



BaseStation Raw Data Socket

Revision 1.03
16 October 2012

CHANGE RECORD

Version Number	Date	Description of Change
1.01	8 Aug 2011	Initial version for BaseStation v1.2.3.160
1.02	1 Sep 2011	Version for BaseStation v1.2.3.161
1.03	16 Oct 2012	Added packet types for Mode A/C , AIS and ACARS data (for SBS-3)

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BaseStation Raw Data Socket

Raw data can be obtained by opening a TCP socket on port 30006, on BaseStation v160 or later.

When using an SBS-3, SBS-1e or SBS-1eR with version 161 of Basestation or later, output of all Mode-S data can be enabled by turning on the “Air to air replies” option in the Basestation settings. This option will significantly increase the bandwidth required on the link between the SBS-3, SBS-1e or SBS-1eR and BaseStation.

Message Protocol

Overall packet format

DLE character (10 hex)
STX character (02 hex)
Packet type (one byte)
Data (variable number of bytes depending on packet type)
DLE character (10 hex)
ETX character (03 hex)
High byte of CRC
Low byte of CRC

DLE stuffing

Any bytes in the data having a value of 10 hex will be preceded by a second 10 hex byte (DLE character). DLE stuffing also applies to the two CRC bytes.

Packet Type

The packet types are defined in KAL_MessageTypes.h and described below
The packet type 10 hex is not used due to the DLE stuffing.

Data field

This has variable content depending on the packet type. Data sub-fields are generally sent high byte first. Users should allow for the possibility that additional fields may be added to the end of the data fields at a future date, and therefore ignore any unexpected additional data.

CRC

The CRC is calculated using the CCITT-16 polynomial on the Packet Type and Data fields (before DLE stuffing). Not all applications or products will populate or check the CRC field. There should be no need for users to check the CRC when using a TCP connection.

Description of each packet type

0x01 - ADS-B or TIS-B data (KAL_PKT_MODES_ADSB)

This is data from ADS-B or TIS-B packets with DF=17, 18 or 19.

Byte 0 - packet type

Byte 1 - not used

Byte 2-4 - Rolling Timestamp – in 50 ns intervals

Byte 5-18 - the 14 bytes of Mode S data.

If the last 3 bytes of the Mode S data (parity bits) are zero then this indicates that the packet has been correctly received or error correction successfully applied.

0x05 - Mode S data – Long Format (KAL_PKT_MODES_LONG)

Containing data from 112-bit Mode S packets other than ADS-B or TIS-B.

Byte 0 - packet type

Byte 1 - not used

Byte 2-4 - Rolling Timestamp – in 50 ns intervals

Byte 5-18 - the 14 bytes of Mode S data.

0x07 - Mode S data – Short Format (KAL_PKT_MODES_SHORT)

This is data from 56-bit Mode S packets with DF = 0 to 15.

Byte 0 - packet type

Byte 1 - not used

Byte 2-4 - Rolling Timestamp – in 50 ns intervals

Byte 5-11 - the 7 bytes of Mode S data.

0x09 - Mode A/C data (KAL_PKT_MODEAC)

(Applies to SBS-3 only)

Byte 0 - packet type

Byte 1 - not used

Byte 2-4 - Rolling Timestamp – in 50 ns intervals

Byte 5: Mode A/C reply bits: SPI-0-0-C1-A1-C2-A2-C4

Byte 6: Mode A/C reply bits: A4-X-B1-D1-B2-D2-B4-D4

0x57 - AIS Data (KAL_PKT_AIS_DATA)

(Applies to SBS-3 only)

This packet type is used to send the binary data from a decoded AIS message.

Byte 0 - packet type

Byte 1 - AIS channel that the message was received on (0 = channel A,

1 = channel B, assuming SDR channel tuned to 161.975 MHz)

Byte 2 - number of complete bytes in the AIS data

Byte 3 - number of extra bits in the AIS data (0 if data is an exact number of bytes)

Bytes 4, 5 - result of decoder CRC calculation (should be FFFF if message has no errors)

Bytes 6-8 - reserved

Byte 9... the binary message data

**0x58 - ACARS Data (KAL_PKT_ACARS_DATA)
(Applies to SBS-3 only)**

This packet type is used to send the data from a decoded ACARS message.

Byte 0 - packet type

Byte 1 - SDR channel that the message was received on (0 = SDR channel 1,
1 = SDR channel 2 etc.)

Byte 2 - number of characters in the ACARS message

Byte 3,4 - result of decoder CRC calculation (should be 0 if message has no errors)

Byte 5 ... the message (7-bit ASCII characters, with parity in the high order bit)