Small Instrumentation Modules

SIM900 — Mainframe

SIM900 Mainframe

- **Rugged, compact design**

- **8 module slots**

- **9th port for remote module**

- **10 MHz reference with ext. sync**

- **Cascade multiple mainframes**

- **GPIB and RS-232 interfaces**

- **Start-up script memory**

TR instruments
Tel.: +420 541 633 670
Fax: +420 541 212 413
Křižíkova 70, 612 00 Brno
tri@trinstruments.cz

SIM (Small Instrumentation Modules) is a robust, flexible platform in which up to eight high-performance instruments share the same compact mainframe and computer interface. Unlike other modular systems, both front-panel and computer operation are possible. With SIM you get the functionality you need while avoiding the cost of unnecessary features. You configure your own system from a broad and growing selection of modules.

The SIM900 Mainframe is the platform on which a SIM system is assembled. The mainframe provides power, computer interfaces, clock synchronization, and individual module status. Eight internal module slots accommodate single-width and double-width modules. For the occasional application needing a module right next to an experiment, a rear-panel connector and an interconnect cable permit operation of a 9th module outside the mainframe.

Communications

The mainframe comes with a standard RS-232 host interface and GPIB (IEEE-488.2) as an option. All commands and queries to individual modules are routed through the mainframe host interface. Messages are routed based on their port number, with the mainframe seamlessly relaying data to and from the appropriate destination. This messaging system is also used to communicate through the two auxiliary RS-232 ports. Using these ports, any number of SIM900 mainframes and other RS-232 instruments may be controlled through one host interface in the master mainframe.

SRS Stanford Research Systems

Each port in the mainframe has independent 511-byte input and output queues. The mainframe also performs any rate adaptation needed when communicating through the ports. A dedicated "eavesdrop" RS-232 port provides an echo of all communications to and from the mainframe to ease debugging of new setups.

Timebase

The mainframe provides a master 10 MHz clock to the modules which lock their internal timebases to this reference. The master clock in the SIM900 can be either free-running or phase-locked to an external 10 MHz reference (like the SIM940 Rubidium Frequency Standard) through a rear-panel BNC input.

Start-Up Script

A 4000 byte start-up script is maintained in non-volatile memory in the SIM900. When enabled, the commands stored in the script are executed each time the mainframe is turned on. This provides a simple way to ensure all modules are automatically set to a desired starting configuration.

Front Panel

Front-panel LED indicators provide status information for the mainframe and also monitor communications between the host and installed modules. Indicators display host interface, timebase, communications status, start-up script, and power information.
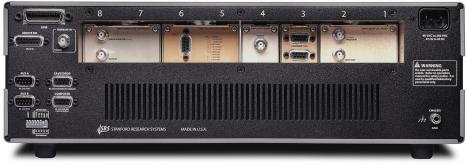
Power Supplies

All modules operate from various combinations of ±5 V, ±15 V, and +24 V. These well regulated and filtered DC voltages are supplied by the mainframe power supply which is forced air cooled to maintain stable performance. All supplies are current limited with a trip-off circuit in case of an over voltage or short circuit.

Ordering Information

SIM900	Mainframe with RS-232
Option 01	GPIB interface
O900RM	Rack mount kit for SIM900

SIM900 Specifications

Module slots	8
Mainframe voltages	±15 VDC, ±5 VDC, +24 VDC
Current limits (max.)	5 A +5 VDC
	3 A for −5 VDC, ±15 VDC, +24 VDC
Power limit	70 W total of all voltages
Voltage regulation	±0.5 %
Internal timebase	10 MHz VCXO, ±10 ppm
Host interfaces	RS-232 (DB9/F DCE), GPIB (opt.)

Module connector pins (DB15/F)

(1)	Signal ground	(9)	Chassis ground
(2)	−Status/service request	(10)	TXD async data
(3)	RTS flow ctrl	(11)	RXD async data
(4)	CTS flow ctrl	(12)	+10 MHz ref
(5)	−10 MHz ref	(13)	+5 VDC
(6)	−5 VDC	(14)	+15 VDC
(7)	−15 VDC	(15)	+24 VDC
(8)	Power ground		

Indicator lights	
Interface	RS-232, GPIB
Timebase	Internal, External Lock, Fault
Activity	8 slots, Remote SIM, Aux A, Aux B, Mainframe, Data Send, Data Receive, Data Error
Start script	Enabled
Power	On, Standby, Overload, Trip
Other connections	Remote SIM (DB15/F)
	Aux. RS-232 (DB9/M DTE, 2 ports)
	Eavesdrop RS-232 (DB9/F DCE)
	10 MHz timebase input (BNC)
	DIP switch for RS-232, GPIB & script enable
	Chassis ground terminal
Operating temperature	0 °C to 40 °C, non-condensing
Power requirements	90 to 260 VAC, 47 to 63 Hz, 150 W
Dimensions	
Mainframe	17.0" × 5.3" × 9.0" (WHD)
Single-width mod.	1.5" × 3.6" × 7.0" (WHD)
Double-width mod.	3.0" × 3.6" × 7.0" (WHD)
Weight (empty)	12.6 lbs.
Warranty	One year parts and labor on defects in materials and workmanship

SIM900 rear panel