



Available Boards

- **D.Module.ADDA12MUX** – a 12-bit resolution, 16 input, multiplexed 1MSPS SAR converter with programmable sequencer. Four outputs, 12-bit resolution. Inputs and outputs are industry standard $\pm 10V$.
- **D.Module.ADDA16** – high precision 4 input, 4 output, 16-bit resolution. 250 KSPS SAR converters
- **D.Module.AD7722** – high precision 6-channel 16-bit Δ - Σ converters, 200 KSPS, for vibration analysis and sonar
- **D.Module.PCM3003** – eight inputs and outputs, 16-bit Δ - Σ converters for voice and audio, 50KSPS
- **ADS-12** – 4-channel 12-bit SAR converters with programmable anti-aliasing filters and $\pm 2.5, 5, \text{ or } 10 V$ input range, 2-channel output with programmable smoothing filter, 300KSPS
- **S.Module.16** – 4-channel high-end 16-bit SAR converters with programmable anti-aliasing filters and $\pm 2.5, 5, \text{ or } 10 V$ input range, two output channels with programmable smoothing filter, 100 KSPS

General Description

A variety of data acquisition boards is available and covers the most typical application areas: industrial control, power-line monitoring, voice processing, sonar, vibration analysis - to name but a few.

These boards are electrically and mechanically compatible with the D.Module.DSP boards and can be stacked with the DSP board and additional data acquisition and communication daughter cards to build a complete signal processing chain.

SAR Converters

Successive-Approximation converters are the first choice for control loops because of their low latency. They do however require an analog anti-aliasing filter if the input signal contains frequencies above the Nyquist frequency. The S.Module.16 and the ADS-12 have built-

in software-configurable 4th order filters. The D.Module.ADDA16 and ADDA12MUX do require external filters if the input signal itself is not band-limited.

Δ - Σ Converters

use oversampling (typically 64x) to reduce the analog anti-aliasing filter requirements. A first order filter is sufficient. Downsampling and filtering in the digital domain increases resolution and removes all spectral components above the Nyquist frequency. These converters provide excellent dynamic characteristics, but the digital post-processing adds a significant latency which often forbids their use in control loops.

Δ - Σ converters are typically used for applications like vibration analysis, power-line metering, etc. Only a few converters like the AD7722 provide DC-accuracy – the majority of audio converters use internal high-pass filters and cannot be used at DC.

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	D.Module.ADDA12MUX	ADS12	S.Module.16	D.Module.ADDA16	D.Module.PCM3003	D.Module.AD7722
Analog Inputs						
Channels	16	4	4	4	8	6
Input Type	single-ended	differential	differential	differential	single-ended	differential
Input Range	± 10V	± 2.5V, 5, or 10 V	± 2.5V, 5, or 10 V	± 2.5V	600mV _{RMS}	± 2.5V
Antialiasing Filter	-	Butterworth 4 th progr. 1.. 150 kHz	Butterworth 4 th progr. 1.. 50 kHz	-	inherent	inherent
additional Gain	-	-	-	-	-	set via resistor
Sampling Frequency	max. 1 MHz sum (eg. 16 ch. at 62.5 kHz: 4 ch. at 250 kHz)	304Hz .. 294 kHz	0.1..100 kHz	15..250 kHz	8..48 kHz	12.5 .. 200 kHz
Sampling Method	multiplexed	simultaneous	simultaneous	simultaneous	simultaneous	simultaneous
Resolution, Converter	12 bit SAR	12 bit SAR	16 bit SAR	16 bit SAR	16 bit Δ-Σ	16 bit Δ-Σ. DC-accurate
Analog Outputs						
Channels	4	2	2	4	8	-
Output Type	single-ended	single-ended	single-ended	single-ended	single-ended	-
Output Range	± 10V	± 2.5V	± 2.5V	± 2.5V	600mV _{RMS}	-
Reconstruction Filter	Butterworth 2 nd	Butterworth 2 nd prog. 1..150 kHz	Butterworth 2 nd prog. 1..50 kHz	Butterworth 2 nd	inherent	-
Settling Time / Update Frequency	10 μsecs	2 μsecs	10 μsecs	2 μsecs	8..48 kHz	-
Resolution	12 bit	12 bit	16 bit	16 bit	16 bit, oversampling	-
Miscellaneous						
Power Supply	± 15V analog 3.3V digital	± 5V analog 3.3V digital	± 5V analog 3.3V digital	± 5V analog 3.3V digital	3.3V single supply	± 5V analog 3.3V digital
DSP Interface	serial. 2 ports	parallel, 16 Bits	parallel, 16 Bits	parallel, 16 Bits	serial, 2 ports	parallel, 16 Bits
Options	± 2.5V input and output ± 5V analog supply	2-channel 5V digital supply		2-channel 500 kHz		2- and 4- channels
Applications	Process Control, General Purpose	Process Control, General Purpose	Process Control, General Purpose	Process Control, General Purpose	Audio, Voice Processing	Audio, Sonar, Vibration Analysis