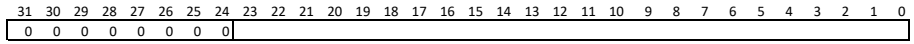
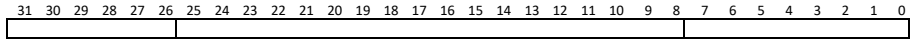
Version 1.5 25th March 2018

ADC SAMPLE PACKET (1472 Bytes)



packet types:
- 0 ADC Samples packet
- 1 End of Samples Status packet
- 2 Timed Status packet keep-alive

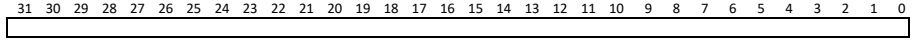
Packet Type (8) — UDP Packet Number (increments, 24 bits) (can wrap)



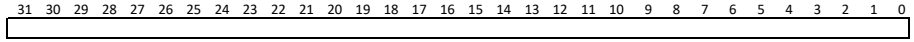
Seconds (6) — This secs is internally synced to real time

Unique ID assigned to this detector (18)

ADC Buffer Number (8) (can wrap)

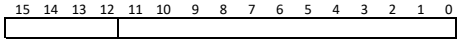


1 Pulse-per-Second Internal Timer snapshot value (32) (Timer approx 108MHz, reloads to zero on 1pps pulse)



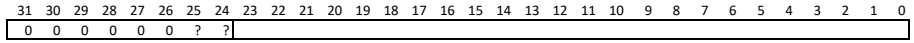
DMA Complete timer snapshot of 728 ADC samples taken (Timer approx 108MHz, reloads to zero on 1pps pulse)

728 Words of 16 bits



spare (4) — ADC Sample (12 bits used)

Status Packet (140 Bytes)

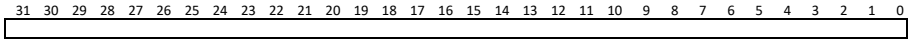


----- ---->
| 1 0 = timed status
same thing | Packet Type (8) 0 1 = end seq status — UDP Packet Number (increments, 24 bits) (can wrap)
|
----- ----> uint32_t udpcount; // udp packet sent index (24 bits, other 8 bits are packet type)

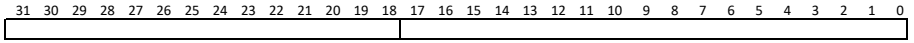
```
struct UbxGpsNavPvt {
    //      Type  Name        Unit   Description (scaling)
    unsigned  long  iTOW;     // ms    GPS time of week of the navigation epoch. See the description of iTOW for details.   0
    unsigned  short year;     // y     Year UTC                                                                              4
    unsigned  char  month;    // month  Month, range 1..12 UTC                                                               6
    unsigned  char  day;      // d     Day of month, range 1..31 UTC                                                         7
    unsigned  char  hour;     // h     Hour of day, range 0..23 UTC                                                          8
    unsigned  char  min;      // min   Minute o                                                                              9
    unsigned  char  sec;      // s     Seconds of minute, range 0..6(                                                        10
    char          valid;      // -     Validity Flags (see gr                                                              11
    unsigned  long  tAcc;     // ns    Time accuracy estimate UTC                                                          12
    long          nano;       // ns    Fraction of second, range -1e9..1e9 UTC                                             16
    unsigned  char  fixType;  // -     GNSSfix Type, range 0..5                                                            20
    char          flags;      // -     Fix Status Flags (see graphic be                                                    21
    unsigned  char  reserved1; // -     22
    unsigned  char  numSV;    23
    long          lon;        // deg   Longitude (1e-                                                                      24
    long          lat;        // deg   Latitude (1e-7)                                                                     28
```

NOTE This secs is not real time - it has latency.

```
long        height;    // mm    Height above Ellipsoid                          32
long        hMSL;      // mm    Height above mean sea level                           36
unsigned long hAcc;    // mm    Horizontal Accuracy Estimate                          40
unsigned long vAcc;    // mm    Vertical Accuracy Estimate                  44
long        velN;      // mm/s  NED north velocity                48
long        velE;      // mm/s  NED east velocity                      52
long        velD;      // mm/s  NED down velocity                      56
long        gSpeed;    // mm/s  Ground Speed (2-D)                60
long        heading;   // deg   Heading of motion 2-D (1e  64
unsigned long sAcc;    // mm/s  Speed Accuracy Estimate    68
unsigned long headingAcc; // deg   Heading Accur  72
unsigned short pDOP;   // -     Position DOP (0.01)               76
short       reserved2; // -     Reserved                                  78
unsigned long reserved3; // -     Reserved                                80
} NavPvt;
```

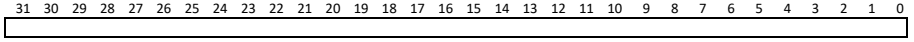


average of STM32 clock frequency referenced to 1pps



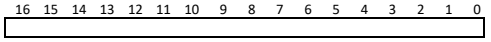
same thing ----- ----> not used (14) ----- ----> Unique ID assigned to this detector (18)

uint32_t uid; // only 18 bits used



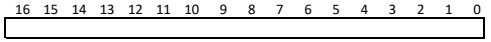
same thing ----- ----> ADC number of buffers sent in last capture sequence before status packet

uint32_t adcpktssent; // Number of ADC pks sent in this trigger event



adc trigger offset (above the noise)

adctrigoff : uint16_t;
adcnoise : uint16_t;



adc current noise level

```
uint32_t sysuptime;      // number of seconds system up from boot uptime
uint32_t netuptime;      // number of seconds network up
uint32_t gpsuptime;      // number of seconds gps locked
uint8_t majorversion;    // major ver
uint8_t minorversion;    // minor ver
uint16_t adcnoise;       // adc average peak noise
uint32_t reserved1;      // spare
uint32_t reserved2;      // spare
uint32_t reserved3;      // spare
uint32_t reserved4;      // spare
```

Any new fields to be added here .....

end sentinal marker (keep at the end) uint32_t telltale1; // end of status packet marker 0xFEEDCODE