HP 98641A

RJE Interface

Product Support Plan

Card Assembly: 98641-66501
Date Code: B-2428

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PRODUCT DESCRIPTION

SECTION I

1.1 GENERAL DESCRIPTION

The HP 98641A provides a communications interface between a series 200 Direct I/O computer and an IBM mainframe. When running the 2780/3780 emulator software from Colorado Networks Operation, the series 200 computer emulates a Remote Job Entry (RJE) station (i.e., IBM's 2780 or 3780 terminal). While in this mode, the series 200 provides batch file transfer capability to the remote computer over point-to-point modem or direct connect links.

The HP 98641A leverages the hardware design from the 98628A/98629A data communication interfaces, increasing RAM from 2K to 8K-bytes and utilizing a 16K byte EPROM.

1.2 PRODUCT FEATURES

The HP 98641A provides the following I/O features for DIO computers:

GENERAL

* EIA RS-232C, CCITT V.24 compatible
* Autoanswer capability
* Baud rates to 19.2K
* 8K bytes RAM
* On-board self-test
* Collection of line statistics from link monitoring
* Trace utility

RJE

* Link control functions:
  - Line Bid
  - Normal transparent data modes
  - Special character handling

* Configureable datacomm formatting:
  - Record/block size
  - Timeouts
  - Retry counts
  - Character sets
  - Conversion tables

1.3 PRODUCT CONFIGURATION

The product has the following configuration:

Part Number	Description
98641-66501	PC assembly
5061-4215	5 Meter male DTE cable
98641-90001	Manual

1.4 USE OF OTHER HP PRODUCTS

The HP 98797A Single-User or HP 98798A Multi-User RJE Emulation software product must reside in system memory for emulation of RJE to take place.

For direct connection to an IBM host, the installer will need to use a DCE cable in addition to the DTE cable provided with the product. A DCE cable is available from CPC and CSO, part number 5061-4216.

To perform external data loopback the following connectors are available at CPC:

5061-4248	Card edge connector
1251-6625	Cable end connector

1.5 PRODUCT SPECIFICATIONS

1.5.1 Physical Specifications

HP 98641A has the following physical attributes:

Length:	135 mm (5.3 in)
Width:	170 mm (6.6 in)
Weight:	310 gm. (11 oz.)

1.5.2 Electrical Specifications

HP 98641A has the following power requirements (2 sigma maximums)

+12V	@ 37 ma
+5V	@ 805 ma
-12V	@ 60 ma

Total power consumption : 5.189 Watts

Total power dissipated: 5.189 Watts

This card does not have battery back-up capabilities.

1.5.3 Mechanical Specifications

This product is mounted in a standard DIO card cage.

This product contains Electrostatic Sensitive Devices and should be handled accordingly.

This product meets vibration specifications established in the DIO standard.

1.5.4 Environmental Specifications

HP 98641A RJE Interface card is only specified to operate inside the chassis/cabinet of a supported host computer or DIO extender box, deriving all power and cooling airflow from the host. HP 98641A will function as long as the host operates within its specified environment.

The RJE Interface card has been designed to allow supported host computer systems to meet HP product assurance environmental class B, industrial commercial environment, as described in the corporate assurance engineering standards. The class B specification includes operating environmental specifications of:

Temperature	0-55 degrees C
Humidity	40 degrees C at 5-95 percent
Altitude	4572 Meters (15000 ft.)

Additionally, to allow for a 15 degree temperature rise inside the chassis of the host computer, the RJE Interface card has been designed to operate from 0 to 70 degrees C. Consult the host system support plan, data sheet, or site preparation guide for environmental specifications.

1.5.5 Safety Specifications

RFI and safety certifications are issued on a system basis. Host systems are tested with HP 98641A installed, connected to HP peripherals via the HP supplied cables, and operating in a normal manner. Consult the host system support plan or data sheet for the appropriate RFI and safety certifications.

Note that user modification or fabrication of device connection cables may invalidate RFI certification on that user's system

1.5.6 Standards

When used with the proper HP supplied cable, the HP 98641A is designed to be compatible with the following data communications standards:

RS-232
RS-423 (No HP cable available)
RS-422 (No HP cable available)
CCITT V.24

1.6 MARKETING DATA

1.6.1 Targeted Market

Expected users to be included from product marketing plan.

Geographical Dispersion of product to be included from product marketing plan.

Expected product life to be included from product marketing plan.

1.6.2 Shipment Schedule

CPL date: September 1984

First demo: NA

First customer shipment: September 1984

First European/Icon shipments: September 1984

Shipment forecast: See below

84				85							
SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
10	10	10	10	10	20	20	30	40	40	40	50

1.6.3 Comparison to Other HP Products

The HP 98641A used with DIO compatible computers performs functions similar to the following interface card computer combinations:

```
HP 1000:    91780A (Includes hardware & software)
Series 500:  27122A
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1.7 WARRANTY

Hardware Warranty:

HP 98641A warranty is a standard HP warranty code 3A, 90 day return to HP. If HP 98641A is purchased with a host computer system (factory integrated or coordinated shipment), the host computers system's warranty coverage will supercede HP 98641A warranty. Consult the host computer system's support plan.

Warranty billings for failed HP 98641As should be sent to Roseville Networks Division (division 52). If on-site warranty repair is authorized under a host system warranty, the parts charge (HP 98641A

NEP), and one travel zone charge may be billed to RND. CE labor time clearly associated with the diagnosis and replacement of the failing interface card may be billed to RND. (This typically includes running the verification program, removing and replacing the defective interface, and re-running the verification program.) Additional travel charges, or additional CE labor time may be charged to the host system's manufacturing division.

Software/Firmware Warranty:

Because HP 98641A contains firmware in ROM with code for the on-board microprocessor, the following firmware/software warranty will apply:

HP warrants that its software and firmware designated by HP for use with the microprocessor resident HP 98641A interface card will execute its programming instructions when properly installed on that interface card. HP does not warrant that the interface card, software, or firmware will be uninterrupted or error free.

Refer to the Computer Groups Warranty and Installation Guidelines, and the Computer Products Warranty and Installation Terms for current warranty information.

SUPPORT STRATEGY

2.1 SITE PREPARATION REQUIREMENTS

There are no special site preparation requirements for HP 98641A RJE Interface card other than those required for the host system. For optimal verification of operation, any required serial devices should be in place at installation time.

2.2 INSTALLATION

Installation of HP 98641A RJE Interface card will consist of the following steps:

Installing the interface card in the host computer or I/O extender.
Installing the card edge test connector or the DTE cable and cable-end test connector.
Powering up the system.
Executing RJE emulation software. The RJE utility program will query the HP 98641A for self-test status and report findings to the user.
Disconnecting the test hood.
Connecting the HP supplied cable (5061-4215) to the DCE.

Refer to the HP 98641A RJE Interface Installation Manual (98641-90001) and the appropriate system manual for specific installation and verification procedures. Installation charge (acceptable under warranty if applicable) at introduction is $35. Consult the CSD Service Price Fiche for the current installation charges. Installation of HP 98641A does not include fabrication or pulling of cables or connection to any non-HP peripheral.

If an HP 98641A RJE Interface card is purchased with an HP computer system and integrated into the system at the systems division, the systems division will absorb the initial cost. If HP 98641A is purchased with an HP computer system and shipped directly to the customer on a coordinated shipment, the installing CE should bill RND the established installation charge. Travel for installation may not be charged to RND unless the HP 98641A interface card missed the coordinated shipment delivery window and the CE must make an additional trip just to install the HP 98641A interface.

If an HP 98641A is purchased as a line item and added to an existing maintenance agreement, installation may be charged to the maintenance agreement. In any other instance, installation is the customer's responsibility. Any time installation is not included, a customer may purchase installation services from CSD. In that case, Computer Support Division will determine an installation price.

2.3 SUPPORT SERVICES

On-Site Service

If on-site service of the host system is performed by an HP CE, a failing 98641-66501 interface card will be replaced by the CE with an exchange assembly 98641-69501. Service contracts for the HP 98641A are available as $0 add-ons to an existing HP 9000 Series 200 system contract.

Bench Repair Service

If the host computer system is eligible for Field Repair Center Maintenance and a failing HP 98641A is detected, it will be replaced with an exchange assembly at the Field Repair Center.

CSD Exchange Program

Customers who perform their own maintenance may purchase exchange assemblies from HP via the CSD Exchange Program.

2.4 REPAIR METHOD

The HP 98641A interface card is considered a Field Replaceable Unit (FRU). The standard repair method for the HP 98641A will be board exchange. Failing assemblies may be exchanged for a new or repaired and updated exchange assembly. Failed assemblies become the property of HP. The CE or customer must isolate problems to the DIO assembly (98641-66501) to affect repair.

Due to the microprocessor based design of the HP 98641A interface card, OEMs and some end users may desire to remove the HP supplied firmware EPROM and replace them with their own firmware. HP WILL NOT provide on-site support services for the HP 98641A interface cards with the non-HP firmware installed. Third party end users should contact their OEMs for on-site support of HP 98641A interface cards with non-HP firmware installed.

If an HP 98641A with non-HP firmware ROMs is suspected to be defective, an exchange assembly (98641-69501) may be ordered from the local sales office via the Assembly Exchange Service program. The customer must then remove the non-HP ROMs and return the suspect assembly to the local sales office.

Component Level Repair

Component level repair of the HP 98641A is not supported by Hewlett-Packard. Customers who perform component level repair will invalidate warranty and render the assembly ineligible for exchange.

Cable Repair

The HP 98641A cable (5061-4215) is not a repairable item. Cables which fail during the warranty period will be replaced by Hewlett-Packard. Out-of-warranty cables may be replaced by the customer. Cables are available at CPC.

Self-test Capabilities

Self-test resides in EPROM on the HP 98641A. The test is initiated on system power up and upon card reset and contains the following procedures: (1) CRC check on EPROM; (2) RAM address decoding and data lines; (3) CTC verified for interrupt generation; stuck-at bits in time constant register, down counter, and data lines; external trigger; and channel independence; (4) SIO tested for interrupt generation and addressability; (5) line drivers and receivers used by RJE are also tested provided a test connector is installed.

Two test connectors are available. The 5061-4248 unbalanced test connector connects directly to the frontplane of the card. The 1251-6625 connects to the remote end of the DTE cable (5061-4215) supplied with the standard product.

Remote Support Capabilities

HP 98641A has no remote support capabilities.

MTTR

Repair is defined to be the following steps performed by the HP CE at the customers site:

Run the RJE emulation software.

If a self-test failure is indicated and the CE has isolated the problem to the I/O card (i.e, there is no cable fault), power down the system and remove the failing HP 98641A and replace it with an exchange assembly from the CE's support kit.

Power up the system and verify that self-test does pass and the problem has been eliminated.

The Mean Time To Repair is expected to be 1.0 hour(s) in all host systems.

2.5 DIAGNOSTIC DESCRIPTION

Self-Test

Self-test is initiated on the card at system power up or upon the driver accessing the card for the first time, or upon card reset.

Self-test performs the tests outlined in **"Self-test Capabilities"**. The card stores the results of self-test and the test hood configuration (if any) in RAM on the card. These results consist of two bytes on the card. One byte contains the self-test result:

```
 0 = Card passed self-test
 1 = ROM test failed
 2 = CTC test failed
 4 = SIO test failed
 8 = Semaphore test failed
16 = RAM test failed
32 = External Loopback failed
```

The second byte contains test connector detection information:

```
0 = No test connector detected
1 = Card edge connector detected
2 = Cable end connector detected
```

Verification Program Description

There is no verification program per se. However, in order to retrieve the results of self-test, you must run the RJE emulation software program. As part of the initialization process, this software will interrogate the card for self-test status and report the following messages to the console:

```
Waiting for Connection
```

This message indicates that no test connector has been detected and that self-test passed. Without the test connector, the card can pass self-test and still have a frontplane problem. In addition, if a test connector *was* installed and this message was received, the card obviously has front plane problems specific to the lines used for detecting the test connector.

```
Self-test passed. Card-edge test connector detected.

Self-test passed. Cable-end test connector detected.

Self-test failed; code n.

Self-test failed; code n. Card-edge test connector detected.

Self-test failed; code n. Cable-end test connector detected.
```

The failure code returned refers to the specific test being run at the time the failure was detected. The installation manual for the card will decode this number for the user.

% Effectiveness of Diagnostics

With an external loopback connector attached, the self-test verifies the functionality of the card to an 85% confidence level.

Adherence to Unified Diagnostic Strategy

This card meets all requirements of the Guidelines for low cost products as spelled out in the Unified Diagnostic Strategy, January 19,1982.

HP-85 Service System use

Not Applicable.

2.6 PREVENTIVE MAINTENANCE

There is no Preventive Maintenance required with this product.

2.7 SPECIAL TOOLS

The following test connectors are made available at CPC:

5061-4248 Unbalanced connector for card-edge
1251-6625 Cable end connector

2.8 TECHNICAL SUPPORT CAPABILITIES

Customer Engineer/Customer Engineering Organization (CE/CEO)

The CE will have primary responsibility for support of the HP 98641A installed in any host system supported by that CE. CEs should contact the Technical Support Engineer for the host line of computer in the CE's area for technical support problems concerning the HP 98641A.

Technical Support Engineer/Organization (TSE/TSO)

The TSE is responsible for the technical backup and training of CEs on the HP 98641A when installed in the host computer line the TSE supports. TSEs should contact the host division hardware support organization or RND Technical Marketing for technical problems involving HP 98641As installed in the host computers.

Systems Engineer/Systems Engineering Organization (SE/SEO)

The SE is responsible for supporting the operation of HP 98641As in the host computer system the SE supports. The SE must understand the host system software in its interaction with the HP 98641A and associated peripheral(s). The SE must be able to set up and demonstrate the operation of the HP 98641A in the host system. If the host systems SE's responsibilities include customer training, the SE should understand enough about the HP 98641A internal operation and DIO backplane protocol to explain the operation of the host system software in an appropriate level of customer training.

SEs should contact Colorado Networks Operation support organization for problems which have not been isolated to the hardware or RND Technical Marketing for technical problems involving the HP 98641A.

Factory Support

The division manufacturing the host computer system will generally be the first division called for factory support of the HP 98641A installed in the host computer system. Backup factory support for the HP 98641A installed in all host systems will be RND Technical Marketing. If support questions are beyond the capabilities of the host division support personnel, or if support questions are strictly confined to the HP 98641A interface card, the host computer division may establish direct communication between the RND support engineer and the TSE or SE involved. RND will issue support plan changes and service notes pertaining to the HP 98641A interface card.

Which Factory to Call for Support

The following information is included to aid field support personnel in deciding who to call for support on the HP 98641A. The division support engineer will review the problem and involve the other division(s) if appropriate.

Call RND if the problem is:

From the card outward to the device.

Call the subsystem division (CNO) if the problem is:

Subsystem related in general.
Software related.

Call the host systems division (FSD) if the problem is:

Involving systems configuration.
From the card inward to the computer.
Generally not well defined.

2.9 CUSTOMER COOPERATIVE SUPPORT PROGRAM

There is no Customer Cooperative Support Program specifically associated with the HP 98641A. Customer self-support plans (if any) for the host computer will apply. It is recommended that customers who wish to do their own support make use of the Assembly Exchange Program to obtain exchange assemblies for failed HP 98641As.

The self-support customer will require the HP 98641A RJE Interface Hardware Reference Manual.

All system diagnostic/verification/exerciser programs and card resident self-tests that are available to the HP CE are also supplied to the customer. Service diagrams, schematics, and theory of operation beyond what is included in the manual (98641-90001) are not available.

2.10 DEALER REPAIR PROGRAM

No dealer repair program is available for the HP 98641A.

SUPPORT MATERIALS

3.1 SPECIAL MATERIALS CONSIDERATIONS

CSDs exchange program will be used for the HP 98641A interface card. The other FRUs (non-exchange assemblies) will be available from CPC.

Estimated cost of all support materials is as follows:

Replacement card	340	(estimated NEP)
Replacement cable	75	(list)
Test hood - card	20	(list)
Test hood - cable	20	(list)

The HP 98641A contains static sensitive components and must be packaged and handled in accordance with approved static sensitive handling procedures. The exchange assembly will be enclosed in an anti-static bag and placed in a CSD approved carton by CSD/CSE prior to shipment to field offices or customers. Field offices and customers should package return assemblies in accordance with established CSD procedures and the directions included in the Installation and Service Manual, 98641-90001.

3.2 PARTS

3.2.1 Exchange Assemblies

The HP 98641A interface card (98641-69501) may be replaced with the equivalent exchange assembly. An exchange assembly consists of a new or repaired and updated 98641-66501 interface card and protective packaging.

Exchange Assembly part number:		98641-69501
New Assembly part number:		98641-66501
Description:		RJE Interface
Estimated AFR:	1.8%	Failure/card-year
Net Exchange Price (NEP):		$ 340

Each Service Responsible Office (SRO) should order one 98641-69501 exchange assembly when the first HP 98641A is ordered for delivery in the SRO's service area. Subsequent exchange assemblies for FSI in the office should be ordered based on failure rate, installed base, and local/CSD/CSE guidelines.

The NEP shown here is the expected NEP at product release. Consult the Hewlett-Packard Parts Price List for the current NEP.

3.2.2 Field-Replaceable Component Parts

The following Field Replacements are viable for this product:

98641-66501 - Card (contains EPROM)

5061-4215 - DTE cable

3.2.3 Non-Exchange Assemblies

In addition to the above exchange assembly, the following non-exchange assemblies exist for this product:

Part Number	Description	Qty
5061-4215	DTE Cable	1
98641-81001	EPROM	1

The above parts may be ordered from CPC or PCE, and Manuals may be ordered from CSO. Consult the Parts Price List for current Prices.

3.3 SUPPORT PACKAGES

No support package is defined for the HP 98641A.

3.4 KIT PACKAGING

Not Applicable.

4.1 PRODUCT INTRODUCTION TRAINING

Introduction training for support of the HP 98641A is available in the form of the following documents:

HP 98797A/B RJE Emulation Software Field Training Manual
HP 98797A/B RJE Emulation Software Support Plan
HP 98641A Product Support Plan (this document)
HP 98641A Installation Manual
RJE User's Guide (97077-90011)

4.1.1 Incumbent TSE Training

N/A

4.1.2 Incumbent CE Training

N/A

4.1.3 Training Unit/Customer Unit Shipping Plan

N/A

4.2 ON-GOING PRODUCT TRAINING

On-going training will consist of all materials referenced in this section. See below.

4.2.1 Pre-Study--General Neophyte CE Training

The following primer is available for pre-study:

5957-4623 Communicating with IBM

4.2.2 100 Level--Neophyte CE Product Training

Not Provided.

4.2.3 200 Level--CE Account Assignment Training

SE 238 - Introduction to Data Communications

This course is a collection of video tapes and workbooks including a separate module discussing RJE. The course number is part number 30000-60030. This course is recommended for field engineers who wish to gain an overview of the RJE application.

4.2.4 300 Level--CE Productivity Enhancement Training

Not Provided.

4.2.5 400 Level--SR. CE/TSE Training

Not Provided.

DOCUMENTATION

SECTION V

5.1 SERVICE DOCUMENTATION

The HP 98641A RJE Interface Hardware Reference Manual will be supplied as part of the HP 98641A product. The reference manual contains installation procedures and technical specifications to aid the user in connection to non-standard devices. To aid sophisticated users who wish to control the HP 98641A directly, the reference section contains interface card programming information. The programming information includes all information required to program the card for specific functions. This manual also provides the user with theory of operation and schematic diagrams. All manuals are available for purchase from Computer Supplies Organization (CSO) for individual purchase by field offices or customers. These manuals will be available for inclusion in any host computer CE or TSE subscription services that may be implemented by CSD or the host computer division.

The following IBM manuals are recommended for further details information on the structure and implementation of IBM Job Entry protocols:

GA27-3004-2 General Information - Binary Synchronous Communications

5.2 USER DOCUMENTATION

All manuals available to the field are available to customers. These may be purchased from CSO.

5.3 DOCUMENTATION MATRIX

Manual Number	Description	Shipped with
98641-90001	RJE Interface Installation	HP 98641A
97077-90010	RJE User's Guide (CNO)	HP 98797A HP 98798A