SATURN TRANSIENT RECORDER

for FAST MEASUREMENTS

SATURN Transient Recorders are modular measurement instruments, available from small portable systems up to 19” mainframes. Individually equipped with different numbers of channels, sampling rates and numerous special features they are ideally suited for a wide range of applications.

- Modular industrial system platform
- Broad selection of sample rates 200kS/s ... 200MS/s ... 2GS/s
- 1 ... 240 channels, expandable
- Optional fiber-optic channels for isolation and distributed systems
- Precision in-system clock source
- Industrial PC for stand-alone operation or remote control via LAN
- Operating modes: Transient, Streaming, Segmentation
- Easy-to-use operating software optimized for large amounts of data
- Powerful analysis and reporting
- Time-saving task automation

The FlatSaturn displayed above is the most compact housing option with up to 16 (BNC) or 48 (SMB) channels at different sampling rates. The small and rugged design makes it a popular portable instrument.

SATURN ADC MODULES

for HIGH PRECISION ANALOG TO DIGITAL

Depending on the application the SATURN systems are equipped with specialized input or output modules. Data acquisition (ADC) modules with different sample rates or digital inputs can be combined in one SATURN System to meet individual requirements. Analog and digital outputs can be installed in parallel for playback or arbitrary function generation (AFG) and digital pattern control (Sequence Timer).
The following specification provides a brief ADC module overview, further types as well as customer-specific adaptations are available on request.

GENERAL SPECIFICATION

Ranges (full scale)
±1V to ±100V, 6 (8) ranges, free definable
(Standard: ±1,2,5,10,20 & 50V)
Custom ranges up to ±200V available

Impedance
1 MOhm, capacity ~10pF
50 Ohm for ranges <10V (option)
Coupling: DC, GND, AC (option)

Acquisition memory

Standard	4 GB per module

Timebase

Accuracy	20 ppm (0.002%)

Overload protection
external option, depends on application

ACQUISITION TRIGGER

Levels
Separate analog level trigger per channel and additional digital level detectors per module.

Range	0 - 100% of full scale
Accuracy	0.025% of full scale

Modes
Multiple trigger configurations (trigger bus)
Level, pulse, slope, window, TTL, fiber (option)
4x global logically combined trigger signals

Trigger delay

Pre trigger range	0 - 100% of sample time
Post trigger range	up to hours (depending on application)

ADC 3M-16-8

cost effective 8 channels

Inputs
8 channels, single ended, SMB or BNC

Sample rate

8 channels maximum	up to 0.33 µs/pt (3 MS/s)
Minimum	1 second/pt (1 S/s)
Total sample rate	24 MS/s

Resolution and bandwidth
16bit @ 1.5 MHz @ -3dB (adaptive anti aliasing)

Acquisition time with 4 GB memory

1 channel	~5 min. @ 3 MS/s
8 channels	~38 sec. @ 3 MS/s

ADC 25M-16-4

flexible & fast

ADC 100M-14

Inputs
4 / 1 channel, diff. or single ended, SMB or BNC

Sample rate

1 channel maximum	up to 10ns/pt (100 MS/s)
4 channels maximum	up to 40ns/pt (25 MS/s)
Minimum	1 second/pt (1 S/s)
Total sample rate	100 MS/s

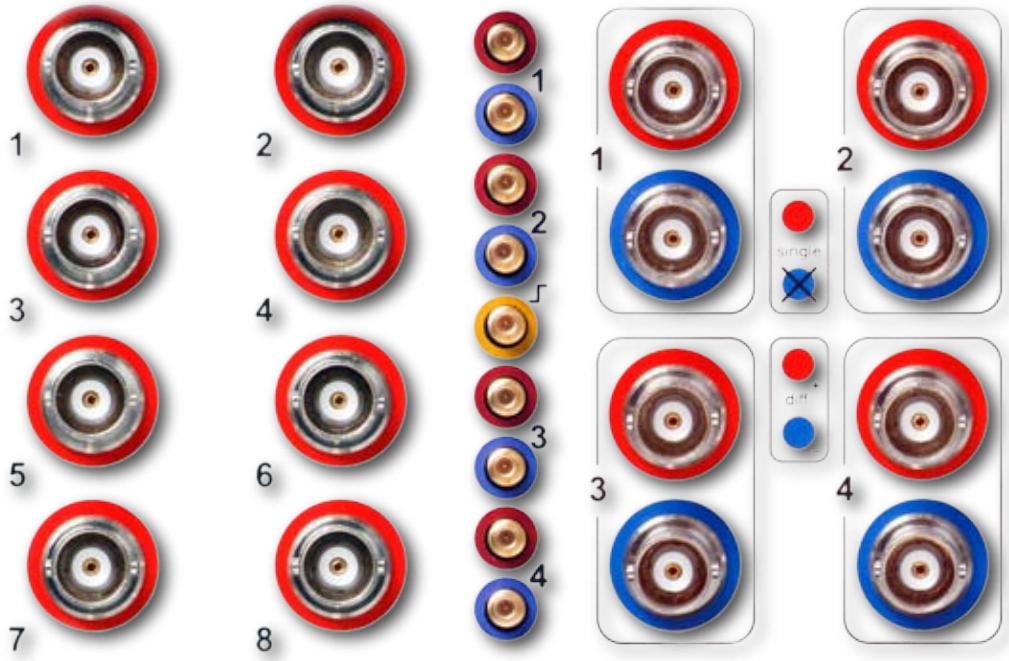
Bandwidth
12.5 / 50 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
16/14bit (higher with EBR option)

Acquisition time with 4 GB memory

1 channel	~19 sec. @ 100 MS/s
4 channels	~19 sec. @ 25 MS/s

CONVERSION



ADC 100M-14 BNC

Inputs and sample rate
1 channel, BNC up to 10ns/pt (100 MS/s)

Resolution and bandwidth
14bit @ 50 MHz @ -3dB (adaptive anti aliasing)

Acquisition time
~19 sec. @ 100 MS/s

ADC 200M-16 BNC

200MS/s
16bit

Inputs and sample rate
1 channel, BNC up to 5ns/pt (200 MS/s)

Resolution and bandwidth
16bit @ 100 MHz @ -3dB (adaptive anti aliasing)

Acquisition time with 4 GB memory
~9 sec. @ 200 MS/s

ADC 2G-10

Inputs
4 / 2 channels, diff. or single ended, MCX / BNC

Sample rate
2 channels maximum up to 0.5 ns/pt (2 GS/s)
4 channels maximum up to 1 ns/pt (1 GS/s)

Bandwidth
~700 / 500 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
10bit

Accessories

Attenuator
>2,000V input range with external attenuator
LEMO, UHF HV, HV BNC input connectors
(Other connectors are available on request)

ADC Module Overview

Type	No. of channels	Sample Rate	Resolution	Bandwidth	Input Type*
200k-20-8	8	200 kS/s	20 bit	100 kHz	Single
750k-18-8	8	750 kS/s	18 bit	300 kHz	Single
1M-18-4	4	1 MS/s	18 bit	500 kHz	Differential
3M-16-8	8	3 MS/s	16 bit	1.5 MHz	Single
10M-16-4	4	10 MS/s	16 bit	5 MHz	Differential
25M-16-4	4	25 MS/s	16 bit	12.5 MHz	Differential
100M-14	1 / 4	100 / 25 MS/s	14 bit	50 / 12.5 MHz	Differential
100M-14-1	1	100 MS/s	14 bit	50 MHz	Differential
200M-16-1	1	200 MS/s	16 bit	100 MHz	Single
1G-10-4	4	1 GS/s	10 bit	500 MHz	Differential
2G-10	2 / 4	2 / 1 GS/s	10 bit	700 / 500 MHz	Differential

* Differential inputs can be used in single ended or differential mode

FIBER COUPLED PROBES

for ISOLATION AND LONG DISTANCE

SATURN Transient Recorders can be equipped with fiber-optic modules. These modules are connected to separated SATURN Measuring Probes (Satellites) by digital fiber-optic cables. The Satellites are battery powered (16 / 32 hours) or supplied by compressed air and remotely controlled from the SATURN main unit.
The optical communication and data transfer ensures perfect galvanic isolation between the DUT and the SATURN main unit. These fiber-optic transmission lines allow both, potential-free measurements as well as bridging large distances between test object and data recording system. The following specification gives a brief Satellite overview, further types as well as customer-specific adaptations are available on request.

Satellite 100M-14-F

Inputs
1 channel, diff. or single ended, BNC

Sample rate

1 channel maximum	up to 10ns/pt (100 MS/s)
Minimum	1 second/pt (1 S/s)

Bandwidth
50 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
14 bit (higher with EBR option)

Acquisition time with 4GB memory
~19 sec. @ 100 MS/s

Satellite 100M-14-4-F

Inputs
4 / 1 channel, diff. or single ended, BNC

Sample rate

1 channel maximum	up to 10ns/pt (100 MS/s)
4 channels maximum	up to 40ns/pt (25 MS/s)
Minimum	1 second/pt (1 S/s)
Total sample rate	100 MS/s

Bandwidth
12.5 / 50 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
14 bit (higher with EBR option)

Acquisition time with 4GB memory

1 channel	~19 sec. @ 100 MS/s
4 channels	~19 sec. @ 25 MS/s

Satellite 3M-16-8-F

Inputs
8 channels, single ended, BNC

Sample rate

8 channels maximum	up to 0.33µs/pt (3 MS/s)
Minimum	1 second/pt (1 S/s)
Total sample rate	24 MS/s

Bandwidth
1.5 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
16 bit (higher with EBR option)

Acquisition time with 4GB memory

1 channel	~5 min. @ 3 MS/s
8 channels	~38 sec. @ 3 MS/s

Satellite 1G-10-F

Inputs
1 channel, diff. or single ended, MCX / BNC

Sample rate

1 channel maximum	up to 1ns/pt (1 GS/s)

Bandwidth
typ. 500 MHz @ -3dB (adaptive anti aliasing)

Vertical resolution
10 bit

digital optical transmission

AirPower

Satellite with AirPower Supply

Unlimitted isolation voltage
Unlimitted endurance
UPS backup battery for 8h

Satellite Options & Accessories

Channel count
1, 4 or 8 analog channels inside one Satellite
Expandable with digital channels

Fiber types
Single Mode (9/125µ) or Multi Mode (50/125µ)
Standard LC connectors
Industrial style sealed metal connector
(Multi-Link cables, fiber patch boxes, 19" fiber patch panels and cable drums available)

Protection
Triple Shielding, optimized for strong electric and magnetic field disturbance

Accessories and Options
Larger housing for 2x battery and extension slot
1 / 2 channel "Rogowski Coil" integration
AirPower supply with backup battery

up to 32 hours of battery power

Satellite Overview

Type	No. of channels	Sample Rate	Resolution	Bandwidth	Input Type*
1M-16-F	1	1 MS/s	16 bit	500 kHz	Differential
3M-16-8-F	8	3 MS/s	16 bit	1.5 MHz	Single
10M-16-F	1	10 MS/s	16 bit	5 MHz	Differential
25M-14-F	1	25 MS/s	14 bit	12.5 MHz	Differential
100M-14-F	1	100 MS/s	14 bit	50 MHz	Differential
100M-14-4-F	1 / 4	100 / 25 MS/s	14 bit	50 / 12.5 MHz	Differential
1G-10-F	1	1 GS/s	10 bit	500 MHz	Differential

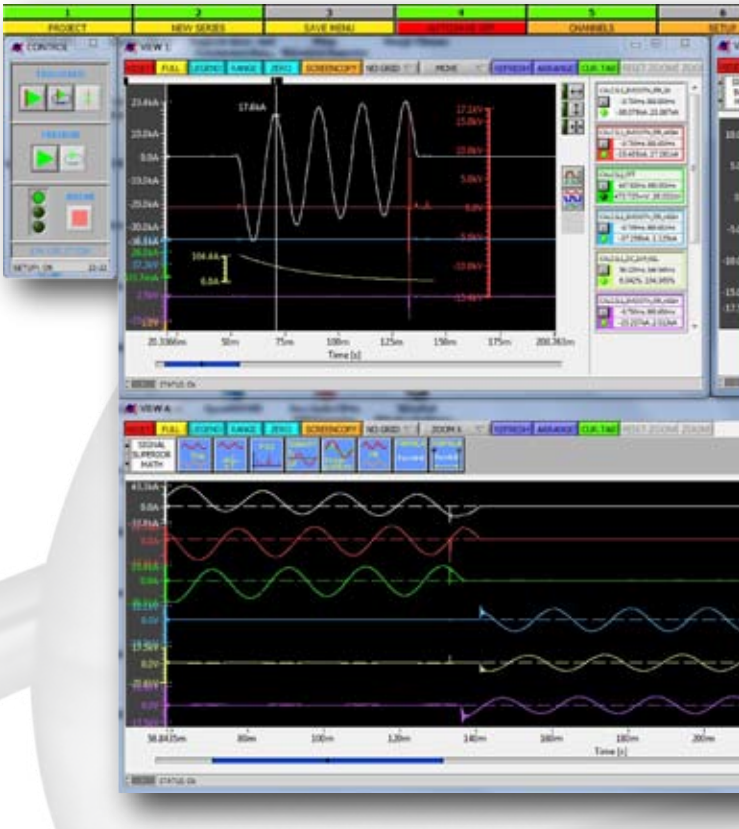
* Differential inputs can be used in single ended or differential mode

SATURN STUDIO II

with powerful scripting interface

SYSTEM CONTROL & ANALYSIS SOFTWARE

SATURN Studio II is the versatile software solution for hardware configuration, measurement control and data display. It includes powerful analysis and flexible reporting for test labs in research and industry.



- Measurement modes: Transient, Loop, Streaming (option), Segmentation (option)
- Table style configuration grants perfect overview
- Project management with user specific archive and path generator
- Integrated sensor data base
- Live monitor display: analog, digital, gauge, bargraph etc.
- 20 view windows, up to 4 monitors, multiple cursors, graphs, scales etc.
- Unique ultra-fast data display
- Multiple analysis functions
- Integrated formular editor
- Powerful reporting module
- Extensive scripting language
- Powerful application programming interface (API)

Transient mode

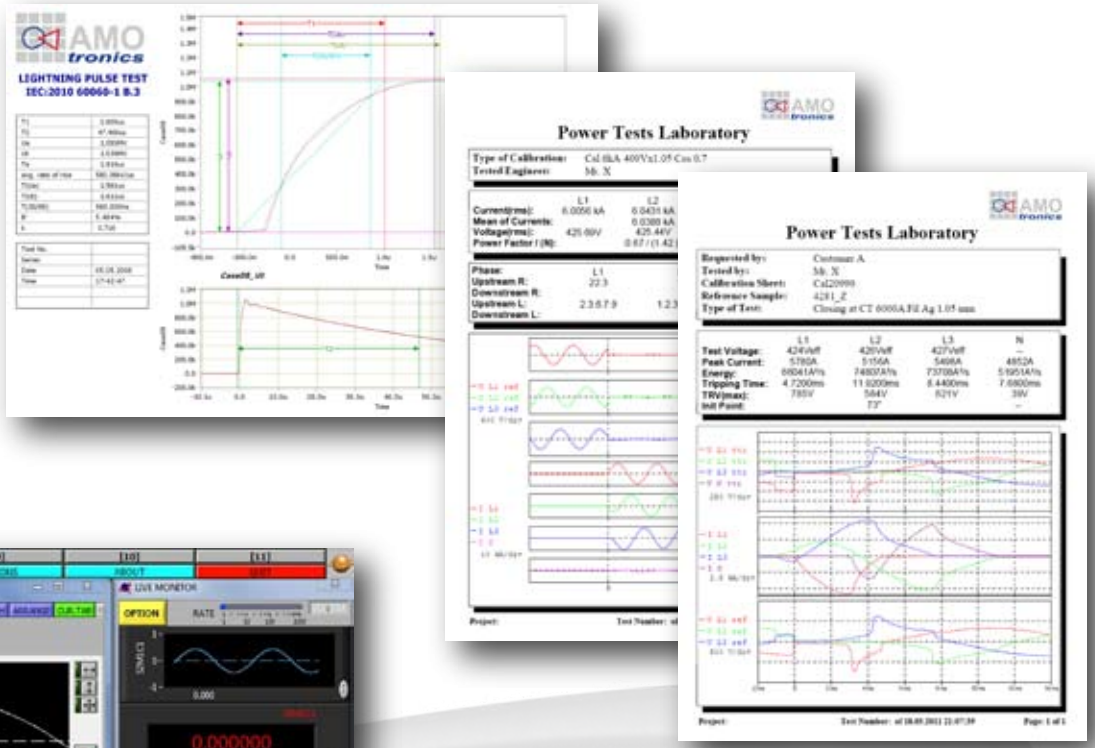
Input channels and trigger are configured by software. Data acquisition starts with a trigger condition (pre- or post trigger) or by software.

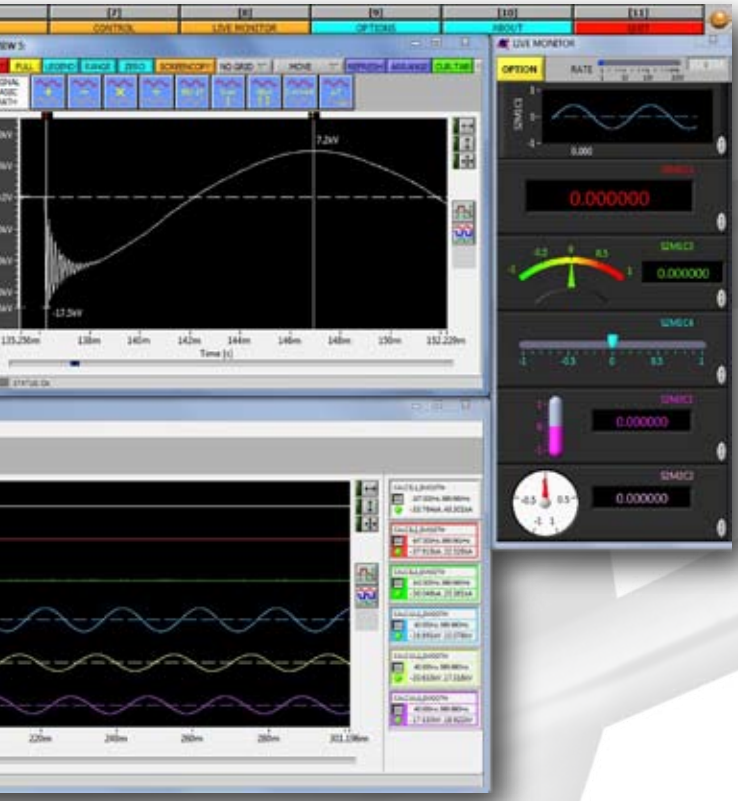
Streaming mode (option)

Extra long recordings are stored directly to the local HDD/SSD or network. Multi channel setups are supported with live data for selected signals.

Segmentation mode (option)

The system re-arm time reduces to only a few µs at very low jitter and repetitively triggered signals are stored in the transient memory. Thousands of segments can be acquired for fast processing.





Loop mode

The fully automatic analysis and reporting mode configures the system based on a configuration template and arms the channels. With each trigger a new test starts. Manual stop or the loop countdown finishes the test cycles.

Scripting language (option)

The powerful scripting interface enables users to automate complex analysis and control tasks. Multiple graphical windows, buttons and selection boxes, etc. allow the programming of comfortable user interfaces with hundreds of standard and special commands in a professional programming environment with syntax highlighting.

Analysis & Reports

Accurate analysis and report functions process sets of sampled data. Multiple automatic filters can be applied to reduce signal noise. Fast reports can be produced with easy drag-and-drop configuration or generated from adjustable templates to store results as a pdf-file in pre-defined folders.
SATURN Studio II is especially optimized for fast display and analysis of large data sets.
Complete ready-to-use report packages are available for several specific applications, e.g.:

Circuit Breaker Tests (acc. to STL)

Automated and interactive analysis routines according to guide lines of the Short-Circuit Testing Liaison (STL) and requirements of the IEC 60060-1 for tests of high current and high voltage switches for different test cases, as for instance No-Load Test, Short Circuit Test, Capacitive Load Test and Synthetic Test.

Lightning Pulse & Impulse Current Tests

Complete analysis package according to IEC 60060 and IEC 61083; automatically measuring parameters like U_p, T_1 and T_2 within seconds. Printed reports are instantly available after the measurement is completed.

AMOtronics offers programming service for individual requirements as well as professional training courses!

SATURN

FAMILY GALLERY

FlatSaturn

max. 48 channels

CubeSaturn

max. 96 channels

19" RackSaturn

max. 240 channels

SingleSatellite

1 channel

MultiSatellite

4 / 8 channels

Specials ... ?

Get in contact for taylor made solutions!

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Specifications are subject to change without prior notice.

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