

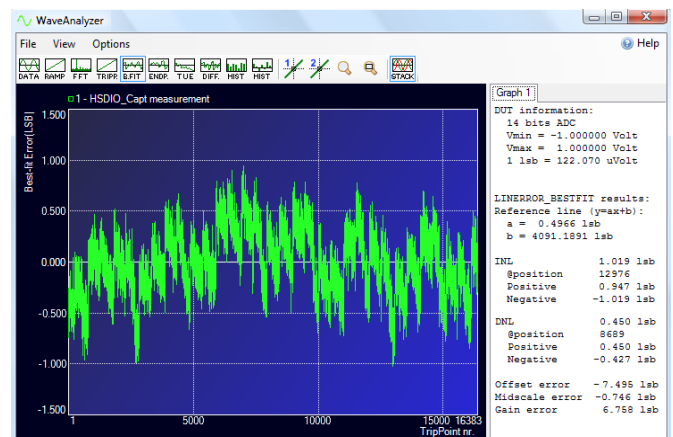
ATX7006A data converter test system



Features

- Fully integrated data converter test solution
- Sample rates from DC up to 200/400MHz
- Unsurpassed signal quality and accuracy
- Coherent measuring by default
- Flexible and versatile digital IO
- Extended Analysis software
- Static, Dynamic and Histogram testing
- Easy -user defined- test scripting

The ATX7006A is a fully integrated solution for testing ADCs, DACs and other Analog functions. It combines very high accuracy, low noise and fast sampling with an exceptional ease of use. Traditionally data converters are tested using a whole stack of bench instruments, filters, switch matrices and user made software. Many engineering hours are needed to get reliable results. The ATX7006A is a single instrument for all your data converter testing and test methods.



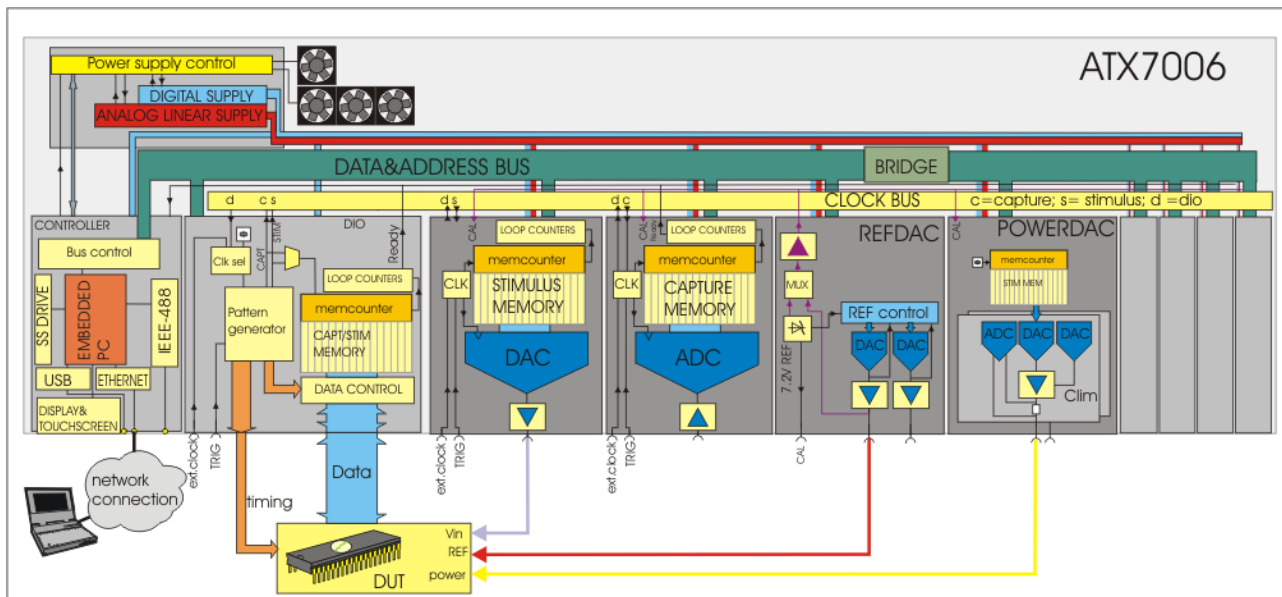
INL / DNL measurement of a 14-bit / 65MSPS ADC

This means you can concentrate on testing your converters rather than fine-tuning the test set-up. The ATX7006A is capable of testing converters from 4 to 24-bit. Its versatile digital I/O makes interfacing to the DUT easy, even for embedded converters. The Single Reference Architecture improves the stability and reduces calibration effort. The backplane distributed clock ensures coherent measuring.

The ATX7006A is also ideally suited as an add-on upgrade for ATE systems.

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Block Diagram



General:

The ATX7006A is a modular system that can be configured according to the user's needs. The available Generator and Digitizer modules cover the range from low speed high accuracy testing to high speed medium accuracy testing. Auxiliary modules provide all other signal needs like Reference voltages, Supply voltages, clocks and Digital IO. The ATX7006A measures linearity parameters just as easy as dynamic parameters, all within the same test set-up.

The system controller runs Windows™ embedded and gives the user full access to software features. For production style testing the ATX7006A can run as slave of an ATE system. For lab measurements a PC is used to control the measurement and display the results. There are three communication possibilities; Ethernet, GPIB and USB. The controller supports the Lua scripting language providing an easy way to add user defined test methods and calculation routines.

Performance:

The ATX7006A has been designed with one important goal in mind: low system noise. It therefore has linear power supplies for the analog section and thorough Shielding and Grounding to maintain analog signal integrity even in a harsh production environment. The DIO module can provide a low jitter sample clock that is distributed to all other modules and to the DUT.

The 20- and 22-bit high accuracy Generator and Digitizer modules offer an outstanding DC accuracy in combination with better than 110dB dynamic performance at sample rates up to 2MSPs. The 16- and 18-bit modules allow testing up to 400MSPs. The ATX7006A features auto calibration and built-in self test.

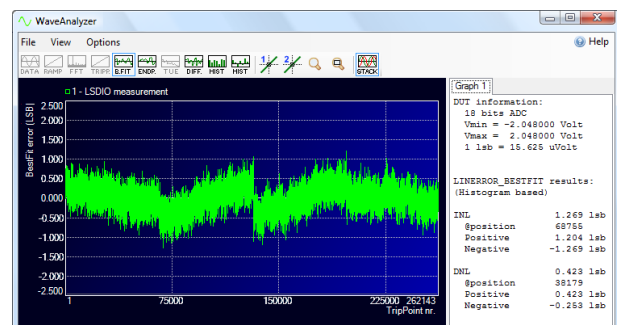
Capabilities:

Linearity

- Offset error, Gain error, Full scale error
- INLE, DNLE, TUE, Transition noise (jitter)

Dynamic

- SNR, SINAD, ENOB
- THD, SFDR, Peak Spurious, PSRR

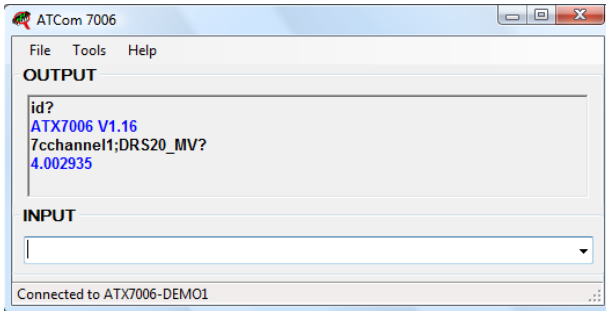


Linearity result of an 18-bit ADC using histogram testing.

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Software:

The ATX7006A is a command driven system that can easily be controlled from almost any programming environment.

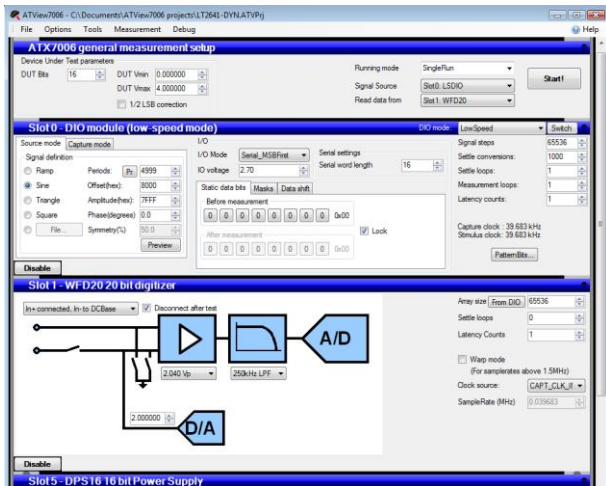


Command level communication with the ATX7006A using ATCom (ID request and measure voltage at DRS channel1)

With ATCom measurements can be sent and results read. This allows testing command sequences before implementing them in software. LabView drivers are also available.

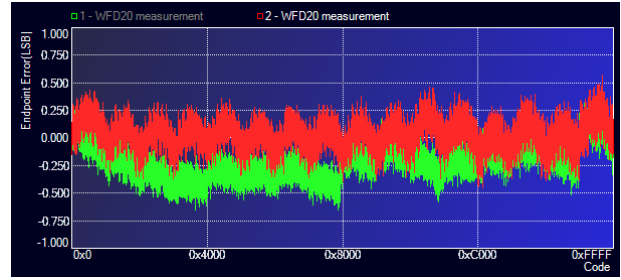
ATView:

The ATX7006A comes with ATView, a sophisticated software package for configuring, programming and controlling the ATX7006A and analyzing the results.



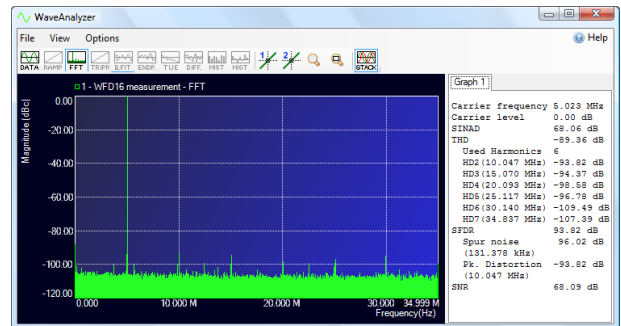
Example of ATView instrument panels

Setting up a test is just a matter of filling in the fields of the instrument panels, program a digital pattern if applicable, and press the START button. After a test the results are viewed in the WaveAnalyzer. The WaveAnalyzer can show the results of time domain, frequency domain and histogram tests. Zoom, stack, and cursor functions are available at any level.



Stacked linearity result of two different 16-bit DAC devices

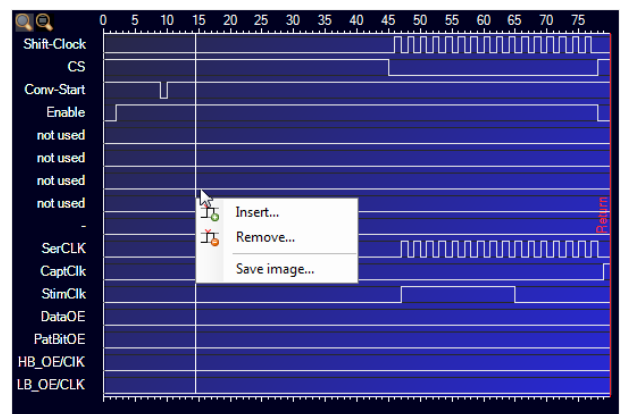
When saving test results all settings are included. So when reviewing the results later, there never has to be any doubt about the exact conditions. Results and settings are stored in human readable XML format which allows additional user processing. Export in CVS format is possible and graphs can be saved in graphical format for easy importation into reports.



Dynamic result of a 14-bit/70Mps ADC

Test Methods:

All standard data converter test methods are supported. Dynamic parameters are measured with sine waves and the results can be analyzed in time domain as well as in frequency domain. Static parameters can be measured with direct ramp testing or with histogram testing. Histogram testing is supported for ramp, triangle and sine wave signals.



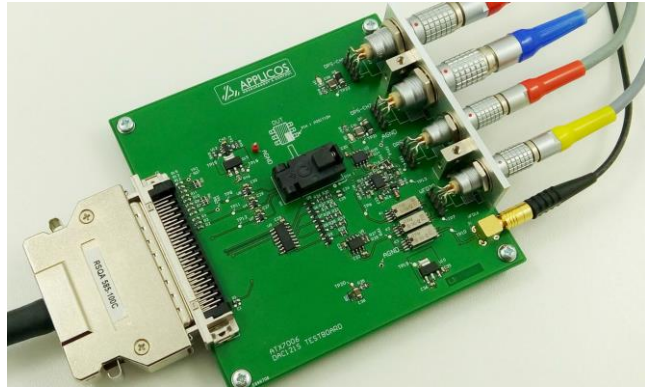
Example of a digital pattern, editable with the mouse or a script.

ATX7006A data converter test system

General specifications:

- 19" Case Frame, 4U high, with integrated air cooling
- Power supplies, 115 / 230VAC
- Controller running Windows 10™ LTSB from SSD
- Ethernet, USB and GPIB communication ports
- Built-in signal generation
- Built-in error calculations for production testing
- ATView7006 Analysis software for Engineering and Qualification purposes (for Windows PC)

Standard configuration: Controller, AWG20, WFD20, Dual Ref. Source, Dual Power Supply and DIO module.



Test fixture with 5 analog signal connections and a DIO connection.

Summary of modules specifications (for full specifications see our website):

AWG20 module

Resolution / Update rate	20-bit / 2Msps
Pattern memory depth	4M-words
Output ranges (Vpp, SE)	80mV to 10.24V in x2 steps
Absolute accuracy	±(40µV + 10ppm of range)
Non Linearity (INL)	±8ppm of range (4ppm typical)
THD / SNR	-108dB / 92dB (@ f-out=1kHz)

AWG22 module

Resolution / Update rate	22-bit / 2Msps
Pattern memory depth	4M-words
Output ranges (Vpp, SE)	80mV to 10.20V in x2 steps
Absolute accuracy	±(25µV + 8ppm of range)
Non Linearity (INL)	±3ppm of range (1.5ppm typical)
THD / SNR	-111dB / 97dB (@ f-out=1kHz)

AWG16 module

Resolution / Update rate*	16-bit / 400Msps
Pattern memory depth	8M-words
Output ranges (Vpp, SE)	480mVpp to 5.12Vpp in 8 ranges
Absolute accuracy	±(500µV+0.08% of range)
Non Linearity	±0.003% of range
THD / SNR	-87dB / 70dB (@1MHz)

AWG18 module

Resolution / Update rate*	18-bit / 300Msps (600Msps, 1.2Gsps)
Pattern memory depth	8M-words
Output ranges (Vpp, SE)	580mVpp to 6.56Vpp in 8 ranges
Absolute accuracy	±(300µV+0.02% of range)
Non Linearity	±0.004% of range
THD / SNR	-99dB / 73dB (@10MHz)

DIO & DIO^{II} module

Data In- Outputs	20/24-bit, parallel, byte-byte, serial
Capture & Stimuli memory	8Mword x 16 or 4Mword x 24 bits
Max. data&clock rate	50MHz LS mode / 200MHz HS mode
DIO ^{II} max. clock rate	600MHz on backplane / 1GHz front
Digital I/O levels	1.2V - 3.3/5V CMOS & LVDS
Clock jitter (DIO ^{II})	190fs (typical@100MHz)

WFD20 module

Resolution / Sample rate	20-bit / 2Msps
Capture memory depth	4M-words
Input ranges (Vpp)	0.544V to 8.16V in 8 ranges
Absolute accuracy	±(40µV + 10ppm of range)
Non Linearity (INL)	±8ppm of range (3ppm typical)
THD / SNR	-110dB / 93dB (@ f-in=1kHz)

WFD22 module

Resolution / Sample rate	2-bit / 1Msps
Capture memory depth	32M-words
Input ranges (Vpp)	0.425V to 10.20V in 10 ranges
Absolute accuracy	±(25µV+10ppm of range)
Non Linearity (INL)	±3ppm of range (1.5ppm typical)
THD / SNR	-115dB / 99dB (@ f-in=1kHz)

WFD16 module

Resolution / Sample rate	16-bit / 180Msps
Capture memory depth	8M-words
Input ranges (Vpp)	0.512V to 7.688V in 16 ranges
Absolute accuracy	±(800µV+0.1% of range)
Non Linearity (INL)	±0.006% of range
THD / SNR	-89dB / 70dB (@1MHz)

DC modules →

	Dual Ref. Source	Dual Power Supply
Outputs/ res./ settl.	2ch. / 20-bit / 20ms	2ch. / 16-bit / 10ms
Output range/config.	±10V / 2 or 4-wire	±12V / 2 or 4 wire
Accuracy	±(25µV+10ppm.Vo)	±(4mV+0.2%.Vout)
Noise (DC- 100kHz)	5µVrms (typical)	18µVrms (typical)
Output current	10mA	200mA
Voltage readback	24-bit (DVM function)	16-bit (volt¤t)
V-out modulation	n.a.	1mHz - 1kHz

* Update rates >200MHz require DIO^{II} or an external clock source

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTIFICATION