Adaptors for HP 15463A
HP PN 15463-63201 lead set
HP PN 10230-62101 probe tip, 1 ea
(10 ea required per POD)

Miscellaneous
Cable for sychronized master/slave operation
of two ea 8175A's
HP Protective Cover (protects front cover)

The following peripherals are also available:

HP 2225A	Thinkjet graphics printer
HP 9122/D	Dual, double sided 3.5 inch flexible disc drive
HP 92192A	box of ten blank 3.5 inch double sided discs
HP 10833A/D	1 meter (3.5 ft)/0.5 meter (1.6 ft) HP-IB cable

1-9 RECOMMENDED TEST EQUIPMENT

Equipment required to maintain the 8175A is given in Table 1-1. Alternative equipment may be substituted, provided that it meets or exceeds the critical specifications listed in the table.

Table 1-1 Recommended Test Equipment

INSTRUMENT	REQUIRED CHARACTERISTCS	RECOMMENDED MODELS)	USE*
Oscilloscope	275 MHz Bandwidth	HP 1725A/1722B	P,A,T
Probe	10:1 8 pF	HP 10017A	P,A,T
DVM	0.1 V Range, >10 M	HP 3456A/3455A	P,A,T
Counter	50 MHz START/STOP TI A to B	HP 5335A/5345A	P,A,T
Signature Multimeter		HP 5005A/5004A	T
Pulse Gen.	50 MHz, Wid<10 ns	HP 8112A	P
Pulse Gen.	100 MHz	HP 8007B	P
Power Supply		HP 6205A/6237A	A,T
Time Marker	2 ns		P
Logic Probe	ECL	HP 10525E	T
Logic Probe	TTL	HP 10252T	T
Controller	HP 200 Series Basic Compatible HP-IB Interface	HP 9816/9836	P,A
ET's	2 S.A. Extender Boards	HP 08175-66522 HP 08175-66523	T
Torque Indicating Screwdriver		8730-0012, 8830-0013 8710-0902, -0901	T
Solder-in Receptacle		HP 15429A	P
Plug-on BNC adaptor		HP 15409A	P
BNC Tee		HP 1250-0781	P
BNC F to F		HP 1250-0080	P
BNC M to M		HP 1250-0216	P
BNC to Probe Adaptor		HP 1250-1454	P
BNC Connector RF		HP 1250-0018	P
Probe Tip		HP 10230-62101	P
Coax Test PT		HP 1250-1737	P

* P=Performance Test   A=Adjust   T=Troubleshooting

Specifications describe the instrument's warranted performance. Non-warranted values are described as 'typical'. All ̧ ̱fications are valid at the end of the output pud cables, at the probes of the input pod or at the respective BNC connectors of the mainframe. All specifications are valid in a 0° .̲ to 55° C temperature range.

PARALLEL/SERIAL DATA GENERATOR

Parallel or serial operating mode can be selected.

DATA CAPACITY

NUMBER OF	parallel	serial
CHANNELS:	24	2
BITS PER CHANNEL:	1024	8192
MAX. BIT RATE PER CHANNEL:	50 Mbit/s NRZ	100 Mbit/s NRZ

TIMING

In PARALLEL mode the duration of each individual pattern is programmable. The duration is equal for all data channels.
In SERIAL mode the duration of the data bits is programmable with 8 successive bits always having the same duration. The duration is equal for both channels.

PATTERN DURATION (with internal clock):

Range	Resolution
₁)	
(10), 20 ns — 9.99 µs	10 ns
10 µs — 999 µs	1 µs
1 ms — 99.9 ms	100 µs
0.1 s — 9.99 s	10 ms

¹) 10 ns in serial mode with fixed timing

Accuracy:	±0.05% of progr. value ±2.5 ns (asynchronous start)
	±0.5% of progr. value ±2.5 ns (synchr. start, clock cal.)
	±3% of progr. value ±2.5 ns (synchr. start no clock cal.)
Jitter (max.):	0.1% of progr. value + 150 ps

PATTERN DURATION (with external clock):
Period of external clock x m

Range (m = No. of ext. clock cycles)			Resolution
₂)			
(1).̲	to	999 /	1 period
1.000	to	99.900 /	100 periods
100.000	to	9.990.000 /	10.000 periods
10.000.000	to	999.000.000 /	1.000.000 periods

₂) min. Pattern Duration in serial mode: 10 ns
    min. Pattern Duration in parallel mode: 20 ns

CLOCK

The clock has a programmable period. It is available on line 7 of the pod for the output flags. The clock is derived from an internal system clock or from an external clock. See EXTERNAL CLOCK (BNC) and HP 15463A TRIGGER POD specifications.

Note: In serial mode an additional Serial Clock is available on pod 0, channel 1 providing a pulse at every bit.

PERIOD (with internal clock):

Range	Resolution
20 ns - 9.99 µs	10 ns
2 µs - 999 µs	1 µs

Accuracy:	±0.05% of progr. value ±2.5 ns (asynchronous start)
	±0.5% of progr. value ±2.5 ns (synchr. start, clock cal.)
	±3% of progr. value ±2.5 ns (synchr. start, no clock cal.)

PERIOD (with external clock):
Period of external clock x m

Range (m):	2 ... 999 [x 1]
	2 ... 999 [x 100]

SKEW between channels of

ECL pods:	≤ 6 ns; typical ≤ 3 ns
TTL/CMOS pods:	≤ 7 ns; typical ≤ 3 ns

Maximum time difference between the leading or trailing data bit edges of the same memory address with Fine Timing (opt. 001) off.

OPTION 001 FINE TIMING

Option can be retrofitted at HP service office.

PARALLEL DATAGENERATOR

CHANNELS:	0,1,2 and 3 of pod 0
DELAY (range/resolution):	20 ns to 40 ns / 100 ps

vs same channel with Fine Timing 'OFF'

Accuracy:	± 5% of progr. value ± 1 ns

SERIAL DATAGENERATOR

CHANNELS:	0 and 2 of pod 0
DELAY (range/resolution):	0 ns to 20 ns / 100 ps

vs same channel progr. to 0 ns Delay

Accuracy:	±5% of progr. value ± 2 ns

HP 15462A TTL/CMOS POD
(DATA OR FLAG OUTPUT POD)

NO. OF CHANNELS: 8

MAX. BIT RATE PER CHANNEL: 50 Mbit/s NRZ

LEVELS

Following level specifications apply for pattern durations and clock periods ≥50 ns, into open.

HIGH LEVEL (range/resolution): 2.4 V - 9.9 V/100 mV
Accuracy: ±5% of programmed value ±300 mV
LOW LEVEL: ≤0.7 V

Programmed high level is valid for all pods connected. High level of an individual pod can also track an external voltage applied to this pod. Ext. level overwrites progr. level if greater. The full level ranges can be achieved provided transition times do not violate pattern duration or clock width. To avoid violation transition times have to be shorter than pattern durations or clock width. Transition times depend on load terminations as specified below.

TRANSITION TIMES
into open: ≤3 ns + high level x 1.2 ns/V
into 50 pF: ≤9 ns + high level x 1.8 ns/V

FAN-OUT PER CHANNEL (typical): 10 LS TTL

OVERSHOOT, RINGING ≤ 20% of amplitude (into open)

MAX. EXTERNAL VOLTAGE
AT OUTPUTS: -3 V / + 10 V

DISABLE / ENABLE CHARACTERISTICS (TRI-STATE)

T(ON), T(OFF): ≤ 30 ns

(Time difference between occurrence of external ON or OFF signal at an output pod (TRIST) until outputs are disabled or enabled; High level of ext. signal ≤ High level at outputs)

LEAKAGE CURRENT: ≤20 μA

RESIDUAL CAPACITANCE: ≤ 40 pF

TRI-STATE INPUT at the output pod (TRIST)

IMPEDANCE (typical): 10 kOhm / 50 pF

THRESHOLD: 35% of programmed or ext. high level
Min. overdrive: 600 mV

MAX. EXTERNAL VOLTAGE
AT INPUTS (TRIST, HIL): 0 V to 10 V

HP 15461A ECL POD
(DATA OR FLAG OUTPUT POD)

NO. OF CHANNELS 8

MAX. BIT RATE PER CHANNEL: 100 Mbit/s NRZ

LOW LEVEL: ≤ -1.60 V

HIGH LEVEL: ≥ -1.02 V

TRANSITION TIMES (20% - 80%; into 22 pF): ≤ 3 ns

FAN-OUT PER CHANNEL (typical): 5 ECL

OVERSHOOT, RINGING:(into 22 pF): ≤ 20% of amplitude

MAX. EXTERNAL VOLTAGE AT OUTPUTS: ±5 V

DISABLE / ENABLE CHARACTERISTICS
(ECL common LOW)

T(ON) T(OFF) ≤ 15 ns

(Time difference between occurence of external ON or OFF signal at an output pod (EN) until outputs are enabled or disabled.)

ENABLE/DISABLE INPUT (EN)

IMPEDANCE (typical): 60 kOhm / 50 pF
INPUT CHARACTERISTICS: ECL compatible
MAX. EXT. VOLTAGE AT INPUT (EN): 0 V to -5 V

HP 15463A TRIGGER POD
(TRIGGER WORD INPUT POD)

This pod is used for external status and/or output flag control. In synchronous mode, it reads trigger words in at positive or negative transitions of a clock applied to this pod. In asynchronous mode it accepts trigger words without clock. The applied clock may be used as an alternative to the internal clock or to the external clock via BNC.

MAX. CLOCK RATE: 25 MHz
IMPEDANCE (typical): 100 kOhm / 5 pF
THRESHOLD
(range/resolution): -9.9 V to + 9.9 V / 100 mV
Accuracy: ±2.5% ± 120 mV
Min. overdrive: 250 mV or 30% of input amplitude, whichever is greater
Min. swing: 600 mV (P-P)
MAX. INPUT VOLTAGE: ±40 V

EXTERNAL INPUT (BNC)

This is a connector at the front panel which, on application of a suitable signal, can be used to START datacycling on positive, negative or both transitions or, to START and STOP cycling with selectable transitions.

IMPEDANCE: 10 kOhm / 50 pF
THRESHOLD
(range/resolution): -9.9 V to + 9.9 V / 100 mV
Accuracy: ±5% of progr. value ±250 mV
Min. swing: 600 mV (P-P)
Min. overdrive: 250 mV or 30% of input amplitude, whichever is greater
MAX. INPUT VOLTAGE: ±20 V

EXTERNAL CLOCK (BNC)

The applied clock may be used as an alternative to the internal system clock or the external clock via the input pod.

CLOCK RATE (range): DC to 100 MHz

All other specifications see EXTERNAL INPUT (BNC).

EXTERNAL REFERENCE (BNC)

The internal timing reference (crystal) can be replaced by an external signal applied to a rear panel connector (1 MHz). Accuracy must be better than 0.01%.

INPUT CHARACTERISTICS: LS TTL compatible
MAX. INPUT VOLTAGE: ±20 V

Supplementary Specifications (describe typical non-warranted performance).

DELAYS

to from	Clock out (pod)	Data out (pod)
Ext. Clock in (pod):	150 ns	140 ns
Ext. Clock in (BNC):	110 ns	100 ns
Clock out (pod):[3])	—	10 ns

[3]) Time positive transition of clock is delayed with respect to a leading data bit transition (clock period = pattern duration).

RESPONSE TIMES (to perform action via pod)

CONT, STOP, TRISTATE ON/OFF:	≤170 ns [4]) + trig. word duration
START, JMP A, JMP B:	≤170 ns [4]) + trig. word duration +9 clock periods [5])
OUTPUT FLAGS:	≤100 ns [4]) + trig. word duration

[4]) Trigger word duration: 20, 50, 100, 500 ns.
Time window during which a trigger word has to be stable.

[5]) Clock period constant with internal clock. 10 ns; otherwise use clock period of external clock

START via BNC:	≤100 ns + 9 clock periods
STOP via BNC:	≤100 ns

DATA MEMORY
(LOAD, EDIT, UPDATE, SEQUENCING)

The memory can be loaded, manually or via HP-IB. The following complete data and parameter set-up's are readily accessible: Standard setting (memory cleared), active setting, 2 previously stored settings.
These settings are retained in a battery backed-up memory for up to 3 weeks when power is off.
Various editing functions allow to set, modify, move and copy blocks of data between addresses or channels. The following fixed patterns are available:
Up-counter/down-counter, definable increments and start/stop address; in parallel mode.
PRBS; length is 2 (exp n), n = 3 to 13 in serial mode.
Data codes include BIN, OCT, HEX DEC

Data can be edited while the instrument is running without affecting the data currently being output. This is also possible via HP-IB. The changes become active after an UPDATE command with status STOP.

Parameters waiting for an UPDATE are: Data patterns and timings, cycling definitions and input trigger/output flag assignments.

1-255 segments can be sequenced; segments are user definable in the 0000 to 1023 address range; segments may overlap.
START, CONTINOUS START, JMP A AND JMP B (BRANCHING) refer to user-assigned segment names.

HP-IB CAPABILITY

The following HP-IB interface functions are implemented:
SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0.

HP-IB PROGRAMMING TIMES (typical):
Times are measured by using the HP 9836A as an HP-IB controller. Reloading refers to programming a setting which once was set-up in the HP 8175A and transfered to the controller.

COMPLETE RELOAD TIME:	1.8 s
DATA/TIMING/PROGRAM RELOAD TIME: (Software and hardware update)	800 ms
DATA/TIMING/PROGRAM RELOAD TIME: (Hardware update only)	180 ms

FLEXIBLE DISC DRIVE ACCESS

Storage of set-ups and data on a flexible disc. Up to 256 settings can be managed depending on disc space.

HARD COPY

Any display can be copied to a graphics printer.

PARALLEL OPERATION

Two HP 8175A's can be operated in master-slave configuration, thus doubling the channel count to 48 channels. Synchronization is provided by the HP 15430A cable.

GENERAL
ENVIRONMENTAL

STORAGE TEMPERATURE:	- 40 C to + 65 C
OPERATING TEMPERATURE:	0 C to + 55 C
HUMIDITY (0 C to + 40 C):	95% R.H.

CALIBRATION

Within a recalibration period of 1 year the instrument is warranted to meet all specifications described after a warm-up time of 30 min. The pattern duration accuracy and the clock accuracy can be enhanced by the inbuilt autocalibration feature. To stay within that higher accuracy, autocalibration is recommended to be repeated every 0.5 hours and also as soon as environmental conditions have changed.

POWER:	115/230 V ac; - 22% + 10% 48-66 Hz; 630 VA max.
WEIGHT:	Net 17,5 kg (38.8 lb) Shipping 24,0 kg (53 lb)

DIMENSIONS
MAINFRAME: 190 mm high, 426 mm wide, 584 mm deep
(7.5 x 16.75 x 23 in)

PODS:

CABLE LENGTH	15461A	15462A	15463A
mainframe to pod:	1.6 m	1.6 m	1.6 m
pod to end of cable:	0.2 m	0.2 m	0.25 m