Asterix expansion 062 - Coding rules for Reserved Expansion Field

category: 062

edition: 1.3

date: 2023-02-13

FSPEC byte size: 1

Items

CST - Contributing Sensors With Local Tracknumbers

definition: List of Sensors contributing to the system track and providing a local track-number

Repetitive

Regular, 1 byte(s) REP field size.

Group

CST/SAC - System Area Code

Element
bit size: 8
Raw Content

CST/SIC - System Identification Code

Element
bit size: 8
Raw Content

Spare bits: 4

CST/TYP

Element
bit size: 4
Values:

- **0:** No detection
- **1:** Single PSR detection
- **2:** Single SSR detection
- **3:** SSR+PSR detection
- **4:** Single Mode S All-Call
- **5:** Single Mode S Roll-Call
- **6:** Mode S All-Call + PSR
- **7:** Mode S Roll-Call + PSR
- **8:** ADS-B
- **9:** WAM

CST/LTN - Local Track Number

Element
bit size: 16
Raw Content

CSN - Contributing Sensors No Local Tracknumbers

definition: List of Sensors contributing to the system track and not providing a local track-number

Repetitive

Regular, 1 byte(s) REP field size.

Group

CSN/SAC - System Area Code

Element
bit size: 8
Raw Content

CSN/SIC - System Identification Code

Element
bit size: 8
Raw Content

Spare bits: 4

CSN/TYP

Element
bit size: 4
Values:

- **0:** No detection
- **1:** Single PSR detection
- **2:** Single SSR detection
- **3:** SSR+PSR detection
- **4:** Single Mode S All-Call
- **5:** Single Mode S Roll-Call
- **6:** Mode S All-Call + PSR
- **7:** Mode S Roll-Call + PSR
- **8:** ADS-B
- **9:** WAM

TVS - Calculated Track Velocity Relative to System Reference Point

definition: Calculated track velocity expressed in Cartesian co-ordinates relative to the system reference point, in two's complement form.

Group

TVS/VX

Element
bit size: 16
Signed quantity
LSB = $1/2^2$ m/s ≈ 0.25 m/s
unit: "m/s"
>= -8192.0
<= 8191.75

TVS/VY

Element
bit size: 16
Signed quantity
LSB = $1/2^2$ m/s ≈ 0.25 m/s
unit: "m/s"
>= -8192.0
<= 8191.75

Note: The y-axis points to the Geographical North at the system reference point as available in the Reserved Expansion Field of category 065.

STS - Supplementary Track Status

definition: Track status information to be transmitted in addition to the information available in data item I062/080 (Track Status).

Extended

STS/FDR - Flight Data Retained

Element
bit size: 1
Values:

0: Flight plan data from active FDPS
1: Flight plan data retained from no longer active FDPS

STS/LNAV - Lateral Navigation Mode

Group

STS/LNAV/EP - LNAV Element Populated

Element
bit size: 1
Values:

0: LNAV not populated
1: LNAV populated

STS/LNAV/VAL - LNAV Mode

Element
bit size: 1
Values:

0: LNAV Mode Engaged
1: LNAV Mode not Engaged

Spare bits: 4
(FX) - extension bit

Note: The information of the Lateral Navigation Mode LNAV complements the already existing Navigation Modes in Data Item I062/380/SF#7.

V3 - ADS-B Version 3 Data

definition: Information transmitted by aircraft equipped with an ADS-B Version 3 System (See Note 1) as defined in EUROCAE/RTCA documents ED-102B/DO-260C [ref. 5/6]. The ASTERIX implementation of this data has been defined in the Category 021 Specification Edition 2.6 (or later) and the Category 021 Reserved Expansion Field Edition 1.5 (or later).

Compound

V3/PS3 - Priority Status for Version 3 ADS-B Systems

Group

V3/PS3/EP - Priority Status for Version 3 ADS-B Systems Populated

Element
bit size: 1
Values:

0: PS3 Element not populated
1: PS3 Element populated

V3/PS3/VAL - Priority Status for Version 3 ADS-B Systems

Element
bit size: 3
Values:

0: No emergency / not reported
1: General emergency
2: UAS/RPAS - Lost link
3: Minimum fuel
4: No communications
5: Unlawful interference
6: Aircraft in Distress Automatic Activation

7: Aircraft in Distress Manual Activation

Spare bits: 4

Notes:

1. The ADS-B Version Number is contained in Data Item I062/380/SF#11/VN.
2. Since in this edition of the REF I062/REF/PS3 is the only Element in this Item, the Element Populated Bit strictly would not be necessary. However, if in a future edition use is made of the Spare Bits, the Element Populated Bit becomes important.
3. For ADS-B Version 3 systems as defined in ED-102B/DO-260C (Ref. [5], as defined in the core Specification of Category 062), the values have been re-defined. I062/REF/PS3 is to be used exclusively for Version 3 ADS-B systems as defined in I062/380/SF#11/VN. For ADS-B systems with a version number below 3, the PS shall be encoded in Data Item I062/380/SF#11/STAT. However, since values have been re-defined in ADS-B Version 3, mapping is required to ensure that information is not lost in systems not yet capable to decode this Edition of Category 062. This mapping shall be done according to the following table: :

```
ADS-B Version 3 (PS3)           ADS-Version < 3 (I062/380 - STAT)
0 (No Emergency/not reported)   0 (No Emergency/not reported)
1 (General emergency)           1 (General emergency)
2 (UAS/RPAS Lost Link)          4 (No communication)
3 (MInimum fuel)                3 (Minimum fuel)
4 (No communication)            4 (No communication)
5 (Unlawful interference)       5 (Unlawful interference)
6 (Aircraft in distress -       1 (General emergency)
  automatic activation)
7 (Aircraft in distress -       1 (General emergency)
  manual activation)
```

V3/AS - Aircraft Status

Group

V3/AS/RCE - Reduced Capability Equipment

Group

V3/AS/RCE/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/AS/RCE/VAL - Value

Element
bit size: 2
Values:

0: Not RCE
1: TABS
2: Reserved for future use
3: Other RCE

V3/AS/RRL - Reply Rate Limiting

Group

V3/AS/RRL/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/AS/RRL/VAL - Value

Element
bit size: 1
Values:

0: Reply Rate Limiting is not active
1: Reply Rate Limiting is active

V3/AS/TPW - Transmit Power

Group

V3/AS/TPW/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/AS/TPW/VAL - Value

Element
bit size: 2
Values:

0: Unavailable, Unknown, or less than 70 W
1: 70 W
2: 125 W
3: 200 W

V3/AS/TSI - Transponder Side Indication

Group

V3/AS/TSI/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/AS/TSI/VAL - Value

Element
bit size: 2
Values:

0: Unknown
1: Transponder #1 (left/pilot side or single)
2: Transponder #2 (right/co-pilot side)
3: Transponder #3 (auxiliary or Back-up)

V3/AS/TAO - Transponder Antenna Offset

Group

V3/AS/TAO/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/AS/TAO/RE - Range Exceeded

Element
bit size: 1
Values:

0: Value in defined range
1: Value exceeds defined range

V3/AS/TAO/VAL - Value

Element
bit size: 6
Raw Content

Spare bits: 5

Notes:

1. TABS is the “Traffic Awareness Beacon System” as defined by ETSO-C199 / TSO-C199.
2. PW contains the nearest minimum transmit power (in Watts) at the antenna port. The nearest minimum setting in this field would be rounded down from the actual design value. For example, if the avionics is designed to transmit at 100W out of the antenna port, the encoded value in this field would be for 70W (decimal 1).
3. Bit-12 shall be set to 1 when the aircraft transmits the maximum encodable value (i.e. 31 representing a TAO greater than 58m). In this case TAO#VAL shall be set to the maximum encodable TAO (i.e. 58m).
4. The TAO is measured along the longitudinal axis of the aircraft from the forward end.

V3/UAS - UAS/RPAS Status

Group

V3/UAS/MUO - Manned / Unmanned Operation

Group

V3/UAS/MUO/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/UAS/MUO/VAL - Value

Element
bit size: 1
Values:

0: Manned Operation
1: Unmanned Operation

V3/UAS/DAA - Detect and Avoid Capabilities

Group

V3/UAS/DAA/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/UAS/DAA/VAL - Value

Element
bit size: 2
Values:

0: No RWC Capability
1: RWC/RA/OCM Capability
2: RWC/OCM Capability
3: Invalid ASTERIX Value

V3/UAS/RWC - Remain Well Clear

Group

V3/UAS/RWC/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/UAS/RWC/VAL - Value

Element
bit size: 1
Values:

0: RWC Corrective Alert not active
1: RWC Corrective Alert active

Spare bits: 1

V3/CASS - Collision Avoidance System Status

Group

V3/CASS/SVH - Sense Vertical & Horizontal

Group

V3/CASS/SVH/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/CASS/SVH/VAL - Value

Element
bit size: 2
Values:

0: Vertical Only
1: Horizontal Only
2: Blended
3: Vertical Only or Horizontal Only per intruder

V3/CASS/CATC - CAS Type & Capability

Group

V3/CASS/CATC/EP - Element Populated Bit

Element
bit size: 1
Values:

0: Element not populated
1: Element populated

V3/CASS/CATC/VAL - Value

Element
bit size: 3
Values:

0: Active CAS (TCAS II) or no CAS
1: Active CAS (not TCAS II)
2: Active CAS (not TCAS II) with OCM transmit capability
3: Active CAS of Junior Status
4: Passive CAS with 1030 TCAS Resolution Message receive capability
5: Passive CAS with only OCM receive capability
6: Reserved for future use
7: Reserved for future use

Spare bits: 1