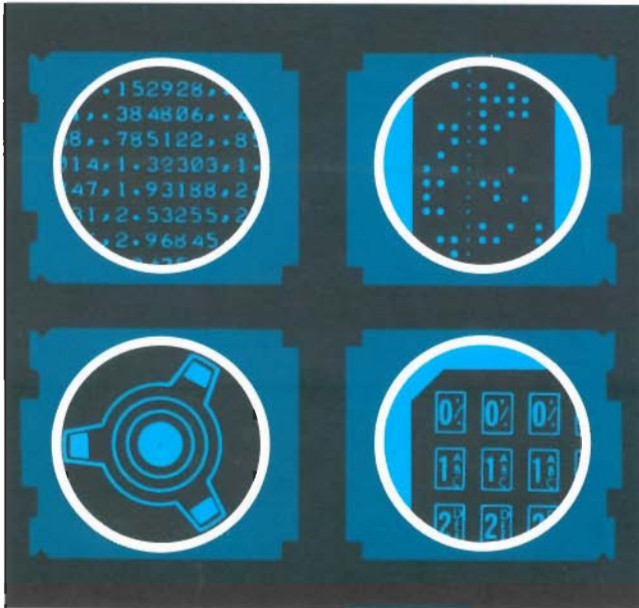# Data Communication Interfaces for HP Computers

HP 12587B Asynchronous Data Set Interface Kit
HP 12618A Synchronous Data Set Interface Kit
HP 12589A Automatic Dialer Interface Kit
HP 12531C Buffered Teleprinter Interface Kit
HP 12531D High Speed Terminal Interface Kit

Features

- Plug-in compatibility with all HP 2100 Series computers

- Asynchronous or synchronous interfaces to meet exact system requirements

- Simplex, half-duplex or full-duplex operations

- Secondary channel control for error detection

- Programmable character size and parity

- Automatic dialing interface for unattended operation

- All interfaces conform to EIA standard RS-232

- Jumper selectable data rates on terminal interfaces

- Special connectors allow conversion to EIA-compatible data levels on terminal interfaces

Hewlett-Packard data communication interface cards permit the HP computer user to transmit data using a wide variety of privately-owned or common-carrier communication facilities. A range of interface capabilities is available, permitting data transmission using either asynchronous or synchronous data modems. By including an automatic dialer interface, data communications terminals in the system can be dialed under software control. Data may then be transmitted to or from the computer via the associated asynchronous or synchronous data modem and data communications interface card. Transmission modes include simplex, half-duplex, full-duplex and echoplex. Conformance to EIA specification RS-232 means your HP data communication system is compatible with equivalent data modems and automatic dialing equipment.

The data communication cards are programmed using HP Assembly Language subroutines. Character size and parity (odd, even or none) are software selectable. Asynchronous cards can be configured for number of stop bits (1 or 2) and

clock frequency. Secondary channel control for "stop and retransmit", error correction subroutines or for low-speed reverse data transmission is a standard feature. Built-in hardware capabilities reduce software engineering to a minimum. And the highly-efficient HP multi-level priority interrupt system keeps communication lines operating at maximum rates.

Installation is accomplished by simply plugging the interface cards into appropriate computer I/O slots and connecting the necessary cables. Additional channels may be added, up to the input/output capacity of your HP computer.

HP 12587B Asynchronous Data Set
Interface Description

The HP 12587B Interface Kit permits use of an HP 2100 Series computer for input or output of data via asynchronous data transmission equipment, such as Bell 103 and 202 Data Sets or equivalent. Transmission mode can be either simplex, half-duplex or echoplex. Input/output of data between the computer and the data set interface is character-parallel. Transmission of data between the interface and the data modem is in bit-serial form. Circuits are provided for adding start and stop bits plus parity (if required) on transmitted information. Start and stop bits are stripped off incoming information and parity (if present) is checked automatically. Character size is from 1 to 8 bits plus parity. With an 8-bit character, parity becomes the 9th bit.

The number of stop bits (1 or 2) and the clock frequency are determined by strapping. Selection of character size, transmission mode, parity generation and checking are performed by a computer "control word". Secondary channel transmit is part of the computer data word and secondary channel receive is available as part of the status word. A computer interrupt is generated when either the card or modem has information requiring a decision to be made by the controlling software.
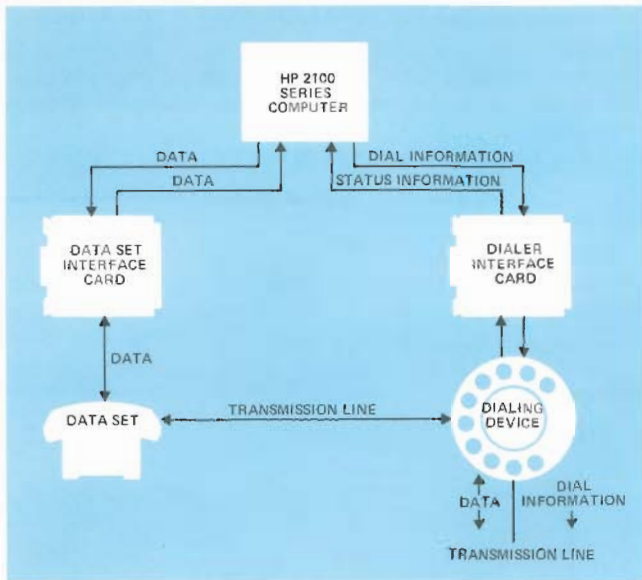
HP 12618A Synchronous Data Set
(Transmit/Receive) Interface Kit Description

The HP 12618A Interface Kit provides a comprehensive system of communications between HP 2100 Series Computers and synchronous data devices such as a Bell 201A/B Data Set or equivalent. Data transfer rate may be as high as 9600 bits per second, operating in either the half or full duplex transmission mode. Transmit and receive channels are fully independent, permitting the rapid transfer of information between the computer and remote terminal.

The card also includes programmable functions for parity generation (odd, even or none), synchronization character transmission, and character size specification. Serial-to-parallel conversion, character recognition, synchronization to the transmitting station and secondary channel transmit are provided. Programmable functions include parity checking, establishment of synchronization, special character recognition and character size determination.

HP 12589A Automatic Dialer
Interface Kit Description

The HP 12589A Automatic Dialer Interface Kit can be used with any HP computer equipped for data communications and a Bell 801 Automatic Dialing Unit or equivalent. The dialer interface together with the 801 allows the computer to automatically dial a predetermined phone number to access a remote terminal for data transmission. Automatic calling can be used with HP asynchronous or synchronous data transmission interface kits. All circuits are contained on a single interface card that plugs into a computer I/O slot.

When placed in operation, the dialer interface card is initialized by instructions and control words from the computer (refer to typical data communications systems block diagram shown above). The dialer interface then indicates to the dialing device that the computer is ready to initiate a call. When the dialing device is ready for operation, the computer outputs the numbers to be dialed. At the completion of dialing, the dialing device switches the transmission line to the data set to allow data transmission. Remote terminals calling into the system are routed directly to the data set for automatic answer and subsequent data transmission.

HP 12531C Buffered Teleprinter Interface Kit Description

The standard HP 12531C Interface Kit controls data transfer between an HP 2100 Series Computer and an HP 2752A or HP 2754B Teleprinter. Optional features allow interfacing the computer with EIA-compatible devices. Option 001 is used with devices such as an HP 2749A Teleprinter or HP 2600A Keyboard/Display Terminal. Option 002 is used with data modems such as a Bell 103A Data Set.

Two jumpers provided on the interface circuit board permit interfacing to a variety of I/O devices. One jumper allows selection of five discrete data transfer rates (110, 220, 440, 880, or 1760 bps). A second jumper allows an external clock pulse (provided by the I/O device) to control the data rate.

HP 12531D High Speed Terminal Interface Kit Description

The HP 21531D Interface Kit provides data transfer between HP 2100 Series Computers and a variety of high speed I/O devices. The standard kit is used with devices requiring data levels of +9 volts (mark) and 0 volts (space). Optional features allow using the kit with devices requiring EIA-compatible data levels. Option 001 is used to interface terminals such as the HP 2605A Console Printer. Option 002 is used with data sets such as a Bell 103A or equivalent.

Jumpers on the optional interface cable connectors permit the insertion of data level converters into the data lines. The level converters allow direct connection to an EIA-compatible device without the use of an ancillary modem. In addition, a special cable connector jumper on the Option 002 kit provides a logic 0 for the "Request to Send" and "Data Terminal Ready" lines of a data set.

Equipment Supplied

12587A Asynchronous Data Set Interface Kit, consisting of:
Asynchronous Data Set Interface Card,
HP Part No. 12587-6001
Interconnecting Cable Assembly,
HP Part No. 12587-60002
Test Connector Assembly, HP Part No. 12587-60005
Interface Card Test, Binary Tape, Accessory No. 20535A

12622A Synchronous Data Set (Transmit) Interface Kit consists of:
Synchronous Data Set Interface Card,
HP Part No. 12622-60001
Interconnecting Cable Assembly,
HP Part No. 12622-60002
Test Connector Assembly, HP Part No. 12622-60005
Interface Card Test, Binary Tape,
Accessory No. 20393A

12621A Synchronous Data Set (Receive) Interface Kit, consists of:
Synchronous Data Set Interface Card,
HP Part No. 12621-60001
Interconnecting Cable Assembly,
HP Part No. 12621-60002
Test Connector Assembly, HP Part No. 12621-60005
Interface Card Test, Binary Tape, Accessory No. 20538A

12618A Synchronous Data Set (Transmit/Receive) Interface Kit, consisting of:
Synchronous Data Set (Receive) Interface Card,
HP Part No. 12621-60001
Synchronous Data Set (Transmit) Interface Card,
HP Part No. 12622-60001
Branched Cable Assembly, HP Part No. 12618-60001
Test Connector Assembly, HP Part No. 12621-60005
Test Connector Assembly, HP Part No. 12622-60005
Interface Card Test, Binary Tape, Accessory No. 20393
Interface Card Test, Binary Tape, Accessory No. 20538

12589A Automatic Calling Unit Interface Kit, consisting of:
Automatic Calling Unit Interface Card,
HP Part No. 12589-6001
Interconnecting Cable Assembly, HP Part No. 12589-6004
Test Connector Assembly, HP Part No. 12589-6005
Interface Card Test, Binary Tape, Accessory No. 20290

HP 12531C Buffered Teleprinter Interface Kit consisting of:
Buffered Teleprinter Interface Card,
HP Part No. 12531-60022
Interconnecting Cable Assembly,
HP Part No. 12531-60023 (standard)
Interconnecting Cable Assembly,
HP Part No. 12531-60021 (Option 001)
Interconnecting Cable Assembly,
HP Part No. 12531-60024 (Option 002)
Interface Card Test, Binary Tape

HP 12531D High-Speed Terminal Interface Kit, consisting of:
High-Speed Terminal Interface Card,
HP Part No. 12531-60025
Interconnecting Cable Assembly,
HP Part No. 12531-60025 (standard)
Interconnecting Cable Assembly,
HP Part No. 12531-60026 (Option 001)
Interconnecting Cable Assembly,
HP Part No. 12531-60024 (Option 002)
Interface Card Test, Binary Tape

Specifications

12587B ASYNCHRONOUS DATA SET INTERFACE KIT

Function
Asynchronous interface for HP 2100 Series Computers. Operates in the simplex, half-duplex or echoplex, transmit or receive mode. Converts parallel data to serial data or serial data to parallel data.

Compatibility
Used with Bell Telephone System 103 or 202 Data Sets or equivalent.

Interface Requirements
Conforms to Electronic Industries Association Standard RS-232-B.

Data Transfer Rate
Adjustable discrete rates: 26 to 3,110 bits per second with two stop bits.

Character Size (determined by control word)
1-8 bits plus parity.

Parity (determined by control word)
Odd, even or none

Secondary Channel
Both transmit control and receive data signals are provided.

Conditions for Computer Interrupt
Ringing, Secondary Channel Receive Off, Data Set Ready Off, Carrier Detector Off, Buffer Full or Buffer Empty

Power Consumption From Computer
0.080A (+12V); 0.045A (-12V); 0.070A (-2V); 1.6A (+4.5V)

12618A SYNCHRONOUS DATA SET INTERFACE KIT

Function
Synchronous interfaces for HP 2100 Series Computers. Convert parallel data to serial data (transmit) or serial data to parallel data (receive).

Transmission Modes
Half or full-duplex with reverse secondary channel, transmit and receive.

Compatibility
Used with Bell Telephone System Model 201 or 208 Data Sets or equivalent.

Interface Requirements
Conforms to Electronic Industries Association Standard RS-232-B.

Data Transfer Rate
1200-9600 bits per second

Character Size (determined by control word)
1-7 bits plus parity or 8-bits without parity

Parity (determined by control word)
Odd, even or none

Conditions for Computer Interrupt
Transmit: Ringing, Secondary Channel Receive Off, Data Set Ready Off, Clear to Send Off, or Buffer Empty
Receive: Ringing, Data Set Ready Off, Carrier Detector Off, Buffer Full, or Special Character Received

Power Consumption From Computer
0.095A (+12V); 0.070A (-12V) 0.23A (-2V); 2.8 (+4.5V)

12589A AUTOMATIC DIALER INTERFACE KIT

Function
Allows an HP 2100 Series Computer to output data and control signals for operation of compatible automatic dialing equipment.

Compatibility
Used with a Bell Telephone System 801A or 801C Automatic Dialing Unit or equivalent.

Interface Requirements
Conforms to Electronic Industries Association Standard RS-232.

Conditions for Computer Interrupt
Power Fail, Digit Buffer Empty, Connection to Data Set Completed, or Call Attempt Unsuccessful.

Power Consumption From Computer
0.050A (+12V); 0.050A (-12V); 0.055 (-2V); 0.650A (+4.5)
+12V supply requires 0.25A when test connector is in use.

12531C BUFFERED TELEPRINTER INTERFACE KIT

Function
Interfaces HP 2100 Series Computers to standard HP Teleprinters. Options 001 and 002 allow interfacing to a variety of EIA-compatible I/O devices.

Compatibility
Used with HP Teleprinters, HP Keyboard/Display Terminals, and EIA-compatible devices such as Bell Telephone Systems 103A Data Set or equivalent.

Interface Requirements
Conforms to Electronics Industry Association Standard RS-232C.

Data Transfer Rate
Jumper selectable: 110,220,440,880 or 1760 bps with two stop bits

Conditions for Computer Interrupt
Buffer Full, Buffer Empty

Power Consumption From Computer
0.05A (+12V); 0.10A (-12V) 0.05A (-2V); 0.76A (+4.5V)

12531D HIGH SPEED TERMINAL INTERFACE KIT

Function
Interfaces HP 2100 Series Computers to wide variety of high speed data devices. Options 001 and 002 allow interfacing to EIA-compatible I/O devices.

Compatibility
Used with data devices such as HP 2605A Console Printer and Bell Telephone System 103A Data Set or equivalent.

Interface Requirements
Conforms to Electronics Industry Association Standard RS-232C.

Data Transfer Rate
Jumper selectable: 150,300,600,1200 or 2400 bps with one stop bit.

Conditions For Computer Interrupt
Buffer Full, Buffer Empty

Power Consumption From Computer
0.24A (+12V)*; 0.01A (-12V)*; 0.05A (-2V); 0.76A (+4.5V)

*Plus current drawn by I/O device