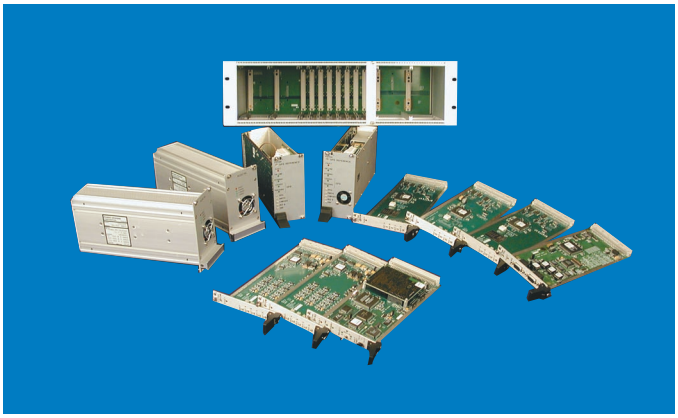
Time and Frequency Modules for Model 9100

Application - WIRELESS ◆ SPACE ◆ DEFENSE

- GPS Reference
- Fault Sense Unit
- AC/DC Power Supply
- Digital Distribution
- Frequency Distribution
- Signal Generator



GPS Reference, with Rubidium Oscillator — Module 9101

This GPS receiver module contains a 10 MHz rubidium oscillator, signal generating circuitry, and microprocessor control circuitry. The receiver is an eight channel unit and is specifically designed for timing applications. Its primary outputs are 1 PPS for oscillator discipline, time, position, and status. Acquisition time is typically < 2 minutes for a "warm" start.

The rubidium oscillator is disciplined from the GPS receiver's 1 PPS, through the microprocessor. Discipline algorithms in the microprocessor smooth short term instabilities of the GPS 1 PPS. The following output signals, referenced to GPS, are derived from the rubidium oscillator and the signal generating circuitry. (10 MHz, 5 MHz, 1 PPS, IRIG-B, Others)

The microprocessor disciplines the rubidium oscillator. It is also provides internal communications with functional sections of this module as well as external communications with other functional modules.

Front panel LED indicators include Fault (summation), GPS Locked, and On Line.

Rubidium Oscillator Characteristics

Accuracy while GPS tracking	< 1 X 10^{-11}, one hour averaging < 1 X 10^{-12}, one day averaging (Frequency domain)
Accuracy while GPS tracking	50 - 100 ns (Time domain)
Aging rate, no GPS	< 2 X 10^{-11} / day, at +25° C, ±3° C < 5 X 10^{-12} / month, at +25° C, ±3° C
Holdover	≤ 5 - 10 μsec/ week, after disciplining for at least 72 hours

GPS Reference, with Crystal Oscillator — Module 9101

This Reference Module contains a 10 MHz crystal oscillator. With the exception of the oscillator and discipline software, this module is functionally identical to the GPS Reference Module, with rubidium oscillator, Model 9101.

Crystal Oscillator Characteristics

Accuracy while GPS tracking	< 1 X 10^{-11}, one hour averaging < 1 X 10^{-12}, one day averaging (Frequency domain)
Accuracy while GPS tracking	80 - 100 ns (Time domain)
Aging rate, no GPS	< 2 X 10^{-10} / day, at +25 °C, ±3 °C
Holdover	≤ 10 μsec/ day, after disciplining for at least 72 hours

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Fault Sense Unit — Module 9104

The Fault Sense Unit detects system module failures, provides switching signals to output modules, and contains Alarm, RS-232 and NTS/NTP circuitry.

Alarm Output Form C Relay Contacts

RS-232 I/O

Message Format	0, 1 Standard (Consult factory for other format availability)
Data rate	9600, N, 8, 1

NTS/NTP (Optional)

Ethernet Interface	10 Base T
Network Features	Network Time Protocol Versions 2 and 3, Telnet status and control

AC Power Supply — Module 9120

The AC Power Supply provides operational power, for all functional modules, from an external AC power input. Status is provided to the FSU module. Three green LED's on front panel indicate power supplies functioning. A red LED Fault indicator is a fault summation of any failed power supply. Two power supplies may be used for redundancy.

Input

Voltage	Universal Input, 100 to 240 Vac, 47 to 63Hz
Power	150 watts maximum capability, 80 watts typical operation

Output

Voltage	+5 Vdc and ±15 Vdc

Note: Front panel test points provided on all modules

DC Power Supply — Module 9121

The DC Power Supply provides operational power, for all modules, from an external DC power input. Status is provided to the FSU module. Three green LED's on front panel indicate functioning power supplies. A red LED Fault indicator is a fault summation of any failed power supply. Two power supplies may be used for redundancy.

Input

Voltage	48 Vdc nominal, ±20%
Power	150 watts maximum capability, 80 watts typical operation

Output

Voltage	+5 Vdc and ±15 Vdc

Digital Distribution Module — Module 9106

The Digital Distribution module is used for pulse distribution and provides four separate output buffers, from a common input. Up to six of these modules may be installed. Signal dropout status is returned to the Fault Sense Unit. Red LED on front panel indicates signal dropout on any of the four output channels.

Output

Rise and all times	15 ns typical
Level	TTL
Drive	50 ohm drive, short circuit protected
Number of outputs	4 each
Connectors	4 each, BNC, female, other types available (consult factory)

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Frequency Distribution Module — Module 9107

The Frequency Distribution Module is used for sinewave and time code distribution and provides four separate output buffers, from a common input. Up to six of these modules may be installed. Signal dropout status is returned to the Fault Sense Unit. Red LED on front panel indicates signal dropout on any of the four output channels.

Output

Frequency Response	DC to 50 MHz
Level	Fixed, 1.0 Vrms, (+13 dBm), ±2 dB
Drive	50 ohm drive, short circuit protected
Number of outputs	4 each
Connectors	4 each, BNC, female, other types available

Telecommunications Signal Generator — Module 9111

The Telecommunications Signal Generator provides four channels of telecom signals in the following configuration: 1.544 MHz or 2.048 MHz rates or T1 or E1 framed signals.

Telecom Rates

Rates	1.544 MHz or 2.048 MHz
Output Level	TTL or RS-422
Connectors	BNC for single ended outputs 15-pin D-sub for balanced outputs

T1 and E1 Framing

Data	Framed all ones

GPS Antenna Characteristics — Model L9

General

Type	Patch, with 35 dB LNA
Operating frequency	1.575 GHz
Supply voltage	+5 VDC Nominal
Supply current	< 27 ma
Coverage	Hemispherical
Connector	“N” female
Size	3.5″ in diameter x 3.8″ in. high (excluding mounting adapter)

Input

Antenna LNA	+5 VDC, 5 to 80 ma, short or open circuit voltage detection
Surge Supressor	Polyphaser 095-0518C-A (Optional)
Cable	50 ft. RG-58/U, other types/lengths available

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Specifications subject to change without notice