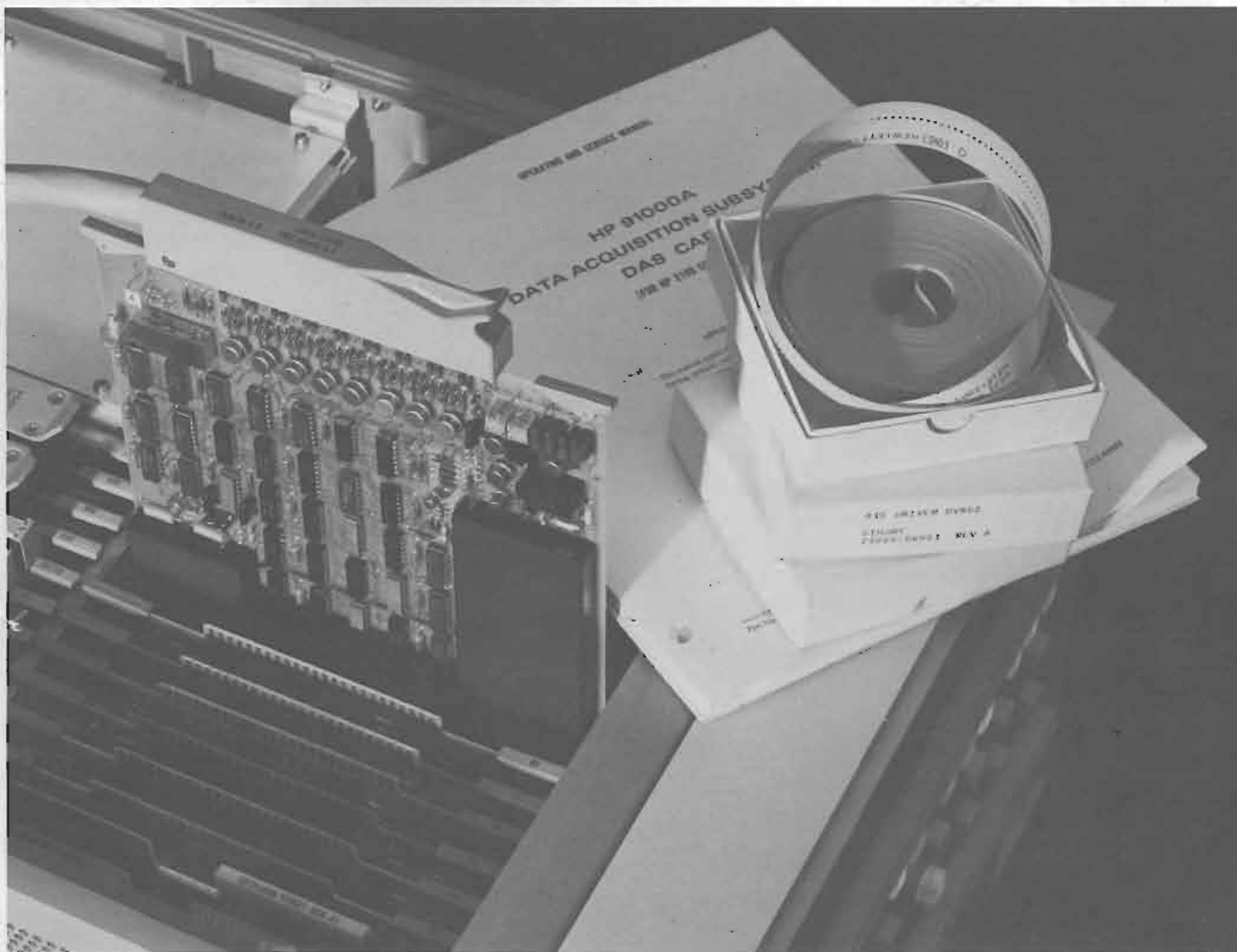


HEWLETT  PACKARD

## PLUG-IN 20 kHz ANALOG-TO-DIGITAL INTERFACE SUBSYSTEM

HP 91000A



### A New, Low-Priced HP A-to-D Subsystem-on-a-Card for Small-Scale Analog Data Collection Applications

Now, for less than \$2000, HP 2100 series Computers can be equipped with 16-channel, 12-bit analog data acquisition capability. This is provided by a complete high-level data acquisition subsystem on a single HP 2100 series Computer plug-in A-to-D interface card. It includes all necessary interface and control logic, a sample-and-hold amplifier, an ADC, and an input multiplexer with capacity for 16 single-ended or 8 differential inputs.

Analog data is sampled and input via this card at throughput rates to 20 kHz, with a sample-and-hold aperture less than 250 nanoseconds. The card accepts external TTL-level pacing signals. It includes BCS or RTE driver software with interfaces to FORTRAN/ALGOL or Real-Time BASIC programs.

In addition to the driver software used in normal operation, the A-to-D card includes a unique verification program. This is an interactive program in which the operator commands any mode of operation via the system's keyboard input unit or paper tape reader. An easy-to-follow printout or display of the results is provided. Because it is extensive and easy to use, this program can substitute for applications programming during the early stages of system setup. It will thus save time and effort, at the same time confirming correct operation of the A-to-D card.

Multiple A-to-D interface cards can be used together in a single 2100 mainframe. The A-to-D card is software-compatible with the HP 2313B Analog-Digital Interface Subsystem, which can thus be substituted with little or no change of programs as measurement needs grow beyond requirements that the A-to-D card can satisfy economically.

# HP 91000A PLUG-IN, 20 kHz ANALOG-DIGITAL INTERFACE SUBSYSTEM SPECIFICATIONS

<b>NUMBER OF INPUTS</b>	16 single-ended or 8 differential; jumper-selectable	
<b>RESOLUTION</b>	12 bits, including sign; LSB = 5mV	
<b>FULL SCALE INPUT</b>	+10.235V to -10.240V	
<b>THROUGHPUT RATE TO BUFFER<sup>1</sup></b>	To 20kHz, maximum, via Direct Memory Access (DMA)	
<b>SAMPLE &amp; HOLD</b>	Delay	150 nsec from trailing edge of pace pulse to "hold" strobe
	Aperture	< 250 ns total jitter with respect to external pace pulse
<b>EXTERNAL PACE PULSE INPUT</b>	+4.5V ± 0.5V, 1.5 ± 0.5µs pulse referenced to 0 ± 0.5V baseline, 100Ω source	
<b>OVERALL ACCURACY<sup>1</sup></b>	At 25° ± 5°C	±0.1% fs ± 1/2 LSB
	Temp. Coeff.	±0.004% fs/°C over 0° to 55°C range <sup>2</sup>
<b>INPUT IMPEDANCE</b>	Power On	> 5MΩ
	Power Off	1kΩ ± 10%
<b>MAXIMUM INPUT</b>	±10.5V diff. + common mode, or high-to-computer chassis (S.E. inputs); ±10.24V high-to-common (S.E. inputs) for rated accuracy; up to ±15V, any input line to computer chassis, w/o damage.	
<b>INPUT PROTECTION</b>	To ±15V, any input to computer chassis without damage.	
<b>SOURCE RESISTANCE</b>	To 1kΩ, balanced or unbalanced.	
<b>CROSSTALK REJECTION</b>	≥ 80dB, dc to 100Hz, using differential input	
<b>COMMON MODE REJECTION</b>	≥ 80dB, dc to 100Hz, using differential input	
<b>COMPUTER I/O CHANNEL</b>	One	
<b>INTERFACE CURRENT</b>	2.4A (+4.5V), 0.05A (-2V) drawn from computer or I/O extender	
<b>MEMORY REQUIRED WORDS</b>	In 9600A Series Systems	560 words for D.62 (non-DMA BCS driver) or 700 words for D.62A (DMA BCS driver) and 130 words for I2313 (FORTRAN/ALGOL interface).
	In 9600B/C/E Series Systems	440 words for RTE driver DVR62 and 370 words for R2313 (FORTRAN/ALGOL interface) or 600 words for RTE-B BASIC interface
<b>OPERATING CONDITIONS</b>	0° to 55°C (+32° to +131°F) <sup>2</sup> , same as HP 2100 series Computers; up to 15°C (27°F) should be allowed for temperature rise inside HP system cabinets.	
<b>WEIGHT</b>	Net: 4 lb. (1,8 kg). Shipping: 6 lb. (2,7 kg).	
<b>SYSTEM COMPATIBILITY</b>	The plug-in A-D Interface Subsystem is hardware and software compatible with all 9600 series Computer Systems for Data Acquisition and Control.	

<sup>1</sup> Absolute accuracy, including 3 sigma noise; linearity; offset; gain and dynamic response errors; ±10% line voltage variation. Includes multiplexer, sample-and-hold amplifier, and ADC.

<sup>2</sup> Temperature range outside of computer.

## SUMMARY OF PLUG-IN ANALOG-TO-DIGITAL INTERFACE SUBSYSTEM (May be ordered from 9600 series Computer Systems Configuring Guide)

HP 91000A Plug-In 20 kHz Analog-Digital Interface Subsystem, consisting of:

1. Analog-Digital Interface Card (91000-60001).
2. Mating Connector (02313-60010) for analog input.
3. Operation and Service Manual (91001-93001).
4. Verification routine (91000-60002).
5. Software driver and interface routine, supplied according to system in which HP 91000A A-D Subsystem will be used. See table of software options, at right.

### HP 91000A-005

Single-Ended Input Cable, 16 foot (02313-60007), terminated with high-level multiplexer card mating connector at one end, unterminated at source end.

### HP 91000A-006

Differential Input Cable, 16 foot (02313-60008), terminated with high-level multiplexer card connector at one end, unterminated at source end.

## TABLE OF SOFTWARE OPTIONS

Order HP 91000A Software Option consisting of:	For 9600 System in:		
	A Series (BCS)	B Series (RTE-B)	C&E Series (RTE)
DMA driver	D.62A	DVR62	DVR62
Non-DMA driver	D.62	n.a.	n.a.
Interface routine	I2313	*	R2313

\*B series interface routine is included in RTE-B Library.



For more information, call your local HP Sales Office or East (201) 265-5000 • Midwest (312) 677-0400 • South (404) 436-6181 • West (213) 877-1281. Or write: Hewlett-Packard, 1501 Page Mill Road, Palo Alto, CA 94304. In Canada: 275 Hymus Blvd., Point Claire, Quebec. In Europe: Hewlett-Packard, P.O. Box 85, CH-1217 Meyrin 2, Geneva, Switzerland. In Japan: Yokogawa-Hewlett-Packard, 1-59-1, Yoyogi, Shibuya-ku, Tokyo, 151.