USER MANUAL

MODEL 1092
High Speed, 2-Wire, Sync & Async Short Range Modem

PATTON Electronics Co.

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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1092 components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If this product fails or does not perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall **Patton Electronics** be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product. **Patton Electronics** specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

1.1 RADIO AND TV INTERFERENCE

The Model 1092 generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. The Model 1092 has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the Model 1092 does cause interference to radio or television reception, which can be determined by disconnecting the unit, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

1.2 CE NOTICE

The CE symbol on your Patton Electronics equipment indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive and the Low Voltage Directive (LVD) of the European Union (EU). A Certificate of Compliance is available by contacting Technical Support.

1.3 SERVICE

All warranty and non-warranty repairs must be returned freight prepaid and insured to Patton Electronics. All returns must have a Return Materials Authorization number on the outside of the shipping container. This number may be obtained from Patton Electronics Technical Service at

    tel: **(301) 975-1007;**
    email: **support@patton.com**
    www: **http://www.patton.com**.

    NOTE: Packages received without an RMA number will not be accepted.

Patton Electronics' technical staff is also available to answer any questions that might arise concerning the installation or use of your Model 1092. Technical Service hours: **8AM to 5PM EST, Monday through Friday.**

2.0 GENERAL INFORMATION

Thank you for your purchase of this Patton Electronics product. This product has been thoroughly inspected and tested and is warranted for One Year parts and labor. If any questions or problems arise during installation or use of this product, please do not hesitate to contact Patton Electronics Technical Support at (301) 975-1007.

2.1 FEATURES

- Synchronous data rates: 19.2, 32, 56, 64 and 128 kbps

- Asynchronous data rates: 0 - 38.4 kbps

- Full duplex operation over a <u>single</u> twisted pair (2-wires)

- Point-to-point distances up to 5 miles (<u>all</u> data rates) on

  24 AWG twisted pair

- Remote digital loopback, local line loopback diagnostic modes

- Field Replaceable DTE-DCE interface modules:

  V.24/RS-232, V.35, RS-422/530, G.703 and X.21

- Internal, external or receive recovered clocking options

- LED indicators for TD, RD, CTS, CD, DTR, TM, ER and NS

- Made in the U.S.A.

2.2 DESCRIPTION

The Patton Model 1092 is a high speed, AC powered short range modem that is able to operate synchronously or asynchronously–full duplex–over a single twisted pair. Supporting data rates to128kbps (synchronous) or 38.4 kbps (asynchronous), the Model 1092 is capable of point-to-point distances up to 5 miles using 24 AWG wire.

The Model 1092 supports internal, external or receive loopback clocking in synchronous mode. Data rates and asynchronous data format may be configured locally using DIP switches.

The Model 1092 features replaceable DCE-DTE interface modules. Available interfaces include V.24/RS-232, V.35, RS-422/530, G.703 and X.21. Line connection is made by RJ-45C jack. Internal AC power supply options include 120/230VAC(switchable), and 100-253VAC(universal). The internal DC power supply option supports any DC input between 40-60VDC.

3.0 CONFIGURATION

The Model 1092 is equipped with two sets of eight DIP switches, which allow configuration of the unit to a wide variety of applications. The Model 1092 is also equipped with an internal switch that allows selection of 115 or 230 VAC power inputs (Note: this switch is not present in Models 1092-UI and 1092-DC). This section describes switch locations and explains all possible configurations.

3.1 CONFIGURING THE HARDWARE DIP SWITCHES

The Model 1092 uses a unique set of 16 external mini DIP switches that allow configuration to wide range of applications. The 16 external switches are grouped into two eight-switch sets, and are externally accessible from the underside of the Model 1092 (See Figure 1).
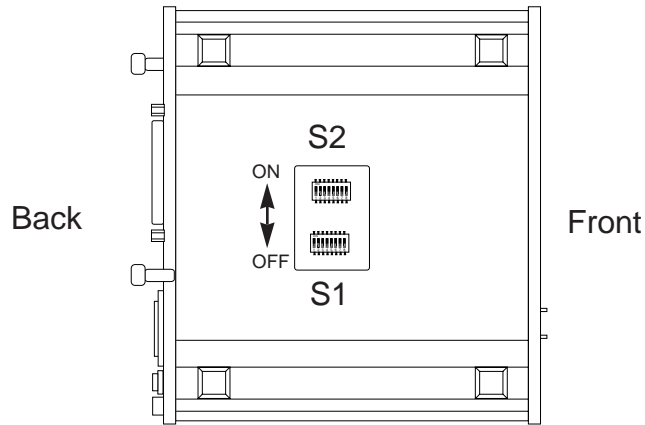
Figure 1. Underside of Model 1092, Showing Location of DIP Switches

The two sets of DIP switches on the underside of the Model 1092 will be referred to as S1 and S2. Figure 2 shows the orientation of all DIP switches is the same with respect to "ON" and "OFF" positions.
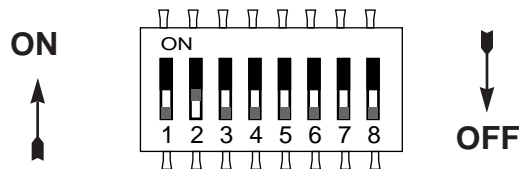
Figure 2. Close Up of Configuration Switches (both sets are identical in appearance)

3.1.1 Configuration DIP Switch Set "S1"

The configuration switches on S1 set data rate, asynchronous or synchronous data format, transmit clock source and response to RDL request. The default settings and detailed descriptions for each switch are shown below.

Position	Function	Factory Default
S1 SUMMARY TABLE		
S1-1	Data Rate	On ⎫ 64K Sync
S1-2	Data Rate	Off ⎭
S1-3	DSR during Local Line Loop	On DSR On
S1-4	Async/Sync Data Format	Off ⎫ Async/Sync
S1-5	Async/Sync Data Format	Off ⎭
S1-6	Tx Clock Source	On ⎫ Internal Clock
S1-7	Tx Clock Source	On ⎭
S1-8	Response to RDL Request	On Enable

Switches S1-1 and S1-2: Data Rate

Use Switches S1-1 and S1-2 to configure the asynchronous or synchronous data rate of the Model 1092. Each setting represents one synchronous data rate and one asynchronous data rate.

S1-1	S1-2	Sync Data Rate	Async. Data Rate
On	On	32 Kbps	Reserved
Off	On	56 Kbps	Reserved
On	Off	64 Kbps	Reserved
Off	Off	128 Kbps	0 - 38.4 kbps

NOTE: The Model 1092 can also operate at the 19.2 kbps synchronous rate. To operate at 19.2 synchronous, set Switches S1-1 and S1-2 both to the OFF position and Switch S2-1 to the ON position (see Section 3.2.1 for a description of Switch S2-1).

Switch S1-3: Data Set Ready During Line Loopback Test

Use Switch S1-3 to control the behavior of the DSR signal at the EIA interface during the line loopback test.

S-3	Setting
On	DSR is on during local line loop
Off	DSR is off during local line loop

Switches S1-4 and S1-5: Asynchronous/Sync Operation

Use Switches S1-4 and S1-5 to configure the Model 1092 for async/sync operation. Both switches must be set in the "Off" position. There is no other valid setting.

S1-4	S1-5	Setting
Off	Off	Async/Sync
On	Off	Reserved
Off	On	Reserved
On	On	Reserved

Switches S1-6 and S1-7: System Clock Mode

Use Switches S1-6 and S1-7 to configure the 1092 for internal, external, or receive recover clock mode.

S1-6	S1-7	Clock Mode	Description
On	On	Internal	System clock generated internally
Off	On	External (DTE)	System clock derived from terminal interface
On	Off	Receive Recover	System clock derived from the received line signal.
Off	Off	Hardware Reset	

> **Important:** A pair of Model 1092s communicate synchronously across the twisted pair line connection. Therefore, **you must set these switches whether your application is async or sync**. For X.21 or Async applications, please configure one Model 1092 for internal clock mode and the other Model 1092 for receive recover clock mode.

Switch S1-8: Response to RDL Request

Use Switch S1-8 to allow Model 1092 to enter the Remote Digital Loopback diagnostic test when requested to do so by the far end Model 1092 For example, when Switch S1-8 is set to "ON", it will enter RDL mode (See Section 5.3.2) when requested to do so by the remote Model 1092.

S1-8	Setting
On	Response to RDL Request Enabled
Off	Response to RDL Request Disabled

3.1.2 Configuration Switch Set "S2"

Use the eight DIP Switches in Switch S2 to enable 19.2 kbps synchronous operation, set the loopback modes and the speed of the control port.   The following table summarizes default positions of DIP Switch S2. Detailed descriptions of each switch follow the table.

S2 SUMMARY TABLE		
Position	**Function**	**Factory Default**
S2-1	19.2 kbps Enable	Off
S2-2	Not Assigned	Off
S2-3	Response to LAL from DTE	Off Disabled
S2-4	Not Assigned	Off
S2-5	Not Assigned	Off
S2-6	Response to RDL from DTE	On Enabled
S2-7	Control Port Data Rate	On ⎫ 9600 bpsc
S2-8	Control Port Data Rate	On ⎭

Switches S2-1: 19.2 kbps Synchronous Rate Enable

Use Switch S2-1 to allow the Model 1092 to operate at the 19.2 kbps *synchronous* data rate.

S2-1	Activation	Description
Off	Disabled	Synchronous data rate is 32 - 128 kbps as defined by switches S1-1 and S1-2
On	Enabled	Model 1092 operates at synchronous 19.2 kbps data rate*

*NOTE: To operate at 19.2 kbps, Set Switches S1-1 and S1-2 to the OFF position (see page 6, Switches S1-1 and S1-2)**.**

Switch S2-2: Not Assigned

Switch S2-3: Response to Local Line Loop Requests from DTE

Use Switch S2-3 to enable Local Line Loopback from the local DTE interface (See Section 5.3.1).

S2-3	Activation	Description
Off	Disabled	Ignore Line Loop Back request from DTE interface
On	Enabled	Respond to Line Loop Back request from DTE interface

Switches S2-4 and S2-5: Not Assigned

Switch S2-6: Response to RDL Request from DTE

Use Switch S2-6 to determine the Model 1092 response to RDL requests from the local DTE. In the enabled setting, the 1092 responds to RDL requests from the local DTE by sending an RDL loop request to the remote Model 1092 (See Section 5.3.2).

S2-3	Activation	Description
Off	Disabled	Ignore Remote Digital Loopback request from DTE interface
On	Enabled	Respond to Remote Digital Loop Back request from DTE interface

Switches S2-7 and S2-8: Control Port Data Rate

Use Switches S2-7 and S2-8 to configure Model 1092's control port bit rate.

S2-7	S2-8	Setting
On	On	9600 Bps (default)
Off	On	19,2000 Bps
On	Off	38,400 Bps
Off	Off	57,600 Bps

3.2   CONFIGURING THE SOFTWARE SWITCHES

The Model 1092 features a menu-driven command system that allows you to configure either the local or remote 1092. Follow the instructions below to configure the Model 1092 using the software switches:

1) Connect the serial RS-232 port of a V100 or similar DTE with terminal emulation to the EIA/TIA-561l port of the Model 1092. To construct an RS-232 to EIA-561 patch cable, refer to the control port pinout diagram in Appendix D. Refer to Appendix C to order a pre-made cable.

2) Power up the terminal and set its RS-232 port as follows:

> 9600 Baud
> 8 data bits, i stop bit, no parity
> Local echo
> CR-CR/LF on inbound data
> ANSI, VT-100 emulation

3) Verify that switches S2-8 and S2-7 are set to ON.

4) Power up the Model 1092.

5) After the Model 1092 is powered on, the control port will send out this message:

2W BBM, ver x.x

6) Press [ESC] on the terminal.

7) The 1092 will then display the MAIN MENU screen. You may configure the LOCAL Model 1092 from this screen. To configure the REMOTE Model 1092, press '$' (Shift-4 on most keyboards).

> *Important!!:* To make a selection from any menu, enter the option number. To exit any menu without making a selection, or to return to the previous menu, press the [ESC] key or the [SPACE] key.

3.2.1 Configuring the Local 1092

To configure the LOCAL 1092, make a selection from the following MAIN MENU screen. To configure the REMOTE 1092, type [$] (Shift-4) and refer to **Section 3.2.2**.

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
*            MAIN MENU                      *
*                                          *
* 1. Display Active Configuration          *
* 2. Display Hardware Configuration        *
* 3. Display Software Configuration        *
* 4. Setup Software Configuration          *
* 5. Select Hardware/Software Control      *
* 6. Display Modem Status                  *
* 7. Test Modes                            *
* 8. Restart Unit                          *
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Enter your selection(1-8)>
```

MAIN MENU Option 1: Display Active Configuration

Select Option 1 to display the most recent configuration of the local Model 1092 (See below). The Model 1092 uses the active configuration for its operation. If you make changes to the configuration, you must select MAIN MENU Option 8. This will update the unit to the new active configuration.

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
*        ACTIVE CONFIGURATION - Esc to MAIN MENU    *
*                                                  *
* Configuration Control:            Hardware       *
* DTE Rate:                         64 Kbps        *
* Data Format:                      Synchronous    *
* Clock Mode:                       Internal       *
* DSR during Local Line Loop:       Enabled        *
* Response to Remote Digital Loop:  Enabled        *
* DTE controlled Local Line Loop:   Disabled       *
* DTE controlled Remote Digital Loop: Disabled     *
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

MAIN MENU Option 2: Display Hardware Configuration

Select Option 2 to display the configuration of the hardware DIP-switches. To use the Hardware Configuration for the Active Configuration, select MAIN MENU Option 5. Then select "Use Hardware DIP-Switches". Finally, select MAIN MENU Option 8 to save.

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
*      HARDWARE CONFIGURATION - Esc to MAIN MENU    *
*                                                  *
* Configuration Control:            Hardware       *
* DTE Rate:                         64 Kbps        *
* Data Format:                      Synchronous    *
* Clock Mode:                       Internal       *
* DSR during Local Line Loop:       Enabled        *
* Response to Remote Digital Loop:  Enabled        *
* DTE controlled Local Line Loop:   Disabled       *
* DTE controlled Remote Digital Loop: Disabled     *
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

MAIN MENU Option 3: Display Software Configuration

Select Option 3 to display the configuration of the software switches. To use the software configuration for the Active Configuration, select MAIN MENU, Option 5. Then select "Use Software Switches". Finally, select MAIN MENU Option 8 to save.

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
* SOFTWARE CONFIGURATION MENU - Esc to MAIN MENU   *
*                                                  *
* 1. DTE Rate                                      *
* 2. Data Format (Async/Sync)                      *
* 3. Clock Mode                                    *
* 4. DSR during Local Line Loop                    *
* 5. Response to Remote Digital Loop               *
* 6. DTE controlled Local Line Loop                *
* 7. DTE controlled Remote Digital Loop            *
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Enter your selection(1-7)>
```

MAIN MENU Option 4: Setup Software Configuration

Select Option 4 toedit the software configuration of the Model 1092. To save changes after editing the software configuration, select MAIN MENU Option 5, then select "Use Software Switches" and then select MAIN MENU Option 8.

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
* SOFTWARE CONFIGURATION MENU - Esc to MAIN MENU   *
*                                                  *
* 1. DTE Rate                                      *
* 2. Data Format (Async/Sync)                      *
* 3. Clock Mode                                    *
* 4. DSR during Local Line Loop                    *
* 5. Response to Remote Digital Loop               *
* 6. DTE controlled Local Line Loop                *
* 7. DTE controlled Remote Digital Loop            *
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Enter your selection(1-7)>
```

1. DTE Rate

Select Option 1 in the SOFTWARE CONFIGURATION menu to select the async. or sync. DTE Rate of the Model 1092. Different DTE Rate menu screens will display for async. or sync. bit rates. The selections are shown below.

a) This menu is displayed when the data format is synchronous:

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
x DTE RATE - Esc to SOFTWARE CONFIG MENU   x
x                                          x
x 1. 32   Kbps        3. 64 Kbps (Default) x
x 2. 56   Kbps        4. 128 Kbps          x
x 5. 19.2 Kbps                             x
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Enter your selection(1-5)>
```

b) This menu is displayed when the data format is asynchronous:

```
*******************************************
* DTE RATE - Esc to SOFTWARE CONFIG MENU  *
*                                         *
* 1. 0-38,400 bps (default)   3. Reserved *
* 2. Reserved                 4. Reserved *
*******************************************
Enter your selection(1-4)>
```

2. Data Format

Select Option 2 in the SOFTWARE CONFIGURATION Menu to select the async or sync data format (See below).

```
*******************************************
* DATA FORMAT - Esc to SOFTWARE CONFIG MENU *
*                                         *
* 1. Asynchronous, 8 bits + no parity     *
* 2. Asynchronous, 7 bits + parity        *
* 3. Asynchronous, 7 bits, no parity      *
* 4. Synchronous                          *
*******************************************
Enter your selection(1-4)>
```

3. Clock Mode

Select Option 3 in the SOFTWARE CONFIGURATION Menu to select the sync clock mode (See below).

```
*******************************************
* CLOCK MODE - Esc to SOFTWARE CONFIG MENU *
*                                         *
* 1. Master Clock - Internal (default)    *
* 2. Master Clock - External (DTE provided)*
* 3. Slaved to Receive Clock              *
*******************************************
Enter your selection(1-3)>
```

Set this option as follows:

Master Clock - Internal: Selection 1 allows the Model 1092 to generate an internal clock as the timing source.

Master Clock - External: Selection 2 allows the Model 1092 to Derive the system clock from the locally connected DTE.

Slaved to Receive Clock: Selection 3 to allows the Model 1092 to derive the timing source from the incoming data stream from the remote Model 1092.

Important: One 1092A must be a Master Clock (either internal or external) and the other must be Slaved to the Receive Clock.

4. DSR During Local Line Loop

Select Option 4 in the SOFTWARE CONFIGURATION to configure the behavior of the local Data Set Ready (DSR) signal during the Local Line Loop test mode (below).

```
*******************************************
*          DSR DURING LOCAL LINE LOOP     *
*          Esc to SOFTWARE CONFIG MENU    *
*                                         *
* 1. DSR ON during Local Line Loop (default) *
* 2. DSR OFF during Local Line Loop       *
*******************************************
Enter your selection(1-2)>
```

5. Response to Remote Digital Loop

Select Option 5 in the SOFTWARE CONFIGURATION Menu to instruct the Model 1092 to either respond or ignore the Remote Digital Loop request from the remote 1092.

```
******************************************
*   RESPONSE TO REMOTE DIGITAL LOOP   *
*      Esc to SOFTWARE CONFIG MENU    *
*                                     *
* 1. ENABLE (default)      2. DISABLE *
******************************************
Enter your selection(1-2)>
```

6. DTE Controlled Local Line Loop

Select Option 6 in the SOFTWARE CONFIGURATION Menu to instruct the Model 1092 to either respond or ignore Local Line Loop requests from the DTE.   To instruct the Model 1092 to respond to Local Line Loop requests from the DTE, select Enable (Option 1). To instruct the 1092 to ignore Local Line Loop requests from the DTE interface, select Disable (Option 2).

```
****************************************
*    DTE CONTROLLED LOCAL LINE LOOP   *
*       Esc to SOFTWARE CONFIG MENU   *
*                                     *
* 1. ENABLE (default)      2. DISABLE *
****************************************
Enter your selection(1-2)>
```

7. DTE Controlled Remote Digital Loop

Select Option 7 in the SOFTWARE CONFIGURATION Menu to enable DTE control of the Remote Digital Loop Menu (See below). The Remote Digital Loop on the 1092 can be controlled from the DTE interface by selecting Enable (Option 1). To instruct the 1092 to ignore this request from the DTE interface, select Disable (Option 2).

```
****************************************
* DTE CONTROLLED REMOTE DIGITAL LOOP *
*      Esc to SOFTWARE CONFIG MENU    *
*                                     *
* 1. ENABLE (default)      2. DISABLE *
****************************************
Enter your selection(1-2)>
```

MAIN MENU Option 5: Select Hardware/Software Control

Select Option 5 from the MAIN MENU selects whether the Model 1092 will use the hardware switch settings or the software switch settings for its active configuration. If Options 1 or 2 are selected, the 1092RC will use the current hardware or software switch settings as the active configuration. After changing this setting select MAIN MENU Option 8 to implement the changes.

```
************************************************
*    HARDWARE/SOFTWARE CONFIGURATION CONTROL   *
*              Esc to MAIN MENU                *
*                                              *
* 1. Use Hardware Dip-switches (default)       *
* 2. Use Software Switches                     *
************************************************
Enter your selection(1-2)>
```

MAIN MENU Option 6: Display Modem Status

Select Option 6 from MAIN MENU to display the Modem Status (below). Press RETURN on the keyboard to update and redisplay the screen.

```
*******************************************************************
*                  MODEM STATUS - Esc to MAIN MENU               *
*                                                                *
* Handshake status:     HANDSHAKING                              *
* Data Terminal Ready: OFF                                       *
* Request To Send:      OFF                                      *
* Carrier Detect:       OFF                                      *
* Data Set Ready:       OFF                                      *
* Clear To Send:        OFF                                      *
* Test Mode:            OFF                                      *
*******************************************************************
```

NOTE: Valid Model 1092 Handshake Statuses are listed below:

1) Handshaking - This status occurs when the 1092 is in the process of establishing a link with another 1092.

2) Data Mode - This status occurs when the 1092 successfully establishes a link with another 1092 allowing the data to flow.

MAIN MENU Option 7: Test Modes

Select Option 7 from the MAIN MENU to select the test mode status of the Model 1092. (below). The Model 1092 Test Mode settings help to verify the integrity of the data link and isolate communication difficulties.

```
********************************************
*     TEST MODE MENU - Esc to MAIN MENU    *
*                                          *
* 1. OFF                                   *
* 2. 511                                   *
* 3. 511 w/errors                          *
* 4. Local Line Loop                       *
* 5. Local Line Loop and 511               *
* 6. Local Line Loop and 511 w/errors      *
* 7. Remote Digital Loop                   *
* 8. Remote Digital Loop and 511           *
* 9. Remote Digital Loop and 511 w/errors  *
********************************************
Enter your selection(1-9)>
```

NOTE: An error counter is displayed when the unit is in one of the above test modes except LLB and RDL.

To run or terminate a particular test, key in the option to get to that screen menu. If a particular test cannot be invoked, the unit displays the message:

<center>"Attempt unsuccessful!".</center>

Test Mode options 2,3,7,8 and 9 require the 1092 to be in Data Mode with the remote 1092.   The Model 1092 Test Modes are described below:

OFF	Terminates all tests
511	Initiates the built-in test pattern generator and detector.
511 with Errors	Initiates the built-in test pattern generator and detector. The test pattern generator also injects intentional errors approximately once per second.
Local Line Loop and 511	Initiates the Local Line Loop test and starts the internal 511 generator and detector.
Local Line Loop and 511 w/errors	Initiates the Local Line Loop test and starts the internal 511 generator and detector. In this test, the 511 pattern generator injects intentional errors into the data stream.
Remote Digital Loop	Initiates the Remote Digital Loopback test. Any data sent to the remote 1092 is returned to the originating device.
Remote Digital Loop and 511	Initiates the Remote Digital Loopback test and starts the internal 511 generator and detectors.
Remote Digital Loop and 511 with errors	Initiates the Remote Digital Loopback test and starts the 511test patterns. In this test the 511 pattern generator will inject initial errors into the data stream.

The Modem Status Screen is displayed upon initiating a test. A 511 error counter is displayed to indicate errors. Press the 'C' key to clear the counter and redisplay the Modem Status Screen. Pressing 'ESC' returns you to the Test Mode Menu.

Pressing "C" will clear the error count and redisplay the modem status screen. Pressing Return will update and redisplay the status.

3.2.2 Configuring the Remote 1092

   To configure the Remote 1092, make a selection from the following REMOTE UNIT CONFIGURATION MAIN MENU. To return to the LOCAL 1092 MAIN MENU screen, press [ESC] and refer to **Section 3.2.1**.

```
**********************************************
*                                            *
*          REMOTE UNIT CONFIGURATION         *
*                  MAIN MENU                  *
*                                            *
*   1.  Display Remote Unit Configuration    *
*   2.  Setup Remote Unit Configuration      *
*   3.  Display Remote Modem Status          *
*   4.  Select Hardware /Software Control    *
*   5.  Restart Remote Unit                  *
*                                            *
**********************************************
```

REMOTE MAIN MENU Option 1: Display Remote Unit Configuration

   Select Option 1 to display the configuration of various parameters in the REMOTE Model 1092.

```
**********************************************
*          REMOTE CONFIGURATION              *
*       CONFIGURATION DISPLAY MENU           *
*                                            *
*   1.  Display Configuration of:            *
*          DSR during Local Line Loop        *
*          Response to Remote Digital Loop   *
*          Clock Mode                        *
*                                            *
*   2.  Display Configuration of:            *
*          Configuration Control             *
*          DTE Rate                          *
*                                            *
*   3.  Display Configuration of:            *
*          DTE Controlled Local Line Loop    *
*          DTE Controlled Remote Digital Loop*
**********************************************
```

REMOTE MAIN MENU Option 2: Remote Unit Configuration

   REMOTE MAIN MENU Option 2 allows you to edit the software configuration of the remote Model 1092. Please note that after editing the software configuration, you must select REMOTE MAIN MENU Option 4, the select "Use Software Switches" and then select MAIN MENU Option 5 to implement the most recent changes.

```
**********************************************
*        REMOTE UNIT CONFIGURATION MENU      *
*                                            *
*   1.  DTE Rate                             *
*   2.  Clock Mode                           *
*   3.  DSR during Local Line Loop           *
*   4.  Response Remote Digital Loop         *
*   5.  DTE Controlledl Local Line Loop      *
*   6.  DTE Controlled Remote Digital Loop   *
*   7.  2-Wire/4-Wire Selection (ONLY FOR 1092A) *
**********************************************
```

REMOTE MAIN MENU Option 3: Display Remote Modem Status

   Select REMOTE MAIN MENU Option 3 to display the status of the REMOTE unit.

REMOTE MAIN MENU Option 4: Display Hardware/Software Control

   Select REMOTE MAIN MENU Option 4 to select whether the remote Model 1092 will use the hardware switch settings or the software switch settings for its active configuration.

REMOTE MAIN MENU Option 5: Restart Remote Unit

   Select REMOTE MAIN MENU Option 5 to restart the remote unit.

> **NOTE:** All REMOTE CONFIGURATION sub-menus are similar to the LOCAL CONFIGURATION sub-menu screens.

4.0 INSTALLATION

Once the Model 1092 is properly configured, it is ready to connect to the twisted pair interface, to the serial port, and to the power source. This section tells you how to make these connections.

4.1 CONNECTION TO THE TWISTED PAIR INTERFACE

The Model 1092 supports communication between two DTE devices at distances to 5 miles (24 AWG) and data rates to 128 kbps (sync) or 38.4 kbps (asynchronous). There are two essential requirements for installing the Model 1092:

1. These units work in pairs. Therefore, you must have one Model 1092 (or a compatible model) at each end of a single twisted pair interface.

2. To function properly, the Model 1092 needs one **twisted** pair of metallic wire. This twisted pair must be unconditioned, dry, metallic wire, between 19 and 26 AWG (the higher number gauges may limit distance somewhat). Standard dial-up telephone circuits, or leased circuits that run through signal equalization equipment, or standard, flat modular telephone type cable, are not acceptable.

The RJ-45 connector on the Model 1092's twisted pair interface is pre-wired for a standard TELCO wiring environment. The signal/pin relationships are shown in Figure 3 below.
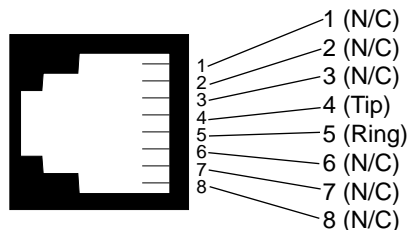
```
1 ── 1 (N/C)
2 ── 2 (N/C)
3 ── 3 (N/C)
4 ── 4 (Tip)
5 ── 5 (Ring)
6 ── 6 (N/C)
7 ── 7 (N/C)
8 ── 8 (N/C)
```

Figure 3. Model 1092 twisted pair line interface.

Proper 2-Wire Pairing between the two modems is as follows:

SIGNAL	PIN#		PIN#	SIGNAL
TIP	4	---------------------------------------	4	TIP
RING	5	---------------------------------------	5	RING

4.2 CONNECTION TO THE SERIAL PORT

The serial port interface on the Model 1092 uses interchangeable *QuikConnect™* Modules. Each *QuikConnect™* Module has a 50-pin card edge connector on one side and a serial port interface on the other. Figure 4 below shows how a *QuikConnect™* Module plugs into the back of the Model 1092.
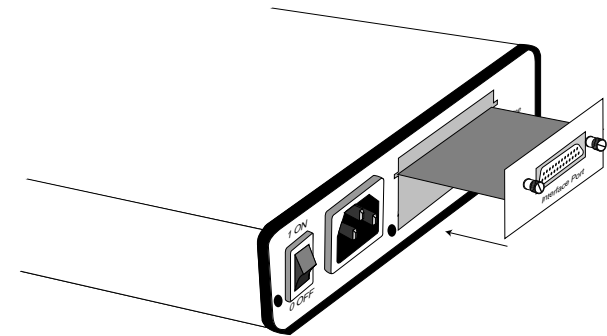

Figure 4. Installation of Model 1092 Plug-in Serial Interface Module

4.2.1 Changing *QuikConnect™* Modules

When you purchase a particular version of the Model 1092, it should be shipped to you with the appropriate *QuikConnect™* Module already installed. If you need to install a different *QuikConnect™* Module, follow these steps:

Removing the Existing *QuikConnect™* Module

1) Turn the power switch off. Leave the power cord plugged into a grounded outlet to keep the unit grounded.

2) Loosen the two thumbscrews on the module by turning them counterclockwise.

3) Grasp the two thumbscrews and gently pull the module from the unit. Apply equal force to the thumbscrews to keep the module straight during the removal process.

Installing the New *QuikConnect™* Module

1) Make sure the power switch is off. Leave the power cord plugged into a grounded outlet to keep the unit grounded.

2) Hold the module with the faceplate toward you and align the module with the guide slots in the rear panel of the Model 1092.

3) While keeping the module's faceplate parallel with the Model 1092 rear panel, slide the module straight in–so that the card edge contacts line up with the socket inside the chassis.

   NOTE: The card edge connector should meet the socket when it is almost all the way into the chassis. If you encounter a lot of resistance, remove the module and repeat steps 2 & 3.

4) With the card edge contacts aligned with the socket, firmly seat the module by using your thumbs to apply pressure directly to the right and left edges of the module faceplate. Applying moderate and *even* pressure should be sufficient to seat the module. You should hear it "click" into place.

5) To secure the module in place, push the thumbscrews into the chassis and turn the screws clockwise to tighten.

4.2.2   Connection to a "DTE" Device

The serial port on most *QuikConnect™* interface modules (all except the X.21 module) is hard-wired as a DCE. Therefore these modules "want" to plug into a DTE such as a terminal, PC or host. When making the connection to your DTE device, use a **straight through** cable of the shortest possible length—we recommend 6 feet or less. When purchasing or constructing an interface cable, please refer to the pin diagrams in **Appendix D** as a guide.

4.2.3   Connection to a "DCE" Device

If the Model 1090's *QuikConnect™* interface module is hard-wired as a DCE (all except the X.21 module), you must use a *null modem* cable when connecting to a printer, modem, multiplexer or other DCE device. This cable should be of the shortest possible length—we recommend 6 feet or less. When purchasing or constructing a null modem interface cable, use the pin diagrams in **Appendix D** as a guide.

   NOTE: Pin-out requirements for null modem applications vary widely between manufacturers. If you have any questions about a specific application, contact Patton Technical Support.

4.2.4   Configuring the X.21 *QuikConnect™* Module

The serial port on the X.21 *QuikConnect™* Module is default wired as a DCE, but may be switched to a DTE. This is done by reversing the orientation of the DCE/DTE strap, as described below:

To reverse DCE/DTE orientation, remove the module according to the instructions in **Section 4.2.1**. The DCE/DTE strap is located on the bottom side of the module's PC board. The arrows on the top of the strap indicate the configuration of the X.21 port (for example, if the DCE arrows are pointing toward the DB-15 connector, the X.21 port is wired as a DCE). Reverse the DCE/DTE orientation by pulling the strap out of its socket, rotating it 180º, then plugging the strap back into the socket. You will see that the DCE/DTE arrows now point in the opposite directions, showing the new configuration of the X.21 port. Reinstall the module according to the instructions in **Section 4.2.1**.

4.3 POWER CONNECTION

The Model 1092 is available with three power supply options:

Standard AC Power Supply option (**Model 1092**, no suffix) is switchable between 100 and 253 VAC and is available with a variety of domestic and international power cords. (See **Appendix C**).

Universal Interface AC Power Supply option (**Model 1092-UI**) operates in environments ranging from 100 to 253 VAC, with no re-configuration necessary (see **Appendix C** for available domestic and international power cords).

DC Power Supply option (**Model 1092-DC**) operates in 48 VDC environments and is equipped with a 3-pin "terminal strip" style connector.

4.3.1   Connecting to an AC Power Source

The two AC power supply options–Standard and Universal–are equipped with a male IEC-320 power connection. A domestic (US)

power supply cord is supplied with the unit at no extra charge. To connect the standard or universal power supply, follow these steps:

1) Attach the power cord (supplied) to the shrouded male IEC-320 connector on the rear of the Model 1092.

2) Plug the power cord into a nearby AC power outlet.

3) Turn the rear power switch ON.

4.3.2 Connecting to a DC Power Source

The 48 VDC power supply option uses a 3-pin terminal block with spring-type connectors. Please refer to the Model 1090 Series Service Manual for further instructions.

WARNING! **There are no user-serviceable parts in the power supply section of the Model 1092. Voltage setting changes and fuse replacement should only be performed   by qualified service personnel. Contact Patton Electronics Technical support at (301) 975-1007, via our website at http://www.patton.com, or by e-mail at support@patton.com, for more information.**

5.0 OPERATION

Once the Model 1092 is properly configured and installed, it should operate transparently. This sections describes power-up, reading the LED status monitors, and using the built-in loopback test modes.

5.1 POWER-UP

To apply power to the Model 1092, first be sure that you have read **Section 4.3**, and that the unit is connected to the appropriate power source. Then power-up the unit using the rear power switch.

5.2 LED STATUS MONITORS

The Model 1092 features eight front panel LEDs that monitor power, the DTE signals, network connection and test modes. Figure 5 (below) shows the front panel location of each LED. Following Figure 5 is a description of each LEDs function.
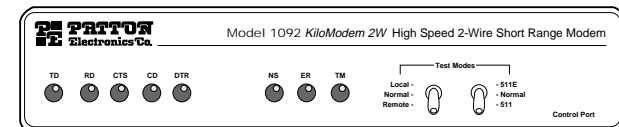

Figure 5. Model 1092 Front Panel Installation of Model

TD & RD   Glows red to indicate an idle condition of Binary "1" data on the respective terminal interface signals. Green indicates Binary "0" data.

CTS   Glows green to indicate that the Clear to Send signal from the modem is active.

CD   Glows red if no carrier signal is being received from the remote modem. Green indicates that the remote modem's carrier is being received.

DTR   Glows green to indicate that the Data Terminal Ready signal from the terminal is active.

ER   Glows red to indicate the likelihood of a Bit Error in the received signal. During the 511 or 511/E test, ER will flash to indicate that the Test Pattern Detector has detected a bit error.

TM   Glows red to indicate that the Model 1092 has been placed in Test Mode. The unit can be placed in test mode by the local or remote user.

NS   Glow red to indicate that the local Model 1092 has not yet connected with the remote

5.3 TEST MODES

The Model 1092 offers two proprietary loopback test modes, plus a built-in V.52 BER test pattern generator, to evaluate the condition of the modems and the communication link. These tests can be activated physically from the front panel, or via the interface.

5.3.1 Using Local Line Loopback (LLB)

The Local Line Loopback (LLB) test checks the operation of the local Model 1092, and is performed separately on each unit. Any data sent to the local Model 1092 in this test mode will be echoed (returned) back to the user device. (See Figure 6, below.) For example, characters typed on the keyboard of a terminal will appear on the terminal screen.
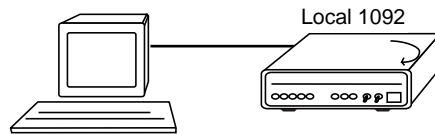

Local 1092

Figure 6. Local Line Loop

To perform a LLB test, follow these steps:

1.   Activate LLB. This may be done in one of two ways: First, by moving the front panel toggle switch UP to "Local". Second, by raising pin 18 on the interface. Once LLB is activated, the Model 1092 transmitter output is connected to its own receiver. The "TM" LED should be lit.

2.   Verify that the data terminal equipment is operating properly and can be used for a test. If a fault is indicated, call a technician or replace the unit.

3.   Perform a V.52 BER (bit error rate) test as described in **Section 5.3.3**. If the BER test equipment indicates no faults, but the data terminal indicates a fault, follow the manufacturer's checkout procedures for the data terminal. Also, check the interface cable between the terminal and the Model 1092.

5.3.2 Using Remote Digital Loopback (RDL)

The Remote Digital Loopback (RDL) test checks the performance of both the local and remote Model 1092s, and the communication link between them. Any characters sent to the remote Model 1092 in this test mode will be returned back to the originating device (see Figure 7, below). For example, characters typed on the keyboard of the local terminal will appear on the local terminal screen after having been passed to the remote Model 1092 and looped back.
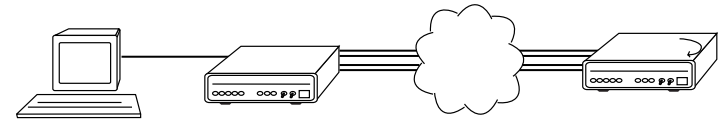

Figure 7. Remote Digital Loop

To perform an RDL test, follow these steps:

1.   Activate RDL. This may be done in two ways: first, by moving the front panel toggle switch DOWN to "Remote". Second, by raising pin 21 on the interface.

     NOTE: Switch S1-8 (Response to RDL Request) on the remote Model 1092 must be enabled.

2.   Perform a V.52 BER test as described in **Section 5.3.3**. If the BER test equipment indicates a fault, and the Local Line Loopback test was successful for both Model 1092s, you may have a problem with the twisted pair line between the modems. You should then check the twisted pair line for proper connections and continuity.

5.3.3 Using the V.52 (BER) Test Pattern Generator

To use the V.52 BER tests in conjunction with the Remote Digital Loopback tests (or with Local Line Loopback tests), follow these instructions:

1. Locate the "511/511E" toggle switch on the front panel of the 1092 and move it UP. This activates the V.52 BER test mode and transmits a "511" test pattern into the loop. If any errors are present, the local modem's red "ER" LED will blink sporadically.

2. If the above test indicates no errors are present, move the V.52 toggle switch DOWN, activating the "511/E" test with errors present. If the test is working properly, the local modem's red "ER" LED will glow. A successful "511/E" test will confirm that the link is in place, and that the Model 1092's built-in "511" generator and detector are working properly.

NOTE: The above V.52 BER tests can be used independently of the Remote Digital Loopback tests. This requires two operators: one to initiate and monitor the tests at the local Model 1092, and one to do the same at the remote Model 1092. In this case, the test pattern sent by each Model 1092 will not be looped back, but will be transmitted down the line to the other Model 1092. While one operator initiates test, the other monitors for errors.

APPENDIX A

PATTON MODEL 1092 SPECIFICATIONS

Transmission Format: Synchronous or asynchronous

Transmission Line: Single unconditioned twisted pair

Clocking: Internal, external or receive loopback

Distance: Distance, max, all data rates:
    10.1 miles (16.4km) on 19 AWG (0.9mm) wire
    7.2 miles (11.5 km) on 22 AWG (0.64mm) wire
    5.0 (8 km) on 24 AWG (0.5mm) wire
    3.4 (5.5 km) on 26 AWG (0.4mm) wire

Interface Modules: EIA RS-232/CCITT V.24, RS-232/530, CCITT V.35 and CCITT X.21

Data Rates: Synchronous 32, 56, 64 & 128 kbps; Asynchronous 0 - 38.4 kbps

Diagnostics: V.52 compliant bit error rate pattern (511/511E pattern) generator and detector with error injection mode; Local Line Loopback and Remote Digital Loopback, activated by front panel switch or via serial interface

LED Status Indicators: TD, RD, CTS, CD, DTR, NS(no signal), ER (error) and TM (test mode)

Connectors: RJ-45 on line side; DB-25 female, M/34 female or DB-15 female on serial interface side, depending upon which interface module is installed.

Power: 120/230 VAC (switch selectable), 50-60 Hz; 100-253 VAC, 50-60 Hz (universal input option); 48 VDC (option). 5 watts.

Temperature Range: 32-122°F (0° -50°C)

Altitude: 0-15,000 feet

Humidity: 5 to 95% noncondensing

Dimensions: 7.3" x 6.6" x 1.62" (185mm x 168mm x 41mm)

Weight: 2.01 lbs. (1.0kg)

APPENDIX B

PATTON MODEL 1092 FACTORY REPLACEMENT PARTS
AND ACCESSORIES

Patton Model #	Description
IM1/A	V.24 with DB25F
IM1/B	RS422/RS530 with DB25F
IM1/C	V.35 with M34F
IM1/D	X.21 with DB15F
IM1/E	V.35 with DB25F
IM1/F	G.703 with RJ45
0805US	American Power Cord
0805EUR	European Power Cord CEE 7
0805UK	United Kingdom Power Cord
0805AUS	Australia/New Zealand Power Cord
0805DEN	Denmark Power Cord
0805FR	France/Belgium Power Cord
0805IN	India Power Cord
0805IS	Israel Power Cord
0805JAP	Japan Power Cord
0805SW	Switzerland Power Cord
07M1090SVC	1090 Series Service Manual

APPENDIX C

PATTON MODEL 1092 INTERFACE PIN ASSIGNMENT

RS-232, RS-530 Interface Pin Description
(DB-25 Female Connector)
(DCE Configuration)

Pin #	Signal
1	FG (Frame Ground)
2	TD (Transmit Data)
3	RD (Receive Data)
4	RTS (Request to Send)
5	CTS (Clear to Send)
6	DSR (Data Set Ready)
7	SGND (Signal Ground)
8	CD (Carrier Detect)
9	RC/ (Receive Timing-B)
10	CD/ (Carrier Detect-B)
11	XTC/ (External Transmit Clock)
12	TC/ (Test Control-B)
13	CTS/ (Clear to Send)
14	TD/ (Transmit Data-B)
15	TC (Test Control-A)
16	RD (Receive Data)
17	RC (Receive Timing)
18	LLB (Local Line Loop)
19	RTS/ (Request to Send)
20	DTR (Data Transfer Rate)
21	DL (Remote Digital Loop)
22	DSR/ (Data Set Ready)
23	DTR/ (Data Transfer Rate)
24	XTC (External Transmit Clock)
25	TM (Test Mode)

PATTON MODEL 1092 INTERFACE PIN ASSIGNMENT
(Continued)

V.35 Interface
(M/34F Female Connector)
(DCE Configuration)

Pin #   Signal
B ....SGND (Signal Ground)
C ....RTS (Request to Send)
D ....CTS (Clear to Send)
E ....DSR (Data Set Ready)
F...........................CD (Carrier Detect)
H ....DTR (Data Transfer Ready)
L............................LLB (Local Line Loop)
M ....TM (Test Mode)
N ....RDL (Remote Digital Loop)
P ....TD(Transmit Data)
R ....RD (Receive Data)
S ....TD/ (Transmit Data-B)
T...........................RD/ (Receive Data-B)
U ....XTC (External Transmit Clock)
V ....RC(Receive Timing)
W ....XTC/ (External Transmit Clock)
X ....RC/ (Receive Timing)
Y ....TC(Test Control-A)
AA ....TC/ (Test Control-B)

X.21 Interface
(DB-15 Female Connector)
(DTE /DCE Configuration)

Pin #   Signal
1 . . . . Frame Ground
2 . . . . T (Transmit Data-A)
3 . . . . C (Control-A)
4 . . . . R (Receive Data-A)
5 . . . . I (Indication-A)
6 . . . . S (Signal Element iming-A)
7 . . . . BT (Byte Timing-A)
8 . . . . SGND (Signal Ground)
9 . . . . T/ (Transmit Data-B)
10 . . . . C/ (Control-B)
11. . . . . R/ (Receive Data-B)
12 . . . . I/ (Indication-B)
13.......................S/ (Signal Element Timing-B)
14 ....BT/ (Byte Timing-B)

APPENDIX D

PATTON MODEL 1092 Pin Out Control Port

The 1092 control port is an 8 position connector, compliant with EIA/TIA-561.

Pin Function	RJ45 Pin No.
Ground	4
Receive data (to DTE)	5
Transmit data (from DTE)	6

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