# Chapter 4
# Configuration

## GENERAL

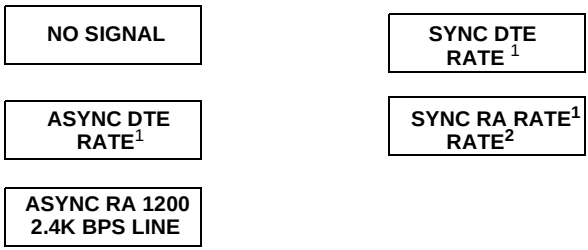
The configuration options allow you to select various operating features that program the DDS/MR64 to your network conditions.

Most configuration options are selected by front panel pushbuttons. Option descriptions state if an option is not available. For instance, if synchronous is selected, bits per word does not appear. Hard straps and a dip switch on the PC board configure signal ground and the DTE interface.

## CONFIGURATION ON POWER-UP

After installation, turn the power on. The DDS/MR64 will perform a self test. If the test fails, the LCD displays ERROR. If an error occurs ensure it is consistent and then refer to Maintenance.

If no error occurs the LCD advances to one of three displays:




In the DDS mode, NO SIGNAL means there is no connection to the DDS network. When used as a limited distance modem, NO SIGNAL means there is no data connection to another modem. Press HOME. The LCD advances to the first option selection.

*1. The word "RATE" does not actually display on the LCD. What displays is the programmed bits per second (bps) rate of the connection.*
*2. The word "RATE" does not actually display on the LCD. What displays is the programmed bits per second (bps) rate of the connection.*

## CONFIGURATION OPTION DESCRIPTIONS

Configuration options available through the front panel are as follows:

### Timing

Transmitter timing may be slaved to

- INTERNAL timing provided by the DDS/MR64 for LDM applications.
- DDS received data timing
- EXTERNAL timing provided by DTE

Normal operation uses DDS received data timing.

### Rate

The rate option is selectable to 2.4, 4.8, 9.6, 19.2, 56 kbps, or 64 kbps clear channel.

### Synchronous/AsynchronousSYNC/ASYNC

The sync/async option is used to configure the DDS/MR64 to operate either synchronously or asynchronously.

### Bits Per WordBITS/WORD

The bits/word option is used to select the asynchronous word size. The word size is computed by adding the number of data bits, the number of stop bits, the number of parity bits (0 to 1), and one start bit. The bits/word option can be 8, 9, 10, or 11. The previous option SYNC/ASYNC must be selected to ASYNC for this option. If SYNC is selected, this option does not apply and is not displayed.

☞ **Note**

*If the async data rate is 38.4 or 57.6 kbps, the 8 BITS PER WORD and 9 BITS PER WORD options will not be displayed.*

**RTS Control RTS CONT**

The RTS control options are as follows:

- Normal - Normal DTE controlled RTS.
- Permanent - Provides a permanent RTS and CTS.
- 35 sec AS - 35 second anti-streaming terminal disconnect. In this mode, if RTS is on from the DTE for 35 continuous seconds, the DDS/MR64 turns CTS OFF.
- SIM SW CR - Simulated switched carrier. Provides a permanent RTS to the DSU/CSU. CTS to the DTE is controlled by and follows RTS from the DTE.
- SIM SW CR A-STRM - Enables both the SIM SW CR option and the 35 sec AS option.

☞ **Note**

*The behavior of CTS once RTS is raised by the DTE may depend on the status of the Circuit Assurance OPTion (CA OPT). Refer to Chapter 4, Circuit Assurance.*

**Buffer BUFF OPT**

This option is used to buffer externally clocked transmitted data and can be enabled or disabled. The option is used mainly with a crossover cable in tail circuit applications. When enabled, transmit data from the DTE is clocked into the buffer using the external clock from the DTE. Data is clocked from the buffer to the DDS line using the clock from the DDS/MR64 (usually in DDS timing). The RTS CONT option should be set for normal. This option is intended for use in a polled system (RTS is toggled). If the TIMING option is selected for EXTERNAL, this option does not apply and is not displayed.

**Loopback LB OPT**

The remote loopback (RMT LB) feature may be enabled or disabled to avoid accidental activation.

**DSR DSR OPT**

DSR can be on or off during loopback modes.

### System Status SS OPT

With this option on, RLSD must be on for DSR to be on. This means that DSR will turn off while receiving Idle or Out-of-Service codes.

With this option off, DSR does not depend on the state of the DDS/MR64 receiver. This option can be used when the remote DDS/MR64 maintains a permanent RTS to verify a complete link.

### Circuit Assurance CA OPT

When on, RLSD must be on for CTS to be on. This means that CTS will turn off while receiving Idle or Out-of-Service codes. When this option is off, CTS does not depend on the state of the DDS/MR64 receiver. This option can be used when the remote DDS/MR64 maintains a permanent RTS to verify a complete link before sending data.

☞ **Note**
*When using DDS/MR64 units for multi-point links, the master unit must have both the CA and SS options disabled.*

### RTS/CTS Delay RS-CS DLY

Certain applications and DTE devices require longer RTS-CTS delay times than others. The approximate RTS on to CTS on delay time selections are:

- 25 ms
- 30 ms
- 60 ms
- Normal - The delay is dependent on the rate. Refer to Table 3-3.

### 64 k Scrambler

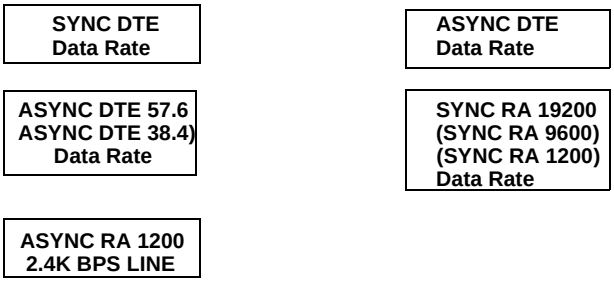
In 64 k clear channel operation, certain specific long patterns of data may be interfered with by the DDS network. Should this occur, the 64 k Scrambler option should be enabled. When the 64 k Scrambler option is enabled, the remote DSU/CSU must be a Motorola DDS/MR64 product with the 64 k Scrambler option enabled.

## OPTION SELECTION

### Front Panel Option Selection

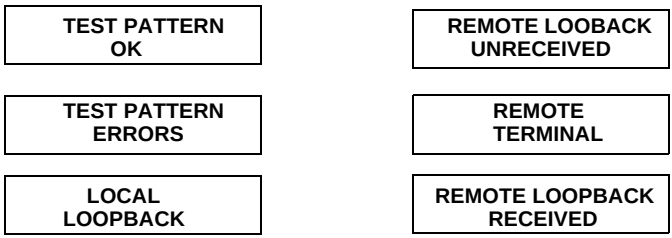
The DDS/MR64 operates in either DATA or SET mode. DATA mode is for normal operation. SET mode allows the user to initiate tests or select soft strap configuration options. DATA mode displays one of the following:

**Data line characteristics:**

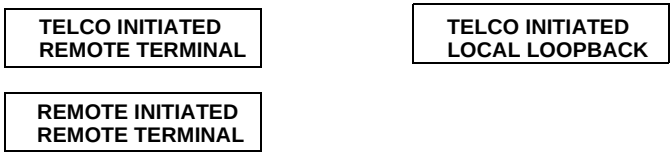



Where Data Rate is equal to 2.4, 4.8, 9.6, 19.2, 56, or 64 kbps LINE.

**DTE Tests:**




**Remote Test:**



To change from DATA mode to SET mode, press HOME. SET mode is divided into two sections:

- Front panel tests
- Configuration options

### Front Panel Initiated Tests

"SELECT TEST?" is the first question of SET mode. If NO is pressed the DDS/MR64 proceeds to the configuration options menu. If YES is pressed the DDS/MR64 enters the test menu. Test choices are displayed with a question mark. To enter a desired test press YES. The DDS/MR64 performs the selected test and the appropriate message is displayed. Press NO to bypass a test and HOME to return to data mode. Once a test is selected, YES or NO attempts to clear ERRORS, and HOME exits the test. The following is a list of the available tests:

| | |
|---|---|
| RL/TP | Remote Loopback with Test Pattern |
| LL/TP | Local Loopback with Test Pattern |
| T | PEnd to End Test Pattern Test |
| RT | Remote Terminal Loopback |
| LL | Local Loopback |
| RL | Remote Loopback |

Chapter 5, Diagnostics provides further information.

### Configuration Option Menu

To scroll through the option menu, answer the displayed questions with YES or NO.

When an option question is answered YES, that option becomes active. A list of option questions and option settings are shown in Table 4-1.

***Table 4-1. Option Menu***

| Main Menu | LCD Messages | | |
|---|---|---|---|
| **1** | NO SIGNAL | (Press HOME to advance to MAIN 2) | |
| | SYNC DTE RATE * | Shows programmed SYNC DTE and line rate | |
| | ASYNC DTE RATE * | Shows programmed ASYNC DTE and line rate | |
| | SYNC RA RATE§ RATE* | Shows rate adapted sync DTE and line rate | |
| | ASYNC RA 1200 2.4K BPS LINE | Shows rate adapted async 1200 bps DTE over 2400 bps line | |
| **Main Menu** | **Submenu** | **Submenu Item** | **Pushbutton (s)** |
| **2** Select Test? | Remote Loopback With Pattern? | Test Pattern Ok | Home |
| | | Test Pattern Errors | Yes, No, Home |
| | | Remote Loopback Unreceived | No, Home |
| | Local Loopback With Pattern? | Test Pattern Ok | Home |
| | | Test Pattern Errors | Yes, No, Home |
| | Test Pattern? | Test Pattern Ok | Home |
| | | Test Pattern Errors | Yes, No, Home |
| | Remote Terminal? | Remote Terminal | Home |
| | Local Loopback? | Local Loopback | Home |
| | Remote Loopback? | Remote Loopback Received | Home |
| | | Remote Loopback Unreceived | No, Home |
| **3** Sync DTE Change? | | | Yes, No, Home |
| Async DTE Change? | | | Yes, No, Home |

**The word RATE does not actually appear on the LCD. The rate of the line that the DDS/MR64 is connected to is shown on the LCD.*

*§The word RATE does not actually appear on the LCD. The programmed rate adapted rate is shown on the LCD*

***Table 4-1. Option Menu (Continued)***

| Main Menu | Submenu | Submenu Item | Push-button (s) |
|---|---|---|---|
| **4** Rate Adapter Enable Change? | | | Yes, No, Home |
| Rate Adapter Disabled | | | Yes, No, Home |
| **5** Change Line Rate? (programmed rate) | Change To 64k? (Programmed Rate) | | Yes, No, Home |
| | Change To 56k? (Programmed Rate) | | Yes, No, Home |
| | Change To 19.2k? (Programmed Rate) | | Yes, No, Home |
| | Change To 9.6k? (programmed rate) | | Yes, No, Home |
| | Change to 4.8K? (programmed rate) | | Yes, No, Home |
| | Change to 2.4k? (programmed rate) | | Yes, No, Home |
| **6** Rate Adapter 19.2k bps Change? | | | Yes, No, Home |
| Rate Adapter 9.6k bps Change? | | | Yes, No, Home |
| **7** Change Timing? (Programmed Timing) | Change To Int? (Programmed Timing) | | Yes, No, Home |
| | Change To DDS? (Programmed Timing) | | Yes, No, Home |
| | Change To Ext? (Programmed Timing) | | Yes, No, Home |
| **8** Change Data Timing? | Change To Int? (Programmed Timing) | | Yes, No, Home |
| | Change To Ext? (Programmed Timing) | | Yes, No, Home |

***Table 4-1. Option Menu (Continued)***

| Main Menu | Submenu | Submenu Item | Pushbutton (S) |
|---|---|---|---|
| **9** Change Network Timing? | Change To Int? (Programmed Timing) | | Yes, No, Home |
| | Change To DDS? (Programmed Timing) | | Yes, No, Home |
| **10** Async DTE = 57.6k Change? | | | Yes, No, Home |
| Async DTE = 38.4k Change? | | | Yes, No, Home |
| **11** Bits Per Word = 8 Change? * | | | Yes, No, Home |
| Bits Per Word = 9 Change? * | | | Yes, No, Home |
| Bits Per Word = 10 Change? | | | Yes, No, Home |
| Bits Per Word = 11 Change? | | | Yes, No, Home |
| **12** Change Control Options? | Change RTS Control? | Normal RTS Change? | Yes, No, Home |
| | | Permanent RTS Change? | Yes, No, Home |
| | | 35 Sec Anti-strm Change? | Yes, No, Home |
| | | Sim Sw Cr Change? | Yes, No, Home |
| | | Sim Sw Cr A-Strm Change? | Yes, No, Home |

***Note:****Submenu 5 displays only 64 k, 56 k, and 2.4 k when the rate adapter option is enabled. If async is selected, Main Menu 5 cannot be accessed and line rate is automatically set to 2.4 kbps.*

***Note:****Main Menu 6 can only be accessed if the rate adapter option is enabled and 56 k or 64k line rate is selected.*

***Note:****Main Menu 7 cannot be accessed if the rate adapter option is enabled*

***Note:****Main Menus 8 an 9 can only accessed if the rate adapter option is enabled.*

***Note:*** *Main Menu 10 and 11 can only be accessed if in Async*

*******8 and 9 Bits Per Word Menu cannot be accessed if 38.4 kbps or 57.6 kbps is selected*

***Table 4-1. Option Menu (Continued)***

| Main Menu | Submenu | Submenu Item | Pushbutton (s) |
|---|---|---|---|
| **12** Change Control Options? (continued) | Change Sync Buffer Opt? | Sync Buffer Dis Change? | Yes, No, Home |
| | | Sync Buffer En Change? | Yes, No, Home |
| | Change Remote LB Opt? | Rmt LB Enabled Change? | Yes, No, Home |
| | | Rmt LB Disabled Change? | Yes, No, Home |
| | Change DSR Opt? | DSR Opt Enabled Change? | Yes, No, Home |
| | | DSR Opt Disabled Change? | Yes, No, Home |
| | Change Sys Status Opt? | SS Option Enabled Change? | Yes, No, Home |
| | | SS Option Disabled Change? | Yes, No, Home |
| | Change CA Option? | CA Option Enabled Change? | Yes, No, Home |
| | | CA Option Disabled Change? | Yes, No, Home |
| | Change RTS-CTS Delay? | RTS-CTS Normal Change? | Yes, No, Home |
| | | Dly CTS 25 mSEC Change? | Yes, No, Home |
| | | Dly CTS 30 mSEC Change? | Yes, No, Home |
| | | Dly CTS 60 mSEC Change? | Yes, No, Home |
| | Change DTE RL Opt? | DTE RL Enabled Change? | Yes, No, Home |
| | | DTE RL Disabled Change? | Yes, No, Home |

***Table 4-1. Option Menu (Continued)***

| Main Menu | Submenu | Submenu Item | Pushbutton (s) |
|---|---|---|---|
| **12** Change Control Options? (continued) | Change DTE LL Opt? | DTE LL Enabled Change? | Yes, No, Home |
| | | DTE LL Disabled Change? | Yes, No, Home |
| | Change DTE TP Opt? | DTE TP Enabled Change? | Yes, No, Home |
| | | DTE TP Disabled Change? | Yes, No, Home |
| | Change DTE RT Opt? | DTE RT Enabled Change? | Yes, No, Home |
| | | DTE RT Disabled Change? | Yes, No, Home |
| | Change 64k Scram Opt? | Scrambler En Change? | Yes, No, Home |
| | | Scrambler Dis Change? | Yes, No, Home |
| | Load Factory Option Set? | | Yes, No, Home |
| | Save New Configuration? | | Yes, No, Home |

cPress HOME to exit set mode. If the current settings are different from the previously saved settings, “SAVE CURRENT CONFIGURATION?” is displayed. To save the current settings into nonvolatile memory, press YES. If NO is pressed the current settings are used but not saved. The DDS/MR64 then returns to DATA mode.

## STRAP/SWITCH CONFIGURATION

Options are available through hard straps and dip switches located on the DDS/MR64 main board.

**Warning**

*Turn the power OFF and unplug the power cord before removing the cover.*

## Cover Removal

- Place the unit on its side on a flat surface. Insert a screwdriver blade in one of the rear latch slots (Figure 4-1).
- Gently push the screwdriver while twisting lightly back and forth.
- Assist removal by prying the cover from the chassis with your fingers on the units rear edges.
- Repeat this procedure on the remaining three latch slots.

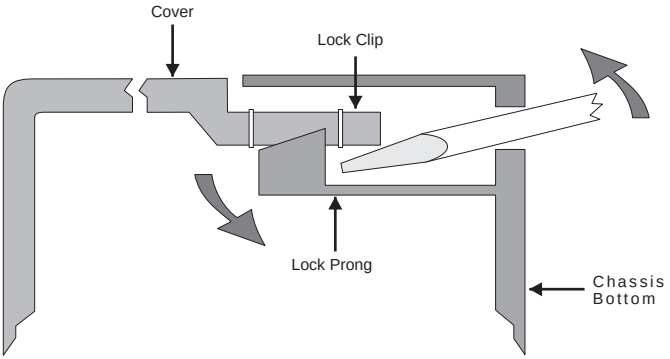



***Figure 4-1***
***Cover Removal***

## Replacing the Cover

- Align the rear panel slide guides and the front panel lock tabs.
- Press the cover to the chassis until the lock prongs engage the lock clips.

Option straps and switches are illustrated in Figure 4-2.

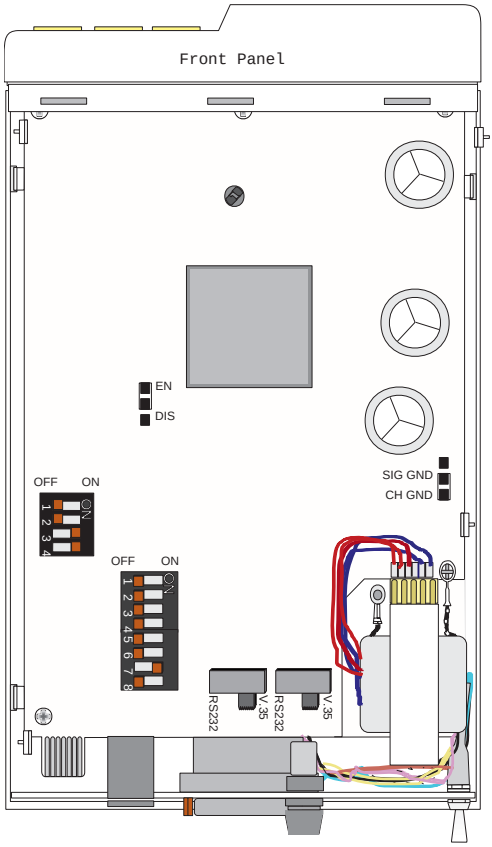



***Figure 4-2***
***Option Straps and Switches (Factory defaults shown)***

### Front Panel Option

EN enables control of all soft strap options via the front panel pushbuttons.

DIS disables the front panel pushbuttons to prevent changing the options currently selected. The operator is limited to scrolling through and viewing those options.

.


```
Front panel c
   selected *
```

** Factory default*

### Chassis Signal Ground

CH GND connects signal ground to chassis ground. This option helps eliminate some interference problems.

SIG GND separates signal ground from chassis ground.


```
Signal ground conn
to chassis ground *
```

** Factory default*

## DTE Interface

The DTE interface options are selected by an eight position dip switch mounted on the pc board near the DTE connector (see Figure 4-2 and Figure 4-3). Positions 5 and 8 are not used and should be kept off.

| | |
|---|---|
| Switch 1<br>TM | ON connects and OFF disconnects Test Mode output to the DTE connector. |
| Switch 2<br>NS V.35 | ON connects and OFF disconnects the No Signal output to the DTE connector in V.35 mode. |
| Switch 3<br>+12 V | ON connects and OFF disconnects the +12 V from the DTE connector. |
| Switch 4<br>- 12 V | ON connects and OFF disconnects the -12 V from the DTE connector. |
| Switch 6<br>NS<br>EIA-RS232 | ON connects and OFF disconnects the No Signal output to the DTE connector in EIA-RS232 mode. |
| Switch 7<br>ISO-2593 | Affects the pins used for TP and LL DTE test inputs on the V.35 connector. ON - the V.35 interface is compatible with ISO-2593. OFF - the V.35 interface is the same as previous Motorola products. To be compatible with ISO-2593, the pins used for the TP and LL DTE test inputs are “swapped.” |

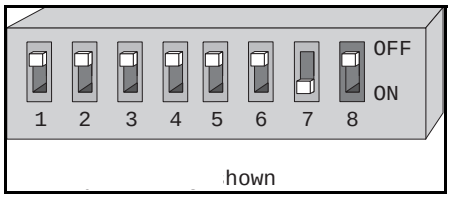



***Figure 4-3***
***DTE Interface Options DIP Switch***