MicroLAB Systems

Ultimate DSP Development Solutions

High-Performance Instrumentation AD/DA PIOX-16 DCM

Multi-channel 14-bit@2.2MSPS and 16-bit@1MSPS Instrumentation AD/DA PIOX-16 Daughter-card Modules for TORNADO DSP Systems/Controllers

covers:
T/PDAS-AD16/16D/1M-DA2/16D/1M, T/PDAS-AD16/14D/2.2M-DA2/14D/10M
T/PDAS-AD16/16Q/1M-DA4/16Q/1M, T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M

general features

- compact PIOX-16 DCMs install into PIOX-16 site of *TORNADO* DSP Systems/Controllers
- high-accuracy and high-speed instrumentation quality AD/DA with general purpose digital I/O
- available in different on-board ADC/DAC channels configuration in order to meet different application requirements
- ideal for high-performance multi-channel instrumentation, industrial control, biomedical and many more applications

details

- 14-bit and 16-bit compatible AD/DA DCM
- avaliable in dual ADC/DAC and quad ADC/DAC channel configurations with synchronous sampling
- 2.2 MSPS maximum conversion rate for 14-bit A/D and 10 MSPS maximum conversion rate for 14-bit D/A
- 1 MSPS maximum conversion rate for 16-bit AD/DA
- 16-channel analog input multiplexer configured as either 2x(8:1)/4x(4:1)@SE or 2x(4:1)/4x(2:1)@DIFF configurations
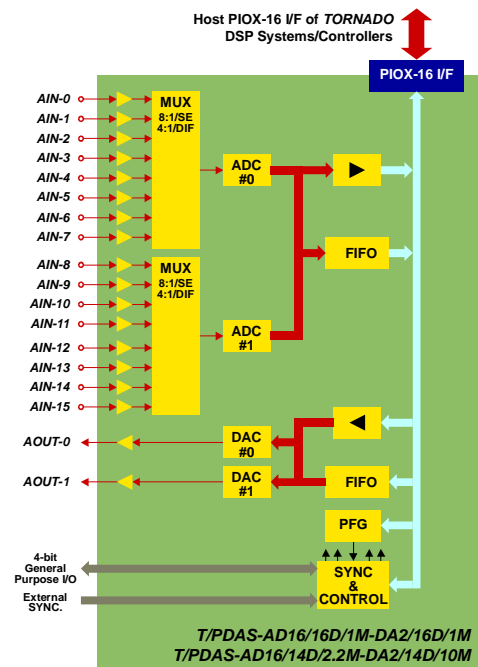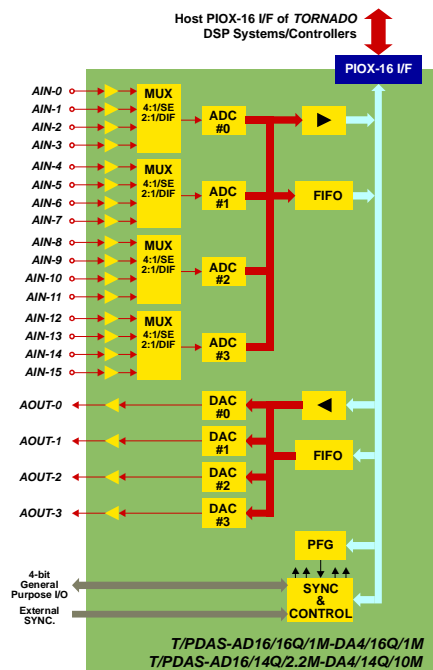
- 2 or 4 analog outputs
- 256 Kwords FIFO for A/D and D/A channels
- asynchronous and synchronous operation
- synchronous operation features programmable scan-table
- on-board high-resolution programmable sampling frequency generator (PFG)
- external synchronization and sampling frequency options
- 4 programmable general purpose I/O pins

software tools

- DSP software utilities
- demo samples

applications

- high-performance instrumentation
- industrial
- telecom
- imaging
- biomedical

T/PDAS-AD16/16Q/1M-DA4/16Q/1M
T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M

T/PDAS-AD16/16D/1M-DA2/16D/1M
T/PDAS-AD16/14D/2.2M-DA2/14D/10M

MLS-SXDS-236-B 2/02

Technical Specifications

A/D and D/A resolution	16 bits: T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M 14 bits: T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
A/D sampling frequency	1 MSPS for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M 2.2MSPS for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
D/A sampling frequency	1 MSPS for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M 10MSPS for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
number of on-board ADC/DAC channels	2 for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/14D/2.2M-DA2/14D/10M DCM 4 for T/PDAS-AD16/16Q/1M-DA4/16Q/1M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M DCM
input A/D multiplexer	16/SE or 8/DIFF configured as: - 4x(4:1)@SE and 4x(2:1)@DIFF for T/PDAS-AD16/16Q/1M-DA4/16Q/1M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M DCM - 2x(8:1)@SE and 2x(4:1)@DIFF for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/14D/2.2M-DA2/14D/10M DCM
input A/D signal range	±5V for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M ±2.5V for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
input impedance	1 Mohm
A/D differential nonlinearity	±1 LSB
A/D integral nonlinearity	±3 LSB
A/D offset error	±5 mV typ for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M ±3mV typ T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
A/D SNR	-88 dB typ for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M -78 dB typ typ T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
A/D FIFO	256 Kwords
A/D operation modes	Asynchronous Synchornous with programmable scan table and direct PIOX-16 access Synchronous with programmable scan table and access via FIFO (one-pass and continuous modes)
output D/A signal range	±5V@5kOhm for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M ±2.5V@1kOhm for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
D/A offset error	±2 mV typ for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M ±20mV typ T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
D/A THD	-104 dB typ for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M -78 dB typ typ T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
D/A signal settling time	1uS for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M 100nS for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
D/A FIFO	256 Kwords
D/A operation modes	Asynchronous Synchornous with direct PIOX-16 access Synchronous with access via FIFO (one-pass and continuous modes)
programmable sampling frequency (PFG)	0.016kHz..1MHz for T/PDAS-AD16/16D/1M-DA2/16D/1M and T/PDAS-AD16/16Q/1M-DA4/16Q/1M 0.1kHz..10MHz for T/PDAS-AD16/14D/2.2M-DA2/14D/10M and T/PDAS-AD16/14Q/2.2M-DA4/14Q/10M
general purpose I/O	4 bits (3V/5V TTL @3.2mA)
host TORNADO I/F	PIOX-16