

K5/VSSP and K5/VSSP32 Header Format

This TDC Technical Report describes the header data format of K5/VSSP and K5/VSSP32 data.

1 K5/VSSP header format

Table 1 shows K5/VSSP header format. It consists of 8 byte data.

Table 1. K5/VSSP Header Format (8 bytes).

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01																
0x02	seconds from 0h UTC (17 bits)															(LSB)
0x03	2nd sync pattern (0x8B)							AD bits		sampling frequency			ch		(M)	

where

- ch – number of channels used 0: 1ch 1: 4ch
- sampling frequency – index for sampling frequency
0: 40kHz / 1: 100kHz / 2: 200kHz / 3: 500kHz
4: 1MHz / 5: 2MHz /6: 4MHz / 7: 8MHz / 8: 16MHz
9: 32MHz / 10: 64MHz / 11: 128MHz / 12: 256MHz / 13: 512MHz
14: 1024MHz / 15: 2048MHz
- AD bits – number of AD resolution bits
0: 1 bit / 1: 2 bits / 2: 4 bits / 3: 8 bits

2 K5/VSSP32 header format

2.1 General specifications of K5/VSSP32 data header

Table 2 shows the specifications of K5/VSSP32 data header. All current K5 utilities adopt 20 bytes for the size of auxiliary field, so that total size of header is 32 bytes.

Table 2. General specifications of K5/VSSP32 data header.

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01																
0x02	seconds from 0h UTC (17 bits)															(LSB)
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)							AD bits		sampling frequency			ch		(M)	
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	AUX FIELD Format #															
0x07	AUX FIELD (user defined)															
0x08																
0x09																
0x0A																
0x0B																
0x0C																
0x0D																
0x0E																
0x0F																

where “ch”, “sampling frequency”, “ad bits” are the same as those for K5/VSSP. The meanings of others are as follows.

- total day – day of year
- year – lower 2 digits of year
- eflg – error flag (set when error occurred in a previous frame)
- AUX FIELD size – size of AUX FIELD (byte unit)
- major version # – major version # of VSSP32 control ROM
- minor version # – minor version # of VSSP32 control ROM

User can define the portion of “AUX FIELD” freely except for the first byte of auxiliary field, which is defined as the format number. When user defines a new format, confliction with the format number, that is predefined or reserved, should be avoid.

2.2 Predefined and reserved format numbers

Table 1 summarizes predefined and reserved format numbers for auxiliary field.

Table 1: Predefined and reserved format numbers

Format #	Note
0	for test
1	for observation (“autoobs” output data format)
2	for observation (“sampling” output data format)
30~39	reserved (for ISAS group)
85	for test
170	for test

Predefined format #s are 0, 1, 2, 85, and 170. Numbers 30~39 are reserved for ISAS group.

2.2.1 Format #0

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01																
0x02	seconds from 0h UTC (17 bits)															(LSB)
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)							AD bits		sampling frequency			ch	(M)		
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	AUX FIELD Format # (0)															
0x07	All 0															
0x08																
0x09																
0x0A																
0x0B																
0x0C																
0x0D																
0x0E																
0x0F																

2.2.2 Format #1

This is “autoobs” output data format.

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01	sync pattern (all 0xFF)															
0x02	seconds from 0h UTC (17 bits) (LSB)															
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)						AD bits		sampling frequency			ch		(M)		
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	LPF frequency (MHz: 0 means through)								AUX FIELD format # (1)							
0x07	Station ID (max 2 charcters)															
0x08	Station name (max 8 characters)															
0x09																
0x0A																
0x0B																
0x0C	PC host name (max 8 characters)															
0x0D																
0x0E																
0x0F																
0x0F																

2.2.3 Format #2

This is “sampling” output data format.

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01	sync pattern (all 0xFF)															
0x02	seconds from 0h UTC (17 bits) (LSB)															
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)						AD bits		sampling frequency			ch		(M)		
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	LPF frequency (MHz: 0 means through)								AUX FIELD format # (2)							
0x07	filler data (0x5555)															
0x08	filler data (0x5555)															
0x09	filler data (0x5555)															
0x0A	filler data (0x5555)															
0x0B	filler data (0x5555)															
0x0C	PC host name (max 8 characters)															
0x0D																
0x0E																
0x0F																
0x0F																

2.2.4 Format #85

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01																
0x02	seconds from 0h UTC (17 bits) (LSB)															
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)						AD bits		sampling frequency				ch		(M)	
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	LPF frequency (MHz: 0 means through)								AUX FIELD format # (85 = 0x55)							
0x07	filler data (0x5555)															
0x08	filler data (0x5555)															
0x09	filler data (0x5555)															
0x0A	filler data (0x5555)															
0x0B	filler data (0x5555)															
0x0C	filler data (0x5555)															
0x0D	filler data (0x5555)															
0x0E	filler data (0x5555)															
0x0F	filler data (0x5555)															

2.2.5 Format #170

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	sync pattern (all 0xFF)															
0x01																
0x02	seconds from 0h UTC (17 bits) (LSB)															
0x03	2nd sync pattern (0x8C) (0x8B for VSSP)						AD bits		sampling frequency				ch		(M)	
0x04	eflg		year (2 digits) (6bits : 0-63)				total day (9bits)									
0x05	major version #				minor version #				AUX FIELD size (in bytes : default is 20)							
0x06	LPF frequency (MHz: 0 means through)								AUX FIELD format # (170 = 0xAA)							
0x07	filler data (0xAAAA)															
0x08	filler data (0xAAAA)															
0x09	filler data (0xAAAA)															
0x0A	filler data (0xAAAA)															
0x0B	filler data (0xAAAA)															
0x0C	filler data (0xAAAA)															
0x0D	filler data (0xAAAA)															
0x0E	filler data (0xAAAA)															
0x0F	filler data (0xAAAA)															