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Find the *Smiths Interconnect / TRAK 9000A-1* at our website: *Click HERE*

Time and Frequency
Modular Time Code Processor
Model: 9000

Application - Defense (Military) ■ SatCom ■ Wireless

- Range Timing
- Communications Networks
- Satellite Ground Stations
- Test and Measurement Systems



Features

- SAASM Module Option Available
- Precise Time and Frequency Processing
- Front Panel Set Up and Status
- Wide Variety of Plug-In Modules
- GPS, Time Code, VHF Synchronizing Options
- Built-in Fault Location and Isolation
- RS-232, IEEE-488, Network Interfaces

Description:

The Model 9000 can be customized for a wide variety of timing applications using available rear-panel plug in modules. By selecting appropriate modules, the unit can be configured as a simple stand-alone generator or support GPS synchronized timing functions. When two synchronizer modules are utilized, GPS and time code for example, the unit may be configured for primary and secondary synchronization. The GPS SAASM Synchronizer is available for existing and new Model 9000's. Incorporated are proven microprocessor and field programmable gate array designs for time keeping, oscillator discipline, signal generation, and fault location and isolation.

All modules may be inserted into any module location within the Model 9000 main frame. As an integral function of this versatile unit, intelligent main frame and modules provide automatic module recognition and set up. The Model 9000 senses module function and location, reporting this information to the front panel display. This report, along with fault/ status and unit serial number is available to remote computers via rear panel interfaces. Faults are isolated down to the module level.

Two versions of the Model 9000 main frames are available, differing primarily in height and the number of plug-in modules they can accept. The Model 9000AN has a 1.75 inch panel height (1U) and accepts six module positions. The required auxiliary I/O module occupies one position, leaving five positions available for other modules. The Model 9000BN has a 3.5 inch panel height (2U) and accepts twelve modules. The required auxiliary I/O module occupies two positions, leaving ten positions available for other modules. The greater height of the Model 9000BN also provides space for optional DC back-up power.

The Model 9000 Main Frame contains a microprocessor controlled main logic board with disciplined crystal oscillator, front panel displays, keypad, power supply, and a passive backplane assembly. A menu system directs the operator to all available setup and status request modes. Functional modules plug into the rear of the main frame and interface with the backplane assembly. Always included with the main frame is the Model 9003, Auxiliary I/O module. This module allows the Model 9000 to operate as a stand-alone generator, operating without any additional modules and provides a means of external synchronization, 1 PPS output, and a RS-232 I/O. Remote interfaces provide basically the same functionality as the front panel keypad and displays. Adding any of the wide variety of functional modules increases the versatility of this instrument.

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Specifications:

Model 9000AN AT - OCXO

Internal:	1 PPS accuracy is < 200ns while disciplined
Oscillator:	Holdover, frequency domain, 1 X 10^{-9}/day (first week)
	Holdover, time domain, 1 - 3 μsec/hour (first 4 hours)
	Temperature stability, ± 5 X 10^{-8} 0° C to +60° C
Module Positions:	Five available
Power:	100 - 240 VAC, 48 - 440 Hz, 40 watt maximum
Dimensions:	1.75 inches high (1U), 19 inches wide, 18 inches deep
Finish:	Clear anodized aluminum
Operating Temperature:	-10° C to + 60° C
Humidity:	95% relative, non-condensing, with modules

Model 9000BN SC - OCXO Type

Internal:	1 PPS accuracy is < 100ns while disciplined
Oscillator:	Holdover, frequency domain, 2 X 10^{-10}/day (first week)
	Holdover, time domain, 8 - 15 μsec/day (first day)
	Temperature stability, ± 1 X 10^{-8} 0° C to +60° C
Module Positions:	Ten available
Power:	100 - 240 VAC, 48 - 440 Hz, 80 watts maximum
Dimensions:	3.50 inches high (2U), 19 inches wide, 18 inches deep
Finish:	Clear anodized aluminum
Operating Temperature:	-10° C to + 60° C
Humidity:	95% relative, non-condensing, with modules

Model 9000 Modules

Modules receive reference frequencies, pulse rates, and time from the Model 9000 main frame main logic assembly. The main logic contains an OCXO (a rubidium oscillator is available as an option) disciplined by the synchronizing source. A minor scaler divides the OCXO output to required rates/frequencies. A time accumulator is set typically by the synchronizing source, but can be manually set by the front panel keypad.

All modules are "intelligent" and interact with the Model 9000 Main Frame providing fault status and accepting control and set up commands. As timing requirements change, simply determine a suitable module type, order, and plug into any available Model 9000 module slot. No hardware/software field changes are required.

The following is a listing of currently available modules. Following this list are individual module data sheets describing each module and are presented in the same order. Consult factory for your particular timing function not shown.

Specifications subject to change without notice.

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Synchronizers

Model 9001	GPS Synchronizer, With Antenna
Model 9002	IRIG-A, IRIG-B, and IRIG-G Reader/Synchronizer
Model 9017	VHF Receiver/Synchronizer

Input/Output:

Model 9003-1	Auxiliary I/O, With RS-232 I/O, External Standard Input and 1 PPS Output (Included With Model 9000A)
Model 9003-2	Auxiliary I/O, as Above With Additional Serial Printer Port and Status Output (Included With 9000B)
Model 9004	IEEE-488 I/O
Model 9019	Network Interface (NTS - NTP/Telnet)

Serial Time Code Generators:

Model 9005	Dual Time Code Generator, Various Popular Time Codes and HAVEQUICK With Both Modulated and DC Level Shift Outputs
Model 9013	Slow Code Generator, Seven Rate Formats, in DC Level Shift

Parallel Code Generators:

Model 9012	Parallel and Group Binary

Rate Generators:

Model 9009	Sine Wave Rate Generator, 1 KHz - 10 MHz
Model 9011	Telecom Generator, T1 or E1, Clock or Framed
Model 9014	Digital Rate Generator, Selectable, 1 PPS - 5MPPS
Model 9021	Digital Frequency Synthesizer, 1 Hz - 50 MHz in 1 Hz Steps

Distribution:

Model 9006	4-Channel Digital Driver (TTL levels)
Model 9007	4-Channel RS-422 Driver
Model 9008-1	4-Channel Linear Driver, DC - 10 MHz
Model 9008-3	4-Channel Linear Driver, 100 Hz - 10 KHz (600Ω Output Transformers)

Miscellaneous:

Model 9010	Dual RS-232 Serial Time Output
Model 9016	Time Tag and Event Trigger
Model 9018	Rubidium Oscillator

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