

Application Note AN-183

Format of ADS-B Transmissions according to AIS/IEC maritime standards

implemented according to
 IEC 61162-1, ITU-R M.1371-5 Message 9 (SAR message)
 IEC 61162-450:2018*, sections 4.4.2, 5.2, 6.1, 7.1, 7.2.3.4, 7.2.3.6
 *Sections not referenced here may not have been implemented.

Sample Message

UdPbC'0'\s:BB0003,n:0068*75\!BSVDM,1,1,,A,9sw5=`wnn:0hHftN7><AV``2000,0*62	'0' is an octet from all zeros.
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Message Dictionary

Section	Sample	Reference
Datagram Header block	UdPbC'0'	IEC 61162-450 sec. 6.1/7.1
TAG block	\s:BB0003,n:0068*75\	IEC 61162-450 sec. 7.2.3.4, 7.2.3.6
NMEA 0183 data block (IEC 61162-1)	!BSVDM,1,1,,A,9sw5=`wnn:0hHftN7><AV``20000,0*62	ITU-R M.1371-5 Message 9 (SAR message)

Details of TAG block

Reference IEC 61162-450	Definition/Sample	Remarks
TAG block	\s:BB0003,n:0068*75\	
7.2.3.4 Source identification – s	s:ccxxxx	System Field ID according to sec. 4.4.2. This ID is configurable in the user interface.

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7.2.3.6 Line-count parameter – n	n:xxxx	Sequence number between 1 and 999. The number is left padded by zeros.
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Details of NMEA 0183 data block (IEC 61162-1, ITU1371)

Parameter	Number of bits	Description
Header		!BSVDM,1,1,,A
Message ID	6	Hard coded to "9"
Repeat Indicator	2	Hard coded to "3"
MMSI	30	ADS-B ICAO hex code converted to a decimal number plus 800.000.000 (decimal number). Actual Range: 800.000.0001 to 816.777.215
Altitude	12	ADS-B barometric value and encoded as per ITU 1371 spec. in meters as follows. If the barometric altitude is less than 0 feet then it falls back to GPS height; if GPS height is not available then it falls back to 0 metres. If the altitude or height exceeds 4094 meters the value is expressed as 4095 meters. IMPORTANT: the barometric altitude is referenced to 1013.25 hPA.NOTE: GPS fall-back height is not available with all targets.
SOG (Speed over ground)	10	ADS-B value and encoded as per ITU 1371 spec. GROUND SPEED in aviation terms.
Position Accuracy	1	Hard coded to 0
Longitude (WGS-84)	28	ADS-B value and encoded as per ITU 1371 spec
Latitude (WGS-84)	27	ADS-B value and encoded as per ITU 1371 spec
COG (Course over ground)	12	ADS-B value and encoded as per ITU 1371 spec. TRUE TRACK in aviation terms (not HEADING)
Time stamp	6	Transmitted is the UTC second of the last ADS-B packet received by the ADS-B receiver for the particular aircraft. This constitutes a deviation from the ITU 1371 spec.

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Altitude sensor	1	Set depending on altitude source, and encoded as per ITU 1371 spec.
Spare	7	Hard coded to 0
DTE	1	Hard coded to 1 (not available)
Spare	3	Hard coded to 0
Assigned mode flag	1	Hard coded to 0
RAIM flag	1	Hard coded to 0
Communication state selector flag	1	Hard coded to 0
Communication state	19	Hard coded to 0

Transmission mode

IP – Internet Protocol as described in ISOC RFC 791 and as updated in ISOC RFC 2474;	
UDP – User datagram Protocol as described in ISOC RFC 768;	
UDP Multicast – Host groups as described in ISOC RFC 966 and Host extensions as described in ISOC RFC 1112;	Destination IP and port are configurable
Transmission interval: 10 sec	

Revisions:

Version	Date	Changes
1.0	20190319	Tag block item "t" removed
1.1	20200103	Published

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