

D-Star ONE telemetry frame format

4k8 GMSK Mobitex (CMX990 Mobitex Format)

Frame head (Hex): **CC CC**(bit sync) **57 65**(frame sync) **71 06**(control bytes) **XX**(fec) following by 6 scrambled and interleaved mobitex data blocks.

Payload data format of the 6x18byte Mobitex Data Blocks

| # | Feild | Value | Coefficien | Unit | Description |
|----|---------|-----------------------|---|------|-------------------|
| 0 | Length | 1 byte 0x6C | | | Length of packet |
| 1 | ID | 1 byte 0xA3 | | | ID of packet |
| 2 | Time | 4 bytes little endian | | s | System clock time |
| 6 | Reboots | 4 bytes little endian | | | Reboot counter |
| 10 | RTC_val | 4 bytes little endian | | | Value of RTC |
| 14 | ADC0_0 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.05)$ | A | Bat charge In |
| 16 | ADC0_1 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.033)$ | A | Bat charge Out |
| 18 | ADC0_2 | 2 bytes big endian | $2.5 / 4096 * ((124 + 27.4) / 27.4)$ | V | Bat Voltage |
| 20 | ADC0_3 | 2 bytes big endian | $(2.5 / 4096) * ((30.1 + 18.2) / 18.2)$ | V | 5V supply |
| 22 | ADC0_4 | 2 bytes big endian | $(2.5 / 4096) * ((18.2 + 18.2) / 18.2)$ | V | 3V3 supply |
| 24 | ADC0_5 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | PCU total curr |
| 26 | ADC0_6 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar +X |
| 28 | ADC0_7 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar -X |
| 30 | ADC0_8 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar +Y |
| 32 | ADC0_9 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar -Y |
| 34 | ADC0_10 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar +Z |
| 36 | ADC0_11 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | Solar -Z |
| 38 | ADC0_12 | 2 bytes big endian | $(2.5 / 4096) * ((30.1 + 18.2) / 18.2)$ | V | Solar total |
| 40 | ADC0_13 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | VCC out0 |

| | | | | | |
|-----|--------------|-----------------------|--|---|------------------------------------|
| 42 | ADC0_14 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | VCC out1 |
| 44 | ADC0_15 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | VCC out2 |
| 46 | ADC1_0 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | VCC out3 |
| 48 | ADC1_1 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.05)$ | A | VCC out4 |
| 50 | ADC1_2 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.05)$ | A | VCC out5 |
| 52 | ADC1_3 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.05)$ | A | VCC out6 |
| 54 | ADC1_4 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.05)$ | A | VCC out7 |
| 56 | ADC1_5 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | SS total curr |
| 58 | ADC1_6 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.2)$ | A | EEPROM1 curr |
| 60 | ADC1_7 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | EEPROM2 curr |
| 62 | ADC1_8 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | Ext ADC1 |
| 64 | ADC1_9 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | Ext ADC2 |
| 66 | ADC1_10 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | Ext ADC3 |
| 68 | ADC1_11 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | Ext ADC4 |
| 70 | ADC1_12 | 2 bytes big endian | $2.5 / (4096 * 20 * 1)$ | A | RTC curr |
| 72 | ADC1_13 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | V | Charger DCDC |
| 74 | ADC1_14 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | V | System V |
| 76 | ADC1_15 | 2 bytes big endian | $2.5 / (4096 * 20 * 0.1)$ | A | OBC curr |
| 78 | SWITCHES | 3 bytes | | | mask of system power switches |
| 81 | reserved | 1 byte | | | reserved |
| 82 | Battery temp | 2 bytes little endian | | | Temperature sensor of battery pack |
| 84 | Schedule | 1 byte | | | Count of scheduled commands |
| 85 | reserved | 10 bytes | | | |
| 95 | Mode | 1 byte | 0x01 – Safe 0x02 – Nominal 0x03 - Experimental | | Current satellite mode |
| 96 | Filler | 10 bytes | | | |
| 106 | CRC | 2 bytes | | | CRC16 |