CERPA DATA

7-JUL-19

57.6K baud 8-bit, no parity, 1 stop
One packet every 2msec

Data packet is 8 bytes (4 16-bit words)

SYNC	SEQ	RPAmsb	RPA lsb	SWPmsb	SWP lsb	HK msb	HK lsb

SYNC Fixed bit pattern (0xBB). Indicates start of data packet.

SEQ Packet sequence number (0..255 repeating).
Used to detect missing data and to identify HK channel.

RPA Unsigned 16-bit number. RPA signal current.
pA = (RPA-zer)*176.7e-3 zer is average with no signal

SWP Unsigned 16-bit number. RPA sweep voltage.
Volts = v(SWP)-5)/.6065+5

HK Unsigned 16-bit number. Housekeeping channel measurement.
The channel ID (0..7) is given by the 3 lsbs of SEQ.

0	BUS VOLTAGE	Volts=v(*HK*)/3.33*13
1	BUS CURRENT	mA=v(*HK*)/3.2*80
2	+2.5V SUPPLY	Volts=v(*HK*)
3	ANODE END V	Volts=v(*HK*)*2
4	+15V SUPPLY	Volts=v(*HK*)/2.88*15
5	TEMPERATURE	°C = (*HK*cf-cal30)*80/(cal110-cal30)+30
6	VREF	
7	PACKET COUNT/8	

HK ADC is 12-bit. Full-scale is Vdd supply (nominal 3.30V)
v(n) = n * Vdd/4095

More accurate scaling uses calibration info
cf = vrefcal/VREF
Vdd = 3.30*cf

VREF is HK[6]. It is slightly temperature dependent. It can be averaged over several readouts to get an accurate correction factor.

Calibration constants are specific to each board should be recorded during bench testing.

vrefcal
cal30
cal110