

Introduction

Analog Devices has a wide range of low bandwidth, high resolution, Σ - Δ ADCs. Along with the ADC, these devices contain current sources, a multiplexer, a PGA and analog input buffers on board. This Technical Note identifies some of the applications in which the ADCs are used as well as identifying the most suitable ADCs for each application.

1) Number of Bits

16-Bit: [AD7705/6](#), [AD7707](#), [AD7708](#), [AD7709](#), [AD7715](#)

24-Bit: [AD7710](#), [AD7711](#), [AD7712](#), [AD7713](#), [AD7714](#), [AD7718](#),
[AD7719](#), [AD7730](#), [AD7731](#), [AD7732](#), [AD7734](#), [AD7738](#)

2) Multi-Channel Applications

High Throughput: [AD7731](#), [AD7734](#), [AD7738](#)

Low Throughput: [AD7708](#), [AD7718](#), [AD7714](#)

3) Temperature Measurements

For thermal diode and RTD applications, current sources are required.

Thermocouple: [AD7714](#), [AD7719](#)

Thermal Diode: [AD7709](#)

RTD: [AD7711](#), [AD7719](#), [AD7783](#)

4) Pressure

Requirements: Low level differential analog inputs with a high level differential reference input for ratiometric operation. Optional features include an auxiliary ADC which can be used for temperature compensation.

[AD7719](#), [AD7714](#), [AD7730](#), [AD7710](#)

5) Weighscale

Requirements: Low level differential analog inputs with a high level differential reference input for ratiometric operation. Optional features include an auxiliary ADC which can be used for temperature compensation, fast-step, AC excitation, a reference detect circuit and increased filter rejection in the out-of-band region.

[AD7730](#), [AD7730L](#), [AD7719](#), [AD7714](#)

6) Low Power

[AD7705/6](#), [AD7714](#), [AD7715](#), [AD7719](#)

7) High Analog Input Voltages (± 10 V)

[AD7732](#), [AD7734](#), [AD7712](#), [AD7707](#)

8) Rail-to-Rail On-Chip Buffers

[AD7719](#), [AD7708/18](#), [AD7782](#), [AD7783](#), [AD7709](#)

9) Bipolar Inputs (± 2.5 V)

[AD7710](#), [AD7711](#), [AD7712](#)

10) Pin Configurable

[AD7782](#), [AD7783](#)

Summary of Low Bandwidth Sigma Delta ADCs.

MODEL	No. of Bits	Min. Input Range (V)	Max. Input Range (V)	p-p res. @ Max. Range (Bits)	@ Data Rate (Hz)	AIN Chan.	Onchip AIN Buffer	Onchip Curr. Source	Power Supply Current (mA)	Price \$/1K	Comments
AD7701	16	2.5	2.5	16	4000*	1			5	15.70	
AD7703	20	2.5	2.5	17	4000*	1			5	13.26	
AD7705	16	0.02	2.5	16	60	2	Y		0.3	4.12	
AD7706	16	0.02	2.5	16	60	3	Y		0.3	4.12	
AD7707	16	0.02	10	16	60	3	Y		0.28	4.46	
AD7708	16	0.02	2.56	16	20	10	Y		1.28	3.98	
AD7709	16	0.02	2.56	16	20	4	Y	Y	1.25	3.89	
AD7710	24	0.02	2.5	17.5	60	2			5	14.45	
AD7711	24	0.02	2.5	17.5	60	2		Y	5	15.30	Two Curr. Sources
AD7711A	24	0.02	2.5	17.5	60	2		Y	5	15.30	One Curr. Source
AD7712	24	0.02	2.5	17.5	60	2			5	13.20	
AD7713	24	0.02	2.5	16	20	3		Y	0.7	16.15	
AD7714	24	0.02	2.5	17.5	60	5	Y		0.35	8.28	
AD7715	16	0.02	2.5	16	60	1	Y		0.35	5.65	
AD7718	24	0.02	2.56	18.5	20	10	Y		1.28	5.24	
AD7719	24	0.02	2.56	18.5	20	5	Y	Y	1.5	8.76	Dual ADC
AD7730	24	0.01	0.08	17	200	2	Y		13	11.60	Weighscale
AD7730L	24	0.01	0.08	17	200	2	Y		13	9.55	Weighscale
AD7731	24	0.02	1.28	17	800	5	Y		13.5	9.86	
AD7732	24	5	10	16	2000	2	Y		18	7.77	Fast Ch. switching
AD7734	24	5	10	16	2000	4	Y		18	7.77	Fast Ch. switching
AD7738	24	0.625	2.5	16	6800	8	Y		18	6.89	Fast Ch. switching
AD7782	24	0.16	2.56	18.5	20	2	Y		1.3	5.10	Read-Only
AD7783	24	0.16	2.56	18.5	20	1	Y	Y	1.3	5.10	Read-Only

*While the update rate equals 4 kHz, the bandwidth is 10 Hz.