

General Specifications

signatureACE® Overview For Metalforming Applications

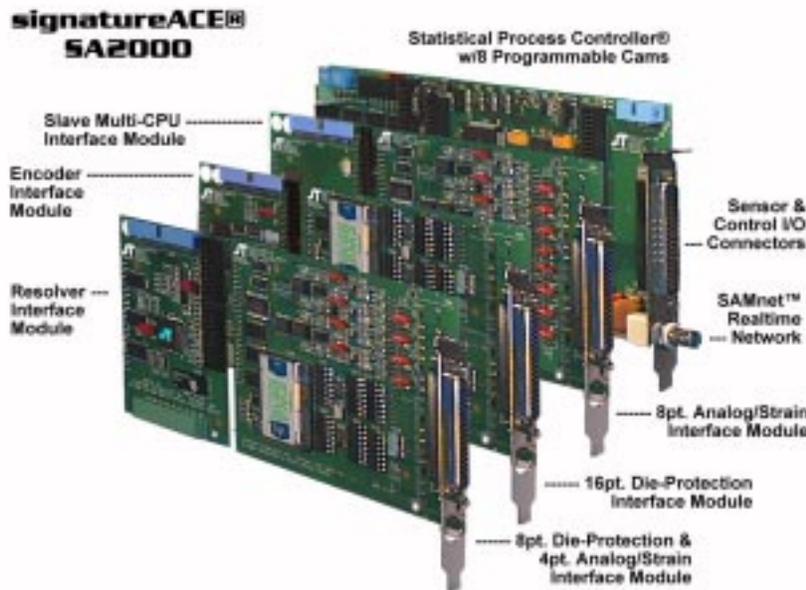


Photo above shows all optional boards and main processor.

The signatureACE® Statistical Process Controller® can provide functionality such as in-die measurement, die-protection, load monitoring, signature analysis, signature-based process control (SbPC), and FeatureExtraction™ for SPC/closed loop operations. It consists of a motherboard (SA-2000) which has a DSP-based processor, communications in various formats, multi-SA2000 sync bus, I/O drivers, and status LED's. Optional daughter boards and software add functions.

This product is a complete machine process monitoring and control product. It has the flexibility to be installed in either a PC (ISA bus) or mounted in an enclosure at the press and connected to the PC via the SAMnet™ real-time network.

All of the functions normally provided by "black boxes" are totally integrated in this one product. New products are software upgrades.

SignatureACE® Statistical Process Controller with PLS (Programmable CAMs option):

[/SA2] The SA-2000 Processor Board is a DSP-based module which works in conjunction with auxiliary plug-in modules listed on back to provide practical functionality in a variety of industrial control applications with presses and similar machines. Integral with the DSP portion of the processor are optional programmable position outputs commonly referred to as [/C04 or /C08] cams. Highlights of the SA-2000 are:

- ⓐ Available in [/P] PC ISA Bus-style card with field connections made via rear panel connectors or [/R] remote mount with field connections made via a remote termination panel that has all termination and hardened I/O modules called a [/TEC]
- ⓐ PC mount configuration with auxiliary modules occupies two ¾ length mounting slots, draws power from a standard PC (ISA Bus) chassis, and requires a SAMnet card for interface to the PC;
- ⓐ Optional NEMA field termination enclosure with integral power supply and mounting for SA-2000;
- ⓐ On-board Flash Memory provides easy re-programming capability and program retention under power-down conditions;
- ⓐ [/ARC] SAMnet™ (ARCNET®) and serial communication capability are built-in;
- ⓐ Operates on a single +5V @ 1 Amp power source in remote applications or uses power available from the PC ISA Bus;
- ⓐ Has status LED's, master reset, network node assignment, hardware-watchdog, and read-only serial ID.
- ⓐ All inputs, outputs both digital and analog use commonly available connectors and cable and are designed to directly interface with PLCs and OPTO 22 I/O.
- ⓐ Provides 8 Hardware Logic Level Inputs, and 16 Hardware Logic Level Outputs for simple interfacing to other systems:

INPUTS:	OUTPUTS:
<ul style="list-style-type: none"> ⓐ 2 Inputs are pre-assigned to: - "Machine Jog" signal - "Machine Running" signal ⓐ 6 special custom order inputs 	<ul style="list-style-type: none"> ⓐ 8 pre-assigned outputs for programmable cams: ⓐ 4 pre-assigned outputs for system control functions: - Warning (Control) Limit Violation output - Fault (Quality) Limit Violation output - Press Design Load Curve Violation output - System Mode Status Indicator output ⓐ 4 special custom order outputs or light stack

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Bulletin No. GS-/SA2000

Page 1 of 2 - Revised 1 April 1999

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[/ENC] Encoder Position Interface module:

This module configures the SA-2000 to provide power for and accept position reference input from an Incremental Encoder.

- ⊕ Accepts 5 – 24 Volt "A", "B", and "Z" track inputs with or without their complements;
- ⊕ Supplies power to the encoder at 5 V.D.C. ;
- ⊕ Supplies 1.5K pull-up resistors for Open Collector Outputs;
- ⊕ Either 2X or 1X base resolution is jumper programmable.

[/RSV] Resolver Position Interface module:

This module configures the SA-2000 to drive and accept position reference input from a resolver. The module is designed for use with the ST HiRes™ Resolver, but can be optimized for other resolvers under special order. This module can also be used with the HiRes™ Resolver Converter in cases where it is desired to take the position information from an existing resolver that is part of another system.

- ⊕ Provides 2.5 kHz Reference Signal @ 1.2 Volts R.M.S. for the ST HiRes™ Resolver;
- ⊕ Jumper programmable 10 Bit (1024 increments), 12 Bit (4096 inc.), 14 Bit (16384 inc.), or 16 Bit (65,536 inc.) resolution;
- ⊕ Accepts Reference, Sine, and Cosine signals from an external resolver position system using the ST /CNV Resolver Converter.

[/SLV] Slave Module:

This module configures the SA-2000 to accept position reference input from another SA-2000 when multiple units are used to increase the number of channels on the same press. This module provides synchronization to the primary SA-2000 which has a position module.

- ⊕ Accepts digital binary position Information from another SA-2000 Module over an auxiliary bus connection;

[/A08] 8 Channel Analog Input Module (InSitu™ (in-die) Measurement, Load Monitor, Signature Analysis, Die-Setup, SbPC):

This module provides the means to interface up to 8 analog inputs to the SA-2000. It is primarily designed as a Strain Gage interface, but can also be used with self-amplified sensors, piezo devices and standard signal analog sensors such as analog proximity transducers.

- ⊕ Accepts up to 8 analog inputs to be signatred and may be either single or differential input;
- ⊕ Common mode range = +/- 2.5 V.D.C.;
- ⊕ Signal Amplification = 2X (+/- 2.5 V full scale) or 1000X (+/- 0.005 V full scale);
- ⊕ Sample resolution = 1.221 mV per increment or 2.441 μV per increment;
- ⊕ Built in individually selectable D.C. offset cancellation circuitry (auto-zero) with < 2 nA input offset current;
- ⊕ Provides 12-Bit Multiplexed A/D conversion with <10 usec. skew between channels;
- ⊕ Built-in D.C. Strain gage bridge excitation of 5 or 10 volts;
- ⊕ Up to 0.4 Amps total gage load per board. (Parallel resistance of all gages must be >25 Ohms).

[/D16] 16 Channel Digital Input Module (Die-Protection):

This module provides the means to interface up to 16 digital die-protection inputs to the SA-2000. It can accept and provide power for a wide range of digital sensors.

- ⊕ Accepts up to 16 D.C. inputs which can be used for windowed die-protection:
- ⊕ Inputs can be software programmed to be:
- ⊕ Grounding (cat's whisker) @24V - 0.005 Amp "wetting" power internally supplied.
- ⊕ Three-wire proximity switch NPN or PNP 24 V.D.C. Power.
- ⊕ Two wire universal proximity switch: 24 V @ up to 2mA wetting - 5 ma "ON" current.
- ⊕ 24V Logic. Software-selectable pull-up to 24 V.D.C. or pull-down to common.
- ⊕ Built-in short-proof D.C. wetting and proximity switch power at 24 Volts.
- ⊕ Wetting current draw per input is 5 mA. per input, proximity switches current up to 15 ma.

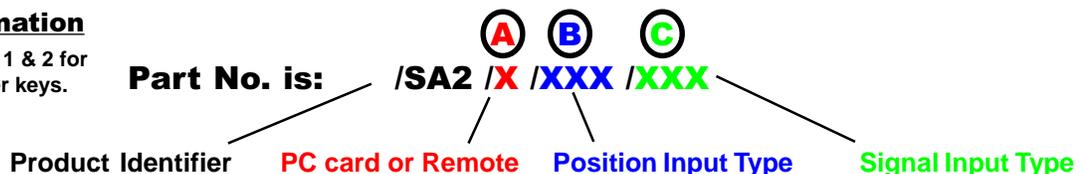
[/A+D] 4/8 Channel Analog/Digital Combi-Module:

This Module provides the means to interface up to 4 analog inputs **and** up to 8 digital die-protection inputs to the SA-2000. The Analog section is primarily designed as a Strain Gage interface, but can also be used with self-amplified sensors, piezo devices and standard signal analog sensors such as analog proximity transducers. The Digital section can accept and provide power for a wide range of digital sensors.

- ⊕ Accepts up to 4 analog inputs with same specifications as above *8 Channel Analog Input Module*;
- ⊕ Accepts up to 8 D.C. digital inputs with same specifications as above *16 Channel Digital Input Module [/D16]*.

Ordering Information

See left side of pages 1 & 2 for matching color letter keys.



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