PC Commend

Header	Command	Resolution & Sampling rate	Gain & Channels	End
FE	CC	RX	GY	FF

Command	function	Command	function
00	Stop	04	Notch filter off
02	Set ads1298's gain	05	Notch filter on
03	Individual channel gain setup, RX as a channel number	0D (60s) ≧CC≧07 (unlimited)	Start + sample time 10s, 20s, 30s, 40s, 50s, 60s, unlimited

R	0	1
Resolution	24	16

G	0	1	2	3	4	5	6
Gain	6	1	2	3	4	8	12

X & Y	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Sample Rate & Channel	1	2	4	8	16	32	64	128	256	512	1024	0	0	0	0	0

New data packet format

Header		16-channel data: Total *A* Bytes						Lead off channels	
		ch1					Ch N		
FF	XY	R Bytes					R Bytes	XX	XX

A=*N*(channel number) * R

R= 3(24 bits) or 2(16 bits)

Lead off channels:
Mindo 2/4 : 2 bits
Mindo 16: 2 bits
Mindo 32: 4 bits

New data packet format - Header

F F X Y

X = Sample Rate

Y = Channel

X & Y	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Sample Rate & Channel	1	2	4	8	16	32	64	128	256	512	1024	0	0	0	0	0

New data packet format - Data

DATA FORMAT

The ADS1294/6/8 outputs 24 bits of data per channel in binary twos complement format, MSB first. The LSB has a weight of $V_{REF}/(2^{23} - 1)$. A positive full-scale input produces an output code of 7FFFFFh and the negative full-scale input produces an output code of 800000h. The output clips at these codes for signals exceeding full-scale. Table 8 summarizes the ideal output codes for different input signals. Note that for DR[2:0] = 000 and 001, the device has only 17 and 19 bits of resolution, respectively.

Table 8. Ideal Input Code versus Input Signal

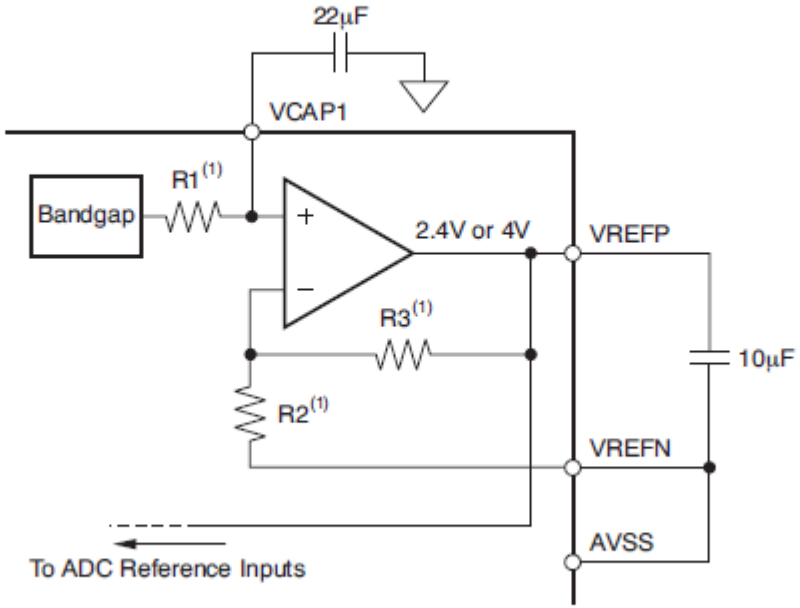
INPUT SIGNAL, V_{IN} (AINP – AINN)	IDEAL OUTPUT CODE(1)
≥ V_{REF}	7FFFFFh
$+V_{REF}/(2^{23} - 1)$	000001h
0	000000h
$-V_{REF}/(2^{23} - 1)$	FFFFFFh
≤ $-V_{REF}$ $(2^{23}/2^{23} - 1)$	800000h

(1) Excludes effects of noise, linearity, offset, and gain error.

New data packet format - Data

REFERENCE

Figure 30 shows a simplified block diagram of the internal reference of the ADS1294/6/8. The reference voltage is generated with respect to AVSS. When using the internal voltage reference, connect VREFN to AVSS.



(1) For V_{REF} = 2.4V: R1 = 12.5kΩ, R2 = 25kΩ, and R3 = 25kΩ. For V_{REF} = 4V: R1 = 12.5kΩ, R2 = 15kΩ, and R3 = 35kΩ.

Figure 30. Internal Reference

New data packet format - Data

Ex. If Dim(R)= 3, | R(0) | R(1) | R(2) |

$V = 2.4* \{R(0)*65536 + R(1)*256 + R(2)\}/(2^{23}-1)$

Where R(0) is a 8-bit signed integer, R(1) and R(2) are 8-bit unsigned integers.

Ex. If Dim(R)= 2, | R(0) | R(1) |

$V = 2.4* \{R(0)*65536 + R(1)*256\}/(2^{23}-1)$

Where R(0) is a 8-bit signed integer, R(1) is a 8-bit unsigned integer.

New data packet format – Lead off channels

ch1	ch2	ch3	ch4	ch5	ch6	ch7	ch8
b	b	b	b	b	b	b	b

ch9	ch10	ch11	ch12	ch13	ch14	ch15	ch16
b	b	b	b	b	b	b	b

b = 0 : lead on

b = 1 : lead off

New data packet format - Example

Sample Rate = 512 Hz

Channel = 16

Lead off channels = ch1 and ch16 lead on= 0x7FFE

Packet ：Total 52 Bytes

The first packet is

F	F	9	4	x	x	x	x	x	x	x	x	x	x	x	x	7	F	F	E

The last packet is

E	F	9	4	x	x	x	x	x	x	x	x	x	x	x	x	7	F	F	E

for ending

(There’s no ending packet when choose unlimited time).

For counter case:

Sample Rate = 512 Hz

Channel = 16

Lead off channels = ch1 and ch16 lead on= 0x7FFE

Packet ：Total 52 Bytes

The first packet is

F	H	9	4	x	x	x	x	x	x	x	x	x	x	x	x	7	F	F	E

H is a number from 0 to 15 repeatedly.

The last packet are

E	F	9	4	x	x	x	x	x	x	x	x	x	x	x	x	7	F	F	E

for ending

(There’s no ending packet when choose unlimited time).

For 32 channels case:

Sample Rate = 256 Hz

Channel = 32

Lead off channels = ch1 and ch32 lead on= 0x7FFFFFFE

Packet ：Total 102 Bytes

The first packet is

F	F	8	5	x	x	x	x	x	x	x	x	7	F	F	F	F	F	F	E

The last packet are

E	F	8	5	x	x	x	x	x	x	x	x	7	F	F	F	F	F	F	E

for ending

(There’s no ending packet when choose unlimited time).