cat020 category specification

Release 2015-03-25, 1.9

Multilateration Target Reports

2015-03-25

CONTENTS:

category: 020

edition: 1.9

date: 2015-03-25

PREAMBLE

Surveillance data exchange.

DESCRIPTION OF STANDARD DATA ITEMS

2.1 I020/010 - Data Source Identifier

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

Structure:

I020/010/SAC - *System Area Code*

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

I020/010/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).

2.2 I020/020 - Target Report Descriptor

Definition: Type and characteristics of the data as transmitted by a system.

Structure:

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

I020/020/SSR

- 1 bit [.]
- values:

  0: Non-Mode S 1090MHz multilateration
  1: No Non-Mode S 1090MHz multilat

I020/020/MS

- 1 bit [.]
- values:

  0: Mode-S 1090 MHz multilateration
  1: No Mode-S 1090 MHz multilateration

I020/020/HF

- 1 bit [.]

- values:

> 0: HF multilateration
> 1: No HF multilateration

I020/020/VDL4

- 1 bit [.]

- values:

> 0: VDL Mode 4 multilateration
> 1: No VDL Mode 4 multilateration

I020/020/UAT

- 1 bit [.]

- values:

> 0: UAT multilateration
> 1: No UAT multilateration

I020/020/DME

- 1 bit [.]

- values:

> 0: DME/TACAN multilateration
> 1: No DME/TACAN multilateration

I020/020/OT

- 1 bit [.]

- values:

> 0: Other Technology Multilateration
> 1: No Other Technology Multilateration

(FX)

- extension bit

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

I020/020/RAB

- 1 bit [.]

- values:

> 0: Report from target transponder
> 1: Report from field monitor (element transponder)

I020/020/SPI

- 1 bit [.]

- values:

> 0: Absence of SPI
> 1: Special Position Identification

I020/020/CHN

- 1 bit [.]

- values:

> 0: Chain 1

1: Chain 2

I020/020/GBS

- 1 bit [.]

- values:

   0: Transponder Ground bit not set
   1: Transponder Ground bit set

I020/020/CRT

- 1 bit [.]

- values:

   0: No Corrupted reply in multilateration
   1: Corrupted replies in multilateration

I020/020/SIM

- 1 bit [.]

- values:

   0: Actual target report
   1: Simulated target report

I020/020/TST

- 1 bit [.]

- values:

   0: Default
   1: Test Target

(FX)

- extension bit

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

2.3 I020/030 - Warning/Error Conditions

Definition: Warning/error conditions detected by a system for the target report involved.

Structure:

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

I020/030/WE

- 7 bits [. . . . . . .]

- values:

   0: Not defined; never used
   1: Multipath Reply (Reflection)
   3: Split plot
   10: Phantom SSR plot
   11: Non-Matching Mode-3/A Code
   12: Mode C code / Mode S altitude code abnormal value compared
   to the track
   15: Transponder anomaly detected

16: Duplicated or Illegal Mode S Aircraft Address

17: Mode S error correction applied

18: Undecodable Mode C code / Mode S altitude code

(FX)

- extension bit

0: End of data item

1: Extension into next extent

Notes:

1. It has to be stressed that a series of one or more W/E conditions can be reported per target report.

2. Data conveyed in this item are of secondary importance, and can generally also be derived from the processing of mandatory items.

3. Definitions can be found in SUR.ET1.ST03.1000-STD-01-01 Radar Sensor Performance Analysis.

4. The coding of Warning/Errors is kept consistent with category 048.

2.4 I020/041 - Position In WGS-84 Coordinates

Definition: Position of a target in WGS-84 Coordinates.

Structure:

I020/041/LAT - *Latitude*

- 32 bits [. . . .]

- signed quantity

- scaling factor: 180

- fractional bits: 25

- unit: "deg"

- LSB = $180/2^{25}$ deg = $180/33554432$ deg $\approx 5.364418029785156e - 06$ deg

- value $>= -90$ deg

- value $<= 90$ deg

I020/041/LON - *Longitude*

- 32 bits [. . . .]

- signed quantity

- scaling factor: 180

- fractional bits: 25

- unit: "deg"

- LSB = $180/2^{25}$ deg = $180/33554432$ deg $\approx 5.364418029785156e - 06$ deg

- value $>= -180$ deg

- value < 180 deg

2.5 I020/042 - Position in Cartesian Coordinates

Definition: Calculated position in Cartesian Coordinates, in two's complement representation.

Structure:

I020/042/X - *X-coordinate*

- 24 bits [. . . .]
- signed quantity
- scaling factor: 1
- fractional bits: 1
- unit: "m"
- LSB = $1/2^1$ m = $1/2$ m ≈ 0.5 m
- value $>= -4194300$ m
- value $<= 4194300$ m

I020/042/Y - *Y-coordinate*

- 24 bits [. . . .]
- signed quantity
- scaling factor: 1
- fractional bits: 1
- unit: "m"
- LSB = $1/2^1$ m = $1/2$ m ≈ 0.5 m
- value $>= -4194300$ m
- value $<= 4194300$ m

2.6 I020/050 - Mode-2 Code in Octal Representation

Definition: Mode-2 code converted into octal representation.

Structure:

I020/050/V - *Validated*

- 1 bit [.]
- values:

    0: Code validated
    1: Code not validated

I020/050/G - *Garbled*

- 1 bit [.]
- values:

    0: Default
    1: Garbled code

I020/050/L

- 1 bit [.]

- values:

     0: Mode-2 code derived from the reply of the transponder
     1: Smoothed Mode-2 code as provided by a local tracker n

I020/050/(spare)

- 1 bit [.]

I020/050/MODE2 - *Mode-2 Reply in Octal Representation*

- 12 bits [. . . . .]
- Octal string (3-bits per digit)

2.7 I020/055 - Mode-1 Code in Octal Representation

Definition: Mode-1 code converted into octal representation.

Structure:

I020/055/V - *Validated*

- 1 bit [.]

- values:

     0: Code validated
     1: Code not validated

I020/055/G - *Garbled*

- 1 bit [.]

- values:

     0: Default
     1: Garbled code

I020/055/L

- 1 bit [.]

- values:

     0: Mode-1 code derived from the reply of the transponder
     1: Smoothed Mode-1 code as provided by a local tracker

I020/055/MODE1 - *Mode-1 Code in Octal Representation*

- 5 bits [. . . . .]
- raw value

2.8 I020/070 - Mode-3/A Code in Octal Representation

Definition: Mode-3/A code converted into octal representation.

Structure:

I020/070/V - *Validated*

- 1 bit [.]

- values:

     0: Code validated

1: Code not validated

I020/070/G - *Garbled*

- 1 bit [.]

- values:

  0: Default
  1: Garbled code

I020/070/L

- 1 bit [.]

- values:

  0: Mode-3/A code derived from the reply of the transponder
  1: Mode-3/A code not extracted during the last update period

I020/070/(spare)

- 1 bit [.]

I020/070/MODE3A - *Mode-3/A Reply in Octal Representation*

- 12 bits [. . . . .]

- Octal string (3-bits per digit)

Notes:

1. Bit 15 (G) is set to one when an error correction has been attempted.

2. Bit 16 (V) is normally set to zero, but can exceptionally be set to one to indicate a non-validated Mode-3/A code (e.g. alert condition detected, but new Mode-3/A code not successfully extracted).

2.9 I020/090 - Flight Level in Binary Representation

Definition: Flight Level (Mode S Altitude) converted into binary two's complement representation.

Structure:

I020/090/V - *Validated*

- 1 bit [.]

- values:

  0: Code validated
  1: Code not validated

I020/090/G - *Garbled*

- 1 bit [.]

- values:

  0: Default
  1: Garbled code

I020/090/FL - *Flight Level*

- 14 bits [. . . . .]

- signed quantity

- scaling factor: 1

- fractional bits: 2

- unit: "FL"

- LSB = $1/2^2$ FL = $1/4$ FL ≈ 0.25 FL

Notes:

1. When Mode C code / Mode S altitude code is present but not decodable, the "Undecodable Mode C code / Mode S altitude code" Warning/Error should be sent in I020/030.

2. When local tracking is applied and the received Mode S altitude code corresponds to an abnormal value (i.e: the difference in altitude between the current and the previous plot exceeds a predefined system threshold), the "Mode C code / Mode S altitude code abnormal value compared to the track" Warning/Error should be sent in I020/030.

3. The value shall be within the range described by ICAO Annex 10

4. For Mode S, bit 15 (G) is set to one when an error correction has been attempted.

2.10 I020/100 - Mode C Code

Definition: Mode-C height in Gray notation as received from the transponder together with the confidence level for each reply bit as provided by a MSSR/Mode-S station.

Structure:

I020/100/V - *Validated*

- 1 bit [.]

- values:

    0: Code validated
    1: Code not validated

I020/100/G - *Garbled*

- 1 bit [.]

- values:

    0: Default
    1: Garbled code

I020/100/(spare)

- 2 bits [..]

I020/100/MODEC - *Mode-C Reply in Gray Notation*

- 12 bits [...........]

- raw value

I020/100/(spare)

- 4 bits [....]

I020/100/QC1 - *Quality Pulse C1*

- 1 bit [.]

- values:

    0: High quality pulse C1
    1: Low quality pulse C1

I020/100/QA1 - *Quality Pulse A1*

- 1 bit [.]

- values:

    0: High quality pulse A1
    1: Low quality pulse A1

I020/100/QC2 - *Quality Pulse C2*

- 1 bit [.]

- values:

    0: High quality pulse C2
    1: Low quality pulse C2

I020/100/QA2 - *Quality Pulse A2*

- 1 bit [.]

- values:

    0: High quality pulse A2
    1: Low quality pulse A2

I020/100/QC4 - *Quality Pulse C4*

- 1 bit [.]

- values:

    0: High quality pulse C4
    1: Low quality pulse C4

I020/100/QA4 - *Quality Pulse A4*

- 1 bit [.]

- values:

    0: High quality pulse A4
    1: Low quality pulse A4

I020/100/QB1 - *Quality Pulse B1*

- 1 bit [.]

- values:

    0: High quality pulse B1
    1: Low quality pulse B1

I020/100/QD1 - *Quality Pulse D1*

- 1 bit [.]

- values:

    0: High quality pulse D1
    1: Low quality pulse D1

I020/100/QB2 - *Quality Pulse B2*

- 1 bit [.]

- values:

    0: High quality pulse B2
    1: Low quality pulse B2

I020/100/QD2 - *Quality Pulse D2*

- 1 bit [.]

- values:

    0: High quality pulse B2
    1: Low quality pulse B2

I020/100/QB4 - *Quality Pulse B4*

- 1 bit [.]

- values:

    0: High quality pulse B4
    1: Low quality pulse B4

I020/100/QD4 - *Quality Pulse D4*

- 1 bit [.]

- values:

    0: High quality pulse D4
    1: Low quality pulse D4

Notes:

1. For Mode S, bit 31 (G) is set to one when an error correction has been attempted.

2. For Mode S, D1 is also designated as Q, and is used to denote either 25ft or 100ft reporting.

2.11 I020/105 - Geometric Height (WGS-84)

Definition: Vertical distance between the target and the projection of its position on the earth's ellipsoid, as defined by WGS84, in two's complement form.

Structure:

- 16 bits [................]
- signed quantity
- scaling factor: 25
- fractional bits: 2
- unit: "ft"
- LSB = $25/2^2$ ft = $25/4$ ft ≈ 6.25 ft
- value $>= -204800$ ft
- value $<= 204800$ ft

2.12 I020/110 - Measured Height (Local Cartesian Coordinates)

Definition: Height above local 2D co-ordinate system in reference to the MLT System Reference Point as defined in item I019/610, in two's complement form, based on a direct measurement not related to barometric pressure.

Structure:

- 16 bits [. . . . .]
- signed quantity
- scaling factor: 25
- fractional bits: 2
- unit: "ft"
- LSB = $25/2^2$ ft = $25/4$ ft ≈ 6.25 ft
- value >= -204800 ft
- value <= 204800 ft

2.13 I020/140 - Time of Day

Definition: Absolute time stamping expressed as UTC.

Structure:

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

2.14 I020/161 - Track Number

Definition: An integer value representing a unique reference to a track record within a particular track file.

Structure:

I020/161/(spare)

- 4 bits [. . . .]

I020/161/TRN - *Track Number*

- 12 bits [. . . . .]
- raw value

2.15 I020/170 - Track Status

Definition: Status of a track.

Structure:

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

> **I020/170/CNF**
>
> > • 1 bit [.]
> >
> > • values:
> >
> > > 0: Confirmed track
> > > 1: Track in initiation phase
>
> **I020/170/TRE**
>
> > • 1 bit [.]
> >
> > • values:
> >
> > > 0: Default
> > > 1: Last report for a track
>
> **I020/170/CST**
>
> > • 1 bit [.]
> >
> > • values:
> >
> > > 0: Not extrapolated
> > > 1: Extrapolated
>
> **I020/170/CDM**
>
> > • 2 bits [..]
> >
> > • values:
> >
> > > 0: Maintaining
> > > 1: Climbing
> > > 2: Descending
> > > 3: Invalid
>
> **I020/170/MAH**
>
> > • 1 bit [.]
> >
> > • values:
> >
> > > 0: Default
> > > 1: Horizontal manoeuvre
>
> **I020/170/STH**
>
> > • 1 bit [.]
> >
> > • values:
> >
> > > 0: Measured position
> > > 1: Smoothed position
>
> (FX)
>
> > • extension bit
> >
> > > 0: End of data item
> > > 1: Extension into next extent

I020/170/GHO

- 1 bit [.]
- values:

  0: Default
  1: Ghost track

I020/170/(spare)

- 6 bits [. . . . . .]

(FX)

- extension bit

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

Notes:

1. Bit-8 (GHO) is used to signal that the track is suspected to have been generated by a fake target.

2.16 I020/202 - Calculated Track Velocity in Cartesian Coordinates

Definition: Calculated track velocity expressed in Cartesian Coordinates, in two's complement representation.

Structure:

I020/202/VX

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

I020/202/VY

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

2.17 I020/210 - Calculated Acceleration

Definition: Calculated Acceleration of the target, in two's complement form.

Structure:

I020/210/AX

- 8 bits [. . . . .]
- signed quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m/s2"
- LSB = $1/2^2$ m/s2 = $1/4$ m/s2 ≈ 0.25 m/s2
- value $>= -31$ m/s2
- value $<= 31$ m/s2

I020/210/AY

- 8 bits [. . . . .]
- signed quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m/s2"
- LSB = $1/2^2$ m/s2 = $1/4$ m/s2 ≈ 0.25 m/s2
- value $>= -31$ m/s2
- value $<= 31$ m/s2

Notes:

1. Maximum value means "maximum value or above"

2.18 I020/220 - Target Address

Definition: Target address (ICAO 24-bit address) assigned uniquely to each Target.

Structure:

- 24 bits [. . . .]
- raw value

2.19 I020/230 - Communications/ACAS Capability and Flight Status

Definition: Communications capability of the transponder, capability of the on-board ACAS equipment and flight status.

Structure:

I020/230/COM - *Communications Capability of the Transponder*

- 3 bits [...]
- values:

  0: No communications capability (surveillance only)
  1: Comm. A and Comm. B capability
  2: Comm. A, Comm. B and Uplink ELM
  3: Comm. A, Comm. B, Uplink ELM and Downlink ELM
  4: Level 5 Transponder capability
  5: Not assigned
  6: Not assigned
  7: Not assigned

I020/230/STAT - *Flight Status*

- 3 bits [...]
- values:

  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: Information not yet extracted

I020/230/(spare)

- 2 bits [..]

I020/230/MSSC - *Mode-S Specific Service Capability*

- 1 bit [.]
- values:

  0: No
  1: Yes

I020/230/ARC - *Altitude Reporting Capability*

- 1 bit [.]
- values:

  0: 100 ft resolution
  1: 25 ft resolution

I020/230/AIC - *Aircraft Identification Capability*

- 1 bit [.]
- values:

> 0: No
> 1: Yes

I020/230/B1A - *BDS 1,0 Bit 16*

- 1 bit [.]
- raw value

I020/230/B1B - *BDS 1,0 Bits 37/40*

- 4 bits [. . . .]
- raw value

2.20 I020/245 - Target Identification

Definition: Target (aircraft or vehicle) identification in 8 characters.

Structure:

I020/245/STI

- 2 bits [. .]
- values:

> 0: Callsign or registration not downlinked from transponder
> 1: Registration downlinked from transponder
> 2: Callsign downlinked from transponder
> 3: Not defined

I020/245/(spare)

- 6 bits [. . . . . .]

I020/245/CHR - *Characters 1-8 (coded on 6 Bits each) Defining Target Identification*

- 48 bits [. . . .]
- ICAO string (6-bits per character)

Notes:

1. See ICAO document Annex 10, Volume IV, section 3.1.2.9 for the coding rules.

2.21 I020/250 - Mode S MB Data

Definition: Mode S Comm B data as extracted from the aircraft transponder.

Structure:

Repetitive item, repetition factor 8 bits.

I020/250/MBDATA - *56-bit Message Conveying Mode S Comm B Message Data*

- 56 bits [. . . .]
- raw value

I020/250/BDS1 - *Comm B Data Buffer Store 1 Address*

- 4 bits [. . . .]
- raw value

I020/250/BDS2 - *Comm B Data Buffer Store 2 Address*

- 4 bits [. . . .]
- raw value

Notes:

1. For the transmission of BDS20, item I020/245 is used.

2. For the transmission of BDS30, item I020/260 is used.

2.22 I020/260 - ACAS Resolution Advisory Report

Definition: Currently active Resolution Advisory (RA), if any, generated by the ACAS associated with the transponder transmitting the report and threat identity data.

Structure:

- 56 bits [. . . .]
- raw value

Notes:

Refer to ICAO Draft SARPs for ACAS for detailed explanations.

2.23 I020/300 - Vehicle Fleet Identification

Definition: Vehicle fleet identification number.

Structure:

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

    0: Unknown
    1: ATC equipment maintenance
    2: Airport maintenance
    3: Fire
    4: Bird scarer
    5: Snow plough
    6: Runway sweeper
    7: Emergency
    8: Police
    9: Bus
    10: Tug (push/tow)
    11: Grass cutter
    12: Fuel
    13: Baggage
    14: Catering
    15: Aircraft maintenance
    16: Flyco (follow me)

2.24 I020/310 - Pre-programmed Message

Definition: Number related to a pre-programmed message that can be transmitted by a vehicle.

Structure:

> **I020/310/TRB**
>
> - 1 bit [.]
>
> - values:
>
>> 0: Default
>> 1: In Trouble
>
> **I020/310/MSG**
>
> - 7 bits [. . . . . . .]
>
> - values:
>
>> 1: Towing aircraft
>> 2: FOLLOW-ME operation
>> 3: Runway check
>> 4: Emergency operation (fire, medical...)
>> 5: Work in progress (maintenance, birds scarer, sweepers...)

2.25 I020/400 - Contributing Devices

Definition: Overview of Receiver Units, which have contributed to the Target Detection.

Structure:

Repetitive item, repetition factor 8 bits.

> **I020/400/BIT1** - *TU1/RU1 Contribution*
>
> - 1 bit [.]
>
> - values:
>
>> 0: TU1/RU1 has NOT contributed to the target detection
>> 1: TU1/RU1 has contributed to the target detection
>
> **I020/400/BIT2** - *TU2/RU2 Contribution*
>
> - 1 bit [.]
>
> - values:
>
>> 0: TU2/RU2 has NOT contributed to the target detection
>> 1: TU2/RU2 has contributed to the target detection
>
> **I020/400/BIT3** - *TU3/RU3 Contribution*
>
> - 1 bit [.]
>
> - values:
>
>> 0: TU3/RU3 has NOT contributed to the target detection
>> 1: TU3/RU3 has contributed to the target detection
>
> **I020/400/BIT4** - *TU4/RU4 Contribution*
>
> - 1 bit [.]

- values:

  0: TU4/RU4 has NOT contributed to the target detection
  1: TU4/RU4 has contributed to the target detection

I020/400/BIT5 - *TU5/RU5 Contribution*

- 1 bit [.]

- values:

  0: TU5/RU5 has NOT contributed to the target detection
  1: TU5/RU5 has contributed to the target detection

I020/400/BIT6 - *TU6/RU6 Contribution*

- 1 bit [.]

- values:

  0: TU6/RU6 has NOT contributed to the target detection
  1: TU6/RU6 has contributed to the target detection

I020/400/BIT7 - *TU7/RU7 Contribution*

- 1 bit [.]

- values:

  0: TU7/RU7 has NOT contributed to the target detection
  1: TU7/RU7 has contributed to the target detection

I020/400/BIT8 - *TU8/RU8 Contribution*

- 1 bit [.]

- values:

  0: TU8/RU8 has NOT contributed to the target detection
  1: TU8/RU8 has contributed to the target detection

Note:

In case of more than 8 devices connected to the system, the numbering of the field "RUx Contribution" follows the standard ASTERIX rule: bits are numbered from right to left. The example below shows the case of a maximum of 16 devices with devices 1, 7 and 14 contributing to the target:

<TODO: add table>

2.26 I020/500 - Position Accuracy

Definition: Standard Deviation of Position

Structure:

Compound item (FX)

I020/500/DOP - *DOP of Position*

I020/500/DOP/X - *DOP (X-Component)*

- 16 bits [...............]

- unsigned quantity

- scaling factor: 1

- fractional bits: 2

- LSB = $1/2^2 = 1/4 \approx 0.25$

I020/500/DOP/Y - *DOP (Y-Component)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 2
- LSB = $1/2^2 = 1/4 \approx 0.25$

I020/500/DOP/XY - *DOP (Correlation XY)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 2
- LSB = $1/2^2 = 1/4 \approx 0.25$

I020/500/SDP - *Standard Deviation of Position*

I020/500/SDP/X - *SDP (X-Component)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m"
- LSB = $1/2^2$ m $= 1/4$ m ≈ 0.25 m

I020/500/SDP/Y - *SDP (Y-Component)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 2
- unit: "m"
- LSB = $1/2^2$ m $= 1/4$ m ≈ 0.25 m

I020/500/SDP/XY - *SDP (Correlation XY)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 2
- LSB = $1/2^2 = 1/4 \approx 0.25$

I020/500/SDH - *Standard Deviation of Geometric Height (WGS 84)*

- 16 bits [. . . . .]
- unsigned quantity
- scaling factor: 1
- fractional bits: 1

- unit: "m"
- LSB = $1/2^1$ m = $1/2$ m ≈ 0.5 m

Note:

1. There is now a new Item for the Position Accuracy defined in the Reserved Expansion Field (REF), more complete (includes a Standard Deviation of Position in WGS-84) and is based on a different calculation method (covariance instead of correlation). It is recommended to use the new definition. Nevertheless, Item I020/500 is kept in order to prevent a full incompatibility with previous releases of ASTERIX Cat. 020 already implemented.

2.27 I020/RE - Reserved Expansion Field

Definition: Expansion

Structure:

Explicit item

2.28 I020/SP - Special Purpose Field

Definition: Special Purpose Field

Structure:

Explicit item

USER APPLICATION PROFILE FOR CATEGORY 020

- (1) `I020/010` - Data Source Identifier
- (2) `I020/020` - Target Report Descriptor
- (3) `I020/140` - Time of Day
- (4) `I020/041` - Position In WGS-84 Coordinates
- (5) `I020/042` - Position in Cartesian Coordinates
- (6) `I020/161` - Track Number
- (7) `I020/170` - Track Status
- `(FX)` - Field extension indicator
- (8) `I020/070` - Mode-3/A Code in Octal Representation
- (9) `I020/202` - Calculated Track Velocity in Cartesian Coordinates
- (10) `I020/090` - Flight Level in Binary Representation
- (11) `I020/100` - Mode C Code
- (12) `I020/220` - Target Address
- (13) `I020/245` - Target Identification
- (14) `I020/110` - Measured Height (Local Cartesian Coordinates)
- `(FX)` - Field extension indicator
- (15) `I020/105` - Geometric Height (WGS-84)
- (16) `I020/210` - Calculated Acceleration
- (17) `I020/300` - Vehicle Fleet Identification
- (18) `I020/310` - Pre-programmed Message
- (19) `I020/500` - Position Accuracy
- (20) `I020/400` - Contributing Devices
- (21) `I020/250` - Mode S MB Data
- `(FX)` - Field extension indicator
- (22) `I020/230` - Communications/ACAS Capability and Flight Status
- (23) `I020/260` - ACAS Resolution Advisory Report
- (24) `I020/030` - Warning/Error Conditions
- (25) `I020/055` - Mode-1 Code in Octal Representation
- (26) `I020/050` - Mode-2 Code in Octal Representation
- (27) `I020/RE` - Reserved Expansion Field

- (28) `I020/SP` - Special Purpose Field
- `(FX)` - Field extension indicator

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