/100/Q** - *Processing Parameters*

- 15 bits [. . . . . .]
- raw value

(FX)

- extension bit

  0: End of data item
  1: Extension into next extent

**Note:** F: Scaling factor, negative values are represented in 2's complement form, bit-24 is set to 0 for positive values and 1 for negative values. R: Current reduction stage

in use. Normal operation is indicated by a value of zero. The actual bit signification is application dependent. Q: Processing parameters. The actual bit signification isapplication dependent.

## 2.11 I008/110 - Station Configuration Status

*Definition*: Information concerning the use and status of some vital hardware components of a radar system .

*Structure*:

Extended item with first part `8 bits` long and optional `8 bits` extends.

**I008/110/DATA** - *Unspecified Data*

- 7 bits [. . . . . .]
- raw value

(FX)

- extension bit

  0: End of data item
  1: Extension into next extent

**Note:** Due to the diversity in hardware design and requirements of present and future radar stations, it is felt impractical to attempt to define individual bits.

## 2.12 I008/120 - Total Number of Items Constituting One Weather Picture

*Definition*: Total number of vectors, respectively contour points, constituting the total weather image, provided with the EOP message.

*Structure*:

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

## 2.13 I008/SP - Special Purpose Field

*Definition*: Special Purpose Field

*Structure*:

Explicit item

## 2.14 I008/RFS - Random Field Sequencing

*Definition*: Random Field Sequencing

*Structure*:

Explicit item

CHAPTER

THREE

# USER APPLICATION PROFILE FOR CATEGORY 008

- (1) `I008/010` - Data Source Identifier
- (2) `I008/000` - Message Type
- (3) `I008/020` - Vector Qualifier
- (4) `I008/036` - Sequence of Cartesian Vectors in SPF Notation
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- (6) `I008/040` - Contour Identifier
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- `(FX)` - Field extension indicator
- (8) `I008/090` - Time of Day
- (9) `I008/100` - Processing Status
- (10) `I008/110` - Station Configuration Status
- (11) `I008/120` - Total Number of Items Constituting One Weather Picture
- (12) `I008/038` - Sequence of Weather Vectors in SPF Notation
- (13) `I008/SP` - Special Purpose Field
- (14) `I008/RFS` - Random Field Sequencing
- `(FX)` - Field extension indicator

CHAPTER

FOUR

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