

Chapter 4

Configuring the 3512

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Overview



This chapter explains how to get the 3512 DSU/CSU ready to run, including:

- *Verifying* primary-line quality
- Using the *MODIFY, *AUXILIARY, and *RESTORAL menu trees to *configure and monitor* the unit
- Using the *DUALVIEW menu tree to *configure* the DualVIEW feature
- Using the *COMPRESS menu tree to *configure* synchronous data compression (on the 3512 SDC)

Verifying Line Quality

IMPORTANT:

All 3512s

- 1) *Follow the procedure here to verify the quality of data-communications lines **before** configuring an application. Complete this procedure **before contacting the telephone company or Motorola**. If tests do indicate a line problem, follow the action(s) below. Do not bring the 3512 online until you can run error-free tests.*

MP-Mux

- 2) *On multipoint DDS-I type circuits, with MP-Mux-supported functionality, follow the steps specified in this section to qualify lines between **each master-slave pair**, and **then** configure for MP-Mux operation.*

To verify line quality:








- 1) If the unit has the DualVIEW feature or is managed by a Motorola Network Management System (NMS), set **NC Override=On** (*MODIFY main menu, MODIFY NETWORK category).
- 2) Set all devices to **DTE Con=Normal** (*MODIFY, MODIFY PORT).
- 3) Set the **Opmode** to match the DDS service type, DDS-I or DDS-II SC (MODIFY DSU category).
- 4) Confirm that the line rate is correct for the application, as follows:
 - a) Set **Data Rate=Auto** (MODIFY DSU category). **NOTE:** The **Data Rate** default option is Auto.
 - b) Wait 60 seconds, then check the rate display (*STATUS main menu).
 - c) Set the line rate to match the DDS service rate (using **Data Rate**).
- 5) If the AL LED is red, check the general alarm queue (*STATUS main menu, ALARM STATUS category). If the ST LED is not red, continue with Step 6.
- 6) Set a unique **Network Control** (NC) address for each device. (*MODIFY main menu, MODIFY NETWORK category.)
- 7) Run a line pattern loopback test to the remote device, as follows (for details on running this test, refer to Chapter 8, Testing and Troubleshooting):

First, initiate a Remote Loop 2 test on the local 3512 (this test puts the remote unit into loopback; it transmits received data back towards the local 3512):

 - a) Under the *TEST menu, press **■** until LOOPBACKS displays.
 - b) Press **■** until **Rm Loop 2=Off** displays.
 - c) Press **⊕** to select **Rm Loop 2:P1**.
 - d) Press **⊙**. **Rm Loop 2=P1** displays. The loopback is now active.

The T/R LED turns steady orange. The ST LED should flash green.






With Remote Loop 2 active, run a pattern test, as follows:

- a) Press  until PATTERN TESTS displays.
- b) Press  until **Type**=Space displays.
- c) Press  until **Type**:511 displays.
- d) Press . **Type**=511 displays.
- e) Press  until **Pattern**=Off displays.
- f) Press  until **Pattern**:On displays.
- g) Press . **Pattern**=On displays.

Next, the T/R LED turns steady orange. If:

- The ST LED flashes green, proceed to Step 8
- The ST LED flashes red, there may be a line problem. *Before* reporting it to the telephone company, disable the Pattern test (set **Pattern**=Off), disable the Remote Loop 2 test (set **Rm 2 Loop**=Off), and *then* run a Device Bit Error Rate (DBER) test at both units, as described in Step 8

8) Run a DBER test as follows:

- a) Under the *TEST menu, press  until BER TESTS displays.
- b) Press  until **Test Type**=Device displays.
- c) Press  until **BER**=Off displays.
- d) Press . **BER**:On displays.
- e) Press . The BER test runs.

9) Turn off the BER test (set BER=Off), if it is not already off.

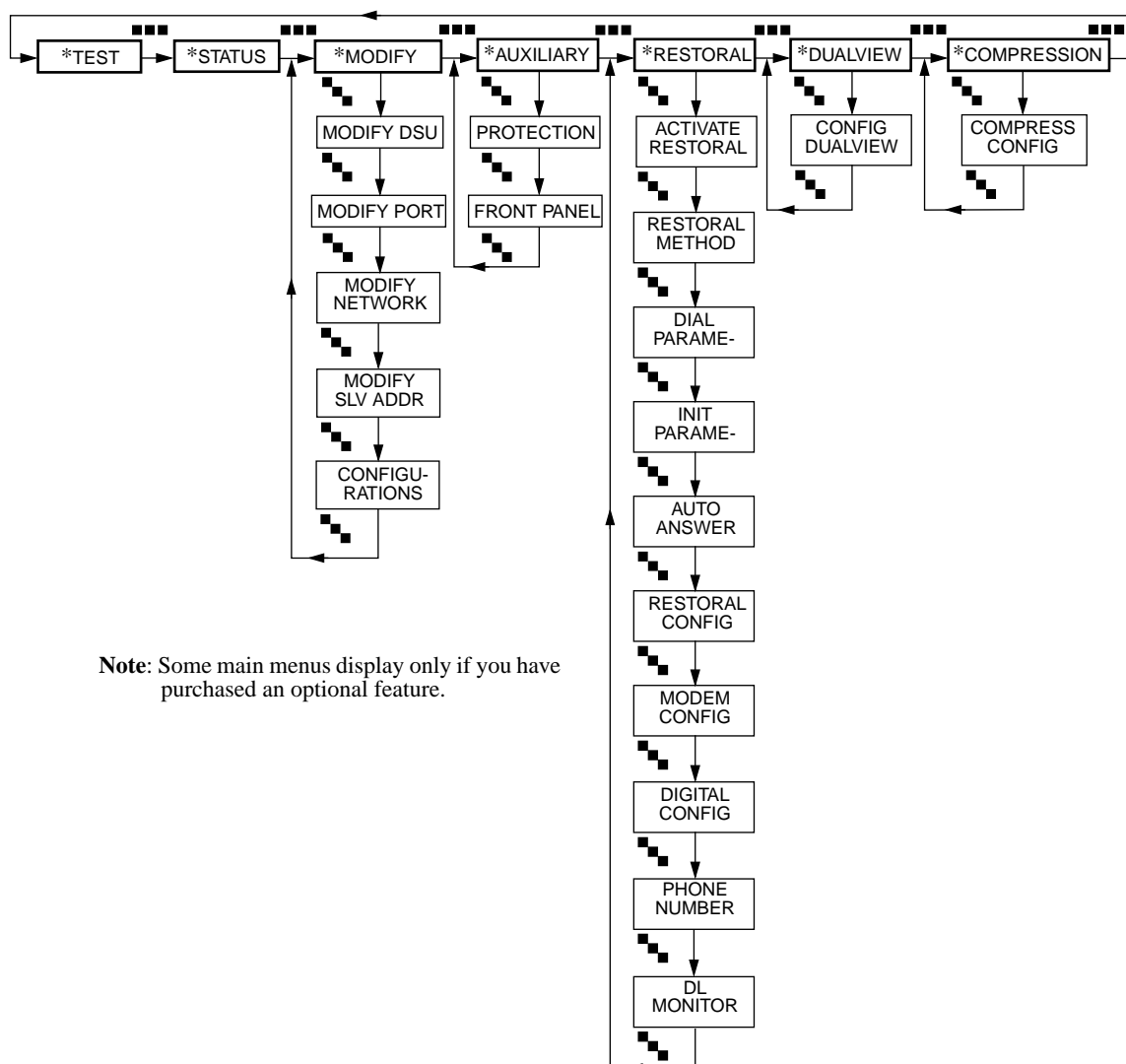
10) Interpret the front panel display as follows:

<i>If this Displays...</i>	<i>Do This:</i>
BER Pass BER ERRORS=000	Report the problem to the telephone company
BER Fail BER ERRORS=x	Contact the Motorola Customer Support Center
[where x equals the number of errors, up to 255]	

When the lines are verified, configure your application, as described next.

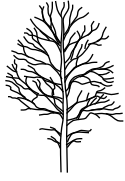
Configuring the 3512

Figure 4-1 shows the 3512's menu tree structure.



Note: Some main menus display only if you have purchased an optional feature.

Figure 4-1. *MODIFY, *AUXILIARY, *RESTORAL, *DUALVIEW, *COMPRESSION Menus



Categories contain **parameters** that have selectable **options**. For instructions on accessing categories, parameters, and options, refer to Chapter 3, The Front Panel.

When options are selected, most are automatically saved so that the configuration is saved even if the power goes down. However, the **Time** parameter (FRONT PANEL category) is cleared when the power supply is interrupted.

NOTE: If **Password** is enabled, you must enter the password to make configuration changes. Refer to PROTECTION (*AUXILIARY main menu) for details.

When operating under network control, all configuration changes can be made from the NMS site. If you try to initiate a configuration change from a unit's front panel, NC ATTACHED displays. Use **NC Override** (*MODIFY main menu, MODIFY NETWORK category) to override network control. Depending on the NMS, configuration changes made from the 3512 front panel may be overwritten when network control is restored. Contact your network manager before overriding the system.

*MODIFY

You configure the 3512's operating characteristics under the *MODIFY main menu (Figure 4-2). This section describes *MODIFY parameters and options.

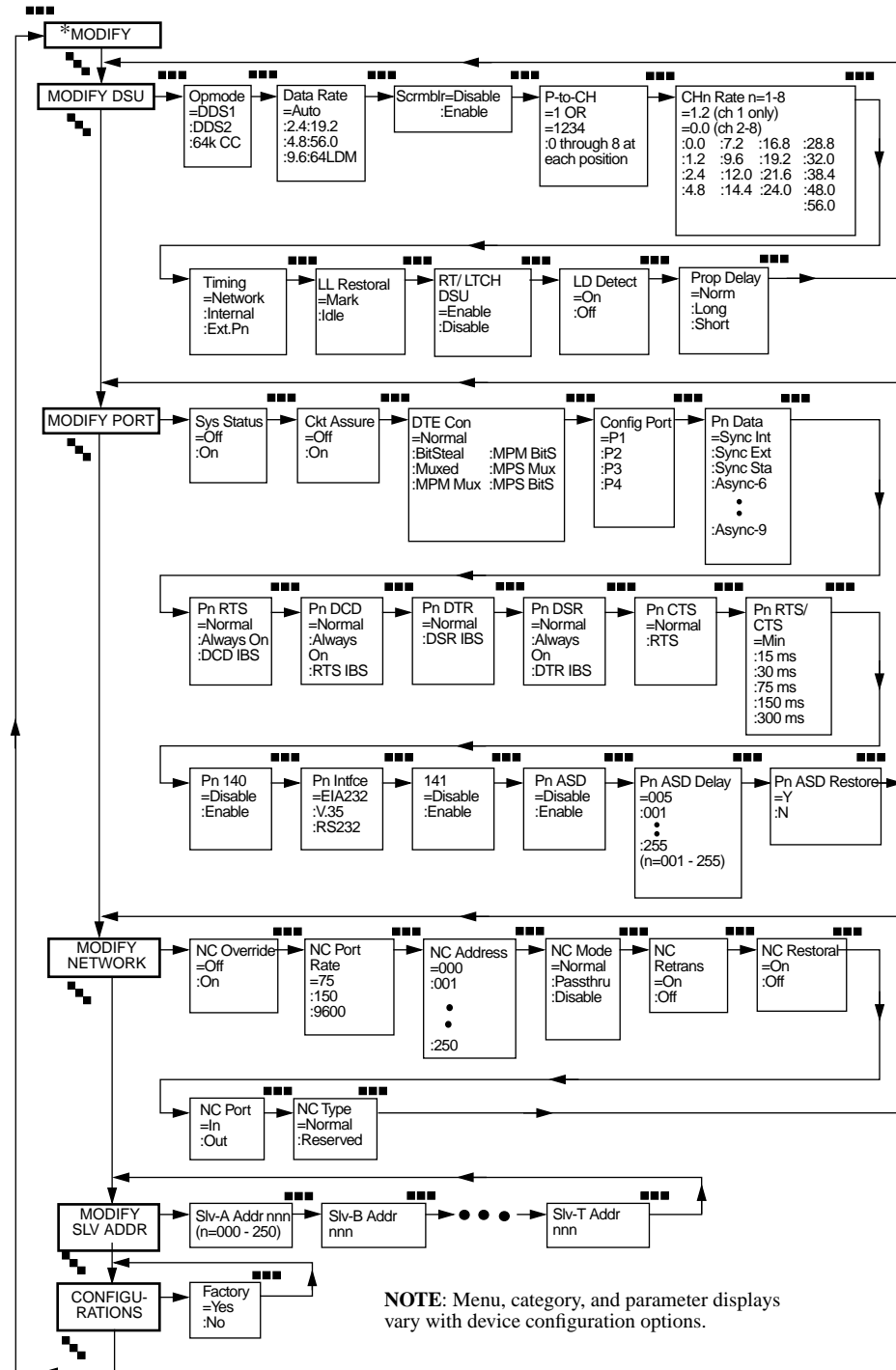
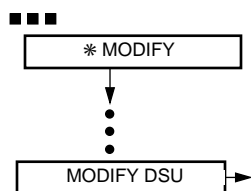


Figure 4-2. *MODIFY Categories, Parameters, and Options

MODIFY DSU Category



MODIFY DSU parameters specify the primary line interface configuration.

Opmode

Default:

DDS1

Options:

DDS1, DDS2, 64K CC

Description:

Opmode identifies the service type to which the 3512 is connected. Refer to Chapter 6, 3512 Operation, for details on DDS type services.

DDS1: Configures the unit to use DDS-I type service.

DDS2: Configures the unit to use DDS-II SC type service.

64K CC: Configures the unit to use 64k Clear Channel (64k CC) service.

In 64k CC mode, it is possible for data bit sequences to resemble maintenance codes, such as the Loopback Enable (LLB) code; if the service provider reports this problem, you can take *one* of the following actions:

- Set **Scrmblr**=Enable at both ends of the circuit
- If **DTE Config**=Normal, set it to Bitstealing, or to Muxed with most or all of the bandwidth allocated to one channel
- If **DTE Config**=Muxed or Bitstealing, change the port order in the **P-to-CH** parameter, and change the **CH n Rate** values accordingly

IMPORTANT: *Do not enable Scrmblr unless the service provider requests it (to avoid LLBs).*

NOTES:

- 1) Multipoint DDS-II SC applications at 56 kbps are not supported.
- 2) In 64k CC mode:
 - System Status and Circuit Assurance are not supported
 - Link Down is the only alarm that can initiate automatic restoral
 - **Line BER** is supported in Muxed and Bitstealing modes only
 - The service provider-initiated LLB replaces the network-initiated RT (DSU) Loopback

64k CC

64k CC

Data Rate

Default:

Auto

Options:

Auto, 2.4, 4.8, 9.6, 19.2, 56.0, 64LDM

Description:

Data Rate lets you set the aggregate port and channel rates to the primary line rate. It does not display when **Opmode**=64k CC.

Auto: This option configures the 3512 to automatically select the line rate based on the received data signal. This is useful for detecting the line's data rate, especially if the correct setting is not known. This option does not operate when **Opmode**=64k CC.

NOTES:

- 1) When **Data Rate**=Auto, **DTE Con** cannot be set to any muxed option.
- 2) If the 3512's data rate differs from the actual line rate, invalid alarms or CQMS readings may occur.
- 3) Motorola recommends using Auto during installation to confirm the service rate, then manually setting the 3512 to match.
- 4) Use the Auto option only when **DTE Con**=Normal or BitSteal.

2.4, 4.8, 9.6, 19.2, 56.0: These options configure the 3512 to use aggregate data rates. For back-to-back 3512 applications, such as limited distance line driver and pre-installation setup, you must set *one* device to one of these options. For a multiplex configuration, *both* devices must be set to one of these options.

64LDM: This option displays only when **Opmode**=DDS1 (MODIFY DSU category) and **DTE Con**=Normal (MODIFY PORT category). Use **64LDM** only to configure a 64k limited-distance modem (LDM) tail circuit application (Figure 6-38). **NOTE:** For tail circuits on a service-provider's *64k Clear Channel* service (not LDM) or for *single-tier 64k LDM* applications, set **Opmode**=64kCC (not 64LDM).

64k CC only

Scrmblr (Scrambler)

Default:

Disable

Options:

Disable, Enable

Description:

Scrambler is designed to prevent the inadvertent transmission of data patterns that match loopback-triggering patterns in 64k CC mode. Loopbacks signal a service provider to begin looping received data back to the 3512, and to “latch” (continue looping until explicitly stopped). Latching loops prevent your applications from operating on the network.

IMPORTANT: *Do not enable Scrmblr unless the service provider requests it (to avoid LLBs).*

Disable: This option does not avoid triggering latching loopbacks. *Always* use this option when **Opmode** is set to any of the MPx-Mux or MPx-BitS options.

Enable: This option encodes transmissions to avoid latching loopbacks.

NOTE: **Scrmblr** must be disabled in order to run service provider-initiated 64k CC LLB and DDS-II RT.

P-to-CH

Default:

1-port unit: 1

2-port unit: 1 2

3-port (SDC) unit: 1 2 3

4-port unit: 1 2 3 4

Options:

0, 1, 2, 3, 4, 5, 6, 7, 8

Description:

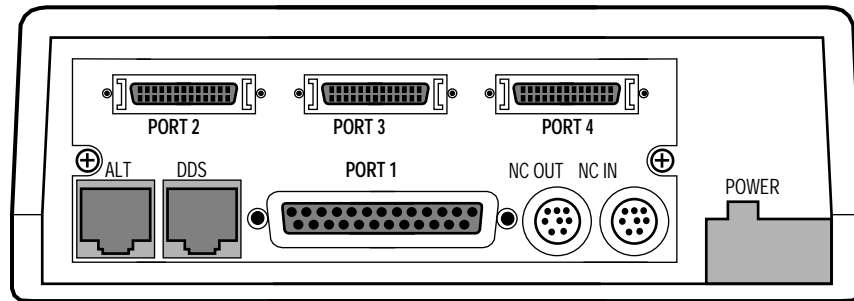
P-to-CH applies to multipoint configurations. It lets you assign:

- A DTE port to a TDM channel
- Multiple DTE ports to a TDM channel (when *multiple* DTE ports share a TDM channel, it is known as **channel sharing**)

P-to-CH displays a series of digits whose:

- *Position* corresponds to a DTE port number
- *Value* specifies a TDM channel (0-8) for the port

Consider, for example, a port-to-channel map on a 4-port 3512 (back panel shown below).



Here, Ports 1, 2, and 3 form a channel-sharing unit assigned to Channel 1, and Port 4 is assigned to Channel 2:

1	1	1	2
---	---	---	---

The **P-to-Ch** setting for this configuration is:

P-to-CH=1112

P-to-Ch applies to primary and alternate lines. Mapping a port to Channel 0 disables that port.

Port to Channel Mapping Guidelines

Keep the following in mind when using port-to-channel mapping:

- If you are not configuring channel sharing, you may specify any combination of channel numbers (0-8) as long as each channel is only specified once. **NOTE:** Eight channels are provided to allow interoperability with 8-channel Motorola 3520 DSU/CSUs.
- Map unused ports to Channel 0.
- Only one channel-sharing unit may be configured on a 3512.
- In MP-Mux mode, the master device transmits channel rates to slave device(s) during training.
- In any muxed mode, you may assign bandwidth to a channel without mapping a port to it; in this case the channel is inactive.
- In an external-restoral (A/B) configuration:
 - If you configure channel sharing, you *must* map Port 2 to the shared channel
 - You cannot configure multiple ports to share Channel 2
 - With no channel sharing, you *must* map Port 2 to Channel 2

In the configuration shown below for a 4-port 3512, Ports 1 and 3 share Channel 1, and Port 4 is assigned to Channel 3. **NOTE:** Port 2 appears to share the map to Channel 1; however, it is not used.

P-to-CH=1113

Here is an example of a port-to-channel map that does *not* specify channel sharing (on a 4-port 3512):

P-to-CH=3214

Here, port-to-channel assignments are as follows:

<i>This port...</i>	<i>To this channel:</i>
1	3
2	2
3	1
4	4

Port to Channel Mapping Examples

When external restoral is not used (and integral restoral is or is not used):

TDM

P-to-CH=1234

Channel Sharing

P-to-CH=1111

Mixed TDM-Channel Sharing

P-to-CH=1123

When external restoral is used:

TDM

P-to-CH=1234

Channel Sharing

P-to-CH=1111

Mixed TDM-Channel Sharing

P-to-CH=1113

CH n Rate ($n=1$ through 8)

Default:

1.2 (Channel 1 only)

0 (Channels 2–8)

Options:

0.0, 1.2, 2.4, 4.8, 7.2, 9.6, 12.0, 14.4, 16.8, 19.2, 21.6, 24.0, 28.8, 32.0, 38.4, 48.0, and 56.0 kbps

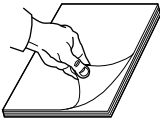
Description:

This parameter sets Channel n 's data rate. It displays only when **DTE Con** (MODIFY PORT category) is set to one of the muxed options. The channel rates' sum must be less than the port data rate.

NOTES:

- 1) Asynchronous data rates up to 19.2 kbps are supported.
- 2) In MP-Mux mode, the master transmits channel rates to slaves during training.
- 3) You may assign bandwidth to a channel without mapping a port to it; in this case the channel is inactive.

Refer to Chapter 6 for more information.



Timing

Default:

Network

Options:

Network, Internal, Ext. P1 through P n (n =number of DTE ports in unit)

Description:

This parameter selects the 3512's primary-line *transmit* timing source. (The 3512 always derives its *receive* timing from the received data signal).

Network: With this option, timing is derived from the received data signal. This is also known as loopback or receive timing. Use this option when operating over a digital transmission services (DDS) network.

Internal: This option uses an internal oscillator for timing. Use this option at one end of back-to-back 3512 applications, such as limited distance drivers and pre-installation setup.

Ext P1 through P n (where n =a DTE port number): With these options, the 3512's timing is derived from the specified port's DTE clock.

NOTES:

- 1) **Ext P n** is not recommended for DDS networks. Motorola recommends using Network timing.
- 2) With **Ext P n** , set the corresponding **P n Data** parameter (MODIFY PORT category) to either Sync Ext or Sync Sta.

IMPORTANT: *External timing only operates when the line rate is an exact multiple of the port rate supplying the timing. This precludes the use of external timing when the **Opmode**=DDS-II, because the actual line rates are never exact multiples of port rates. For the same reason, external timing is not supported when **Opmode**=DDS-I, and **DTE Con**=a bitstealing option.*

Refer to Chapter 6 for tail circuit application timing considerations.

LL Restoral (Leased Line Restoral)

Default:

Mark

Options:

Mark, Idle

Description:

LL Restoral specifies codes the 3512 uses to signal the network.

Mark. Use this option in typical point-to-point restoral applications between two digital DDS line devices. Mark lets the local device use Circuit Assurance and System Status functions. Marks are required on a DDS line.

Idle. Use this option in multipoint and point-to-point applications where the devices are configured for restoral to a pool of dial devices. Selecting Idle lets the NMS maintain control of DDS line multipoint slaves.

NOTES:

- 1) **LL Restoral** displays only if the 3512 has integral restoral or TDM.
- 2) Idle is required when **DTE Con=** MP-Mux or MP-Bits.

RT [or] LTCH DSU (Latching DSU Loopback--LLB)

Default:

Enable

Options:

Enable, Disable

Description:

This parameter display depends on the line service (specified by **Opmode**):

- With 64k Clear Channel service, **LTCH DSU** displays
- With DDS-I and DDS-II SC type services, **RT** displays

Both are signals sent by the service provider to initiate loopbacks for testing.

NOTE: When passing data on the *restoral line*, an RT *can be executed* on the primary line without disrupting restoral-line data.

When passing data on the *primary line*, an RT *cannot be executed* on the restoral line without disrupting primary-line data.

In 64k CC mode, the only mode that uses LLBs, the 3512 does not respond to LLBs on the inactive line while it is transmitting data on the active line.

Enable: This option lets the 3512 respond to one kind of loopback signals:

- When **Opmode=**64k CC, it processes Latching Loopbacks (LLBs)
- When **Opmode=**other options, it processes RTs

Disable: This option makes the 3512 ignore both kinds of signals.

64k CC only

LD Detect (Link Down Detection)

Default:

On

Options:

On, Off

Description:

A Link Down condition occurs when a line's **CQMS Signal Level**=0 for more than one second.

For 3512s configured with integral digital restoral: when **LD Detect**=Off and the service provider does *not* supply sealing current, the 3512 cannot detect an actual link down on the restoral line. Thus, when configured for integral digital restoral, set **LD Detect**=On so the 3512 can detect failure of the restoral line.

On: The 3512 displays a Link Down message when **CQMS Signal Level**=0. The 3512 stops passing data.

Off: The 3512 does not monitor the Link Down statistic.

Prop Delay (Propagation Delay)

Default:

Norm

Options:

Norm, Long, and Short

Description:

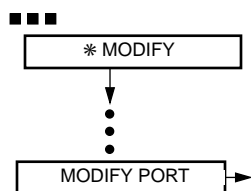
This parameter specifies how long a multiplexed master device waits for a response from a slave during training. **Prop Delay** displays only when **DTE Con** is set to one of the MPM options.

Short: Select this option for faster training.

Long: Select this option for successful training on lines with high delays.

MP-Mux

MODIFY PORT Category



The parameters in the MODIFY PORT category configure the unit's DTE ports.

Sys Status (System Status)

Default:

Off

Options:

Off, On

Description:

This parameter specifies DSR signal control.

On: With this option, the 3512 asserts DSR only when it receives valid data. Thus data transmission stops when the unit detect a Link Down, Idle, or network-generated alarms. This option overrides all other DSR options.

Off: This option disables **System Status**; the **Pn DSR** option controls DSR signaling.

NOTES:

- 1) Disable **System Status** when running loopback tests. Loopbacks can cause Idles, which activate **System Status** functions and prevent transmission from resuming after the loopback is terminated.
- 2) **System Status** is supported on the primary line only.
- 3) On DDS-I lines, use **System Status** only when **DTE Con**=Normal; for **System Status** to operate properly, the channel rates assigned to Ports 2 through 4 must be 0 bps.

IMPORTANT: *Never enable **System Status** at both a local and a remote unit. This could stop data transmission.*

Ckt Assure (Circuit Assurance)

Default:

Off

Options:

Off, On

Description:

This parameter specifies CTS signal control.

On: This option makes the unit assert CTS only when it receives valid data. CTS is de-asserted and data transmission is inhibited by Link Down, Idles, or network-generated alarms. This option overrides all other DSR options.

Off: Disables **Circuit Assurance**; the **Pn CTS** option controls DSR signaling.

NOTES:

- 1) Disable **Circuit Assurance** when running loopback tests. Loopbacks can cause Idles, which activate **Circuit Assurance** functions and prevents transmission from resuming after the loopback is terminated.
- 2) **Circuit Assurance** is supported on the primary line only.
- 3) On DDS-I lines, use **Circuit Assurance** only when **DTE Con**=Normal and assign channel rates of 0 to Ports 2 through 4.

IMPORTANT: *Never enable **Ckt Assure** at both a local and a remote unit. This could stop data transmission.*

DTE Con (Data Terminal Equipment Configuration)

Default:

Normal

Options:

Normal, BitSteal, Muxed, MPM-Mux, MPM-BitS, MPS-Mux, MPS-BitS

Description:

This parameter specifies the network-management channel type and DTE port rates.

Normal (Main Channel): With this option, line rate and DTE rate are equal, and:

- On DDS-I type service, network control is interruptive
- On DDS-II SC type service, network control uses a non-interruptive secondary channel supplied by the service

NOTE: With this option, a remote device asserts DCD when it receives RTS. Thus RTS/DCD and DTR/DSR inband signaling is unnecessary.

BitSteal: (Bitstealing or Derived Secondary Channel) This option applies to DDS-I and 64k CC point-to-point circuits only. It provides non-interruptive network management on services that do not provide a secondary channel. The 3512 frames data into two-channel TDM to the DTE and NC ports. The DTE port rate is slightly reduced to a nonstandard rate, using most of the line bandwidth, and the NC port uses the lower-rate channel. Table 4-1 shows the effective port rates with bitstealing.

Table 4-1.
Effective DTE Port Rates With Bitstealing

Data Rate parameter (kbps)	Effective DTE Port Rate (bps)	Point-to-Point	Multipoint
2.4	2290	Supported	Not Supported
4.8	4688	Supported	Not Supported
9.6	9487	Supported	Supported
19.2	19040	Supported	Supported
56.0	55200	Supported	Supported
64.0	62400	Supported	Not supported

Muxed: (Multiplexing or Rate Adaptation) This option provides non-interruptive network management over a “derived” secondary channel on services that do not provide a secondary channel. This option lets you configure the DTE port to any standard data rate.

On DDS-I and 64k CC service, the 3512 frames data into two-channel TDM to the DTE and network control channel. This maintains the rates specified by **CHn Rate**. On DDS-II SC type service, network control uses a non-interruptive secondary channel supplied by the service.

The Muxed option supports the following **CHn Rate** options: 0.0, 1.2, 2.4, 4.8, 7.2, 9.6, 12.0, 14.4, 16.8, 19.2, 21.6, 24.0, 28.8, 32.0, 38.4, and 48.0.

MP-Mux

MPM-Mux (Master Device Multipoint Multiplexing or Rate Adaptation): This option configures the unit as the master device in a multipoint muxed application. It provides non-interruptive network management on services that do not provide a secondary channel. This option displays only when **Opmode=DDS-I**.

With this option, the 3512 frames the DDS-line data into two-channel TDM to the DTE and NC ports. This maintains the rates specified by **CHn Rate**. MPM-Mux supports the following **Data Rate** options: 9.6, 19.2, and 56.0.

MPM-BitS (Master Device Multipoint Multiplexing, Bitstealing or Derived Secondary Channel): This option configures the unit as the master device in a multipoint bitstealing application. It provides non-interruptive network management on services that do not provide a secondary channel. This option displays only when **Opmode**=DDS-I. Refer to the Bitstealing option, above, for details on bitstealing function.

MPM-BitS supports the following **Data Rate** options: 9.6, 19.2, and 56.0.

MPS-Mux (Multipoint Slave Device, Multiplexing or Rate Adaptation): This option configures the unit as a slave device in a multipoint multiplexing application. It provides non-interruptive network management over a “derived secondary channel” on services that do not provide a secondary channel. This option displays only when **Opmode**=DDS-I.

With this option, the 3512 frames the DDS- line data into two-channel TDM to the DTE and NC ports. This maintains the rates specified by **CHn Rate**. MPS-Mux supports the following **Data Rate** options: 9.6, 19.2, and 56.0.

MPS-Bits: (Multipoint Slave Device, Bitstealing or Derived Secondary Channel) This option configures the unit as the slave device in a multipoint bitstealing application. It provides non-interruptive network management on services that do not provide a secondary channel. The MPS-BitS option displays only when **Opmode**=DDS-I. Refer to the Bitstealing option, above, for details on bitstealing function.

MPS-BitS supports these **Data Rate** options: 9.6, 19.2, and 56.0.

NOTES:

- 1) Channel sharing is available with **DTE Con** parameter options.
- 2) RTS/DCD inband DTE signaling (**Pn RTS** and **Pn DCD** parameters) and DTR/DSR inband DTE signaling (**Pn DTR** and **Pn DSR** parameters) *should not* be enabled at the same time.
- 3) When **DTE Con**=MPM Mux, MPM BitS, MPS Mux, or MPS BitS, RTS/DCD and DTR/DSR inband signaling are not supported.
- 4) When **DTE Con**=MPM Mux, MPM BitS, MPS Mux, or MPS BitS, you *must* set **Scrmblr**=Disable.
- 5) The multipoint options (MPx-y, where x=M or S and y=Mux or BitS) display only when **Opmode**=DDS-I, you have the MP-Mux feature, and **Data Rate**= (not Auto).

Config Port (Configure Port)

Default:

P1

Options:

P1 to P4 (depending on the number of ports on the unit)

Description:

This parameter, which does not display on 1-port 3512s, specifies the port that is configured by **the rest of the parameters in this category**. Select an option, then set the rest of the parameter. Repeat for each port.

P_n Data (Port *n* Data)

Default:

Sync Int

Options:

Sync Int, Sync Ext, Sync Sta, Async 6-9

Description:

This parameter selects a DTE port's data type and timing source.

Sync Int: This option specifies a DTEs with synchronous data and timing from the 3512's clock.

Sync Ext: This option specifies a DTE with synchronous data and timing external to the 3512 (such as from the DTE itself). Sync Ext synchronizes ports connected by a DCE-DCE crossover cable.

Sync Sta: This option specifies a DTE with synchronous data and timing external to the 3512. It synchronizes ports connected by a DCE-DCE crossover cable and uses one clock for both transmit and receive timing.

Async 6 through Async 9: These options specify a DTE with asynchronous data and 6 to 9 data bits per word. The 3512 converts data to and from synchronous form, using the V.22 algorithm. The options include data and parity bits, but not start and stop bits, as follows:

<i>This Option...</i>	<i>Specifies...</i>	<i>With Total Data and Parity Bits:</i>
Async 6	Asynchronous data	6
Async 7	Asynchronous data	7
Async 8	Asynchronous data	8
Async 9	Asynchronous data	9

For example, with six data bits and one parity bit, select Async 7.

The DTE can use any parity (even, odd, no) and number of stop bits (1 or 2). When using a 5-bit Baudot code and two stop bits, select Async 6. You cannot use 1.5 stop bits with the 5-bit Baudot code.

NOTES:

- 1) Asynchronous data rates up to 19.2 kbps are supported.
- 2) This parameter does not display when the unit is in restoral.

P_n RTS (Port *n* Request to Send)

Default:

Normal

Options:

Normal, Always On, DCD IBS

Description:

This parameter determines how the 3512 responds to a DTE's RTS signal on Port *n*. Refer to Table 4-2.

Normal: The DTE controls the RTS/CTS handshaking sequence. When the DTE asserts RTS, the local unit asserts CTS and transmits data from the DTE port to the DDS line. When the DTE de-asserts RTS, the local unit de-asserts CTS and sends Idles to the line.

Always On: This option lets the 3512 function as if RTS is continuously asserted. If your DTE does not supply RTS, use this option.

DCD IBS (In Band Signaling): This option lets the 3512 use DCD handshaking signals. For proper operation, use this option at one 3512 and DCD signaling at the other. (See **P_n DCD**, next.) This option cannot be used in multipoint circuits.

NOTE: The use of handshaking signals depends on the DTE or control signal application. When using Circuit 140 control (**P_n 140=Enable**), set this parameter to Normal.

P_n DCD (Port *n* Data Carrier Detect)

Default:

Normal

Options:

Normal, Always On, RTS IBS

Description:

This parameter specifies how the 3512 controls DCD output to the DTE on Port *n*. Refer to Table 4-2.

Normal: Asserts DCD while the 3512 detects valid data. De-asserts DCD when Idles, Link Downs, or network-generated alarms are received.

Always On: This option lets the 3512 function as if DCD is continuously asserted. This option overrides other DCD signaling options.

RTS IBS: This option enables the use of RTS handshaking signals. For proper operation, use this option at one 3512 and RTS signaling at the other. (See **P_n RTS**.)

NOTE: The use of handshaking signals depends on the DTE or control signal application. When using Circuit 140 control (**P_n 140=Enable**), set this parameter to Normal.

P_n DTR (Port *n* Data Terminal Ready)

Default:

Normal

Options:

Normal, DSR IBS

Description:

This parameter specifies how the 3512 interprets the DTE's DTR signal on Port *n*. Refer to Table 4-2.

Normal: The 3512 monitors DTR from the DTE.

DSR IBS: This option enables the use of the DSR handshaking signal. For proper operation, use this option at one 3512 and DSR signaling at the other. (See **P_n DSR**, next.) This option cannot be used in multipoint circuits.

NOTE: The use of handshaking signals depends on the DTE or control signal application. When using Circuit 140 control (**P_n 140=Enable**), set this parameter to Normal.

P_n DSR (Port *n* Data Set Ready)

Default:

Normal

Options:

Normal, Always On, DTR IBS

Description:

This parameter specifies how the 3512 controls DSR output to the DTE on Port *n*. Refer to Table 4-2. **NOTE:** For most applications, the 3512 should control DSR; check your DTE manual to determine whether the DTE requires DSR.

Normal: With this option, the 3512 controls DSR signaling.

Always On: This option lets the 3512 function as if DSR is continuously asserted.

DTR IBS: This option enables the use of the DTR handshaking signal. For proper operation, use this option at one 3512 and DSR signaling at the other.

NOTE: The use of handshaking signals depends on the DTE or control signal application. When using Circuit 140 control (**P_n 140=Enable**), set this parameter to Normal.

P_n CTS (Port *n* Clear To Send, where *n*=1 - 4, set in Config Port)

Default:

Normal

Options:

Normal, RTS

Description:

This parameter specifies how the 3512 controls CTS on Port *n*. Refer to Table 4-2.

Normal: CTS signals the DTE that the device is ready to send data.

The delay between receipt of RTS and generation of CTS is controlled by the **P_n RTS/CTS** parameter option and any required training time.

RTS: This option forces CTS to follow RTS, regardless of the device status.

NOTE: This option overrides the **P_n RTS/CTS** parameter (described next).

P_n RTS/CTS (Port *n* Request To Send/Clear To Send)

Default:

Min

Options:

Min, 15 ms, 30 ms, 75 ms, 150 ms, 300 ms

Description:

This parameter specifies the delay between the time the 3512 receives the DTE's RTS and the time it responds with CTS. Use this parameter to set a wait time; the minimum delay is a function of the port rate.

<i>Port Rate (bps)</i>	<i>Minimum RTS/CTS Delay (ms)</i>
Below 7200	None
7200	150
9600	150
12000	150
14400–56000	75

Refer to Table 4-2. **NOTE:** The **P_n CTS** parameter's RTS option overrides this parameter.

Pn 140 (Port n Circuit 140 signal, where n=1 - 4)

Default:

Disable

Options:

Disable, Enable

Description:

This parameter lets the 3512 initiate (and accept) a remote digital loopback test from a DTE using CCITT Circuit 140 (described in Chapter 8, Testing and Troubleshooting). This loopback is equivalent to Remote Loop 2.

NOTES:

- 1) Do not enable Circuit 140 on a port if you have set a control signaling parameter (**Pn RTS**, **Pn DCD**, **Pn DTR**, or **Pn DSR**) on the port to other than Normal.
- 2) Circuit 140 is supported only in a point-to-point configuration.
- 3) The port number (n) is specified by the **Config Port** parameter.

Enable: This option lets a DTE initiate the test. NOTE: With TDM, you can set each mux channel independently. **NOTE:** If the DTE does not support Circuit 140, *do not* enable this function.

Disable: This option makes the 3512 ignore the signal.

Pn Intfce (Port n Interface)

Default:

EIA232

Options:

EIA232, V.35, RS232

Description:

This parameter specifies a port's electrical interface.

EIA232: This option sets the port in compliance with EIA 232-C/D.

V.35: This option sets the port in compliance with V.35.

RS232: This option sets the port in compliance with RS232.

NOTES:

- 1) Motorola recommends using V.35 for port rates above 19.2 kbps.
- 2) To set Port 2, 3, or 4 to V.35, you must first set **DTE Con** to a muxed option, then disable A/B restoral by setting **DDS to Dial=Off**. This allows the unit to display Port 2 options.

141 (Circuit 141)

Default:

Disable

Options:

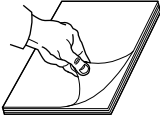
Disable, Enable

Description:

This parameter, which is available only for Port 1, controls initiation and termination of a modem check (local analog loopback) test from a DTE using the Circuit 141 signal. (Refer to Chapter 8, Testing and Troubleshooting, for details.) **NOTE:** If the DTE does not support 141, disable this parameter.

Enable: The 3512 starts a loopback when the DTE asserts Circuit 141.

Disable: The 3512 functions as if Circuit 141 is always off.



P_n ASD (Port *n* Automatic Stream Disconnect)

Default:

Disable

Options:

Disable, Enable

Description:

Automatic Stream Disconnect (ASD) disconnects a streaming terminal on Port *n*. This is normally used in a multipoint configuration.

P_n ASD Delay (Port *n* Automatic Stream Disconnect Delay)

Default:

005 seconds

Options:


1 to 255 seconds

Description:

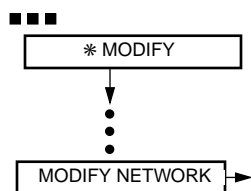
This parameter applies only when **P_n ASD=Enable**. It determines how long RTS must be asserted before the streaming terminal is disconnected.

P_n ASD Restore (Port *n* ASD Restore)

Description:

You can only select Y (Yes) with this parameter. Press  to reconnect a terminal that was disconnected by ASD.

MODIFY NETWORK Category



MODIFY NETWORK parameters configure the 3512 for network management.

NOTE: When a Motorola Network Management System (NMS) is not connected, you can use **NC Address** to identify remote units.

NC Override (Network Control Override)

Default:

Off

Options:

Off, On

Description:

This parameter sets network-manager control of the 3512.

Off: Allows network management control. With this option, configuration changes must be initiated from the NMS.

On: Prevents network control. Use this option for local testing.

NOTE: Contact your network manager before setting to On. Depending on the NMS, configuration changes made from the 3512 front panel when **NC Override=On** may *not* be retained when network control is restored.

NC Port Rate (Network Control Port Rate)

Default:

75

Options:

75, 150

Description:

This parameter controls the NC IN and NC OUT ports' data rate.

NC Address (Network Control Address)

Default:

000

Options:

000 to 250

Description:

NC Address lets a network control system or a multipoint master identify:

- The 3512 DSU/CSU to the network control system
- MP-Mux slave devices to the MP-Master

This parameter is *not* cleared by the **Factory** parameter (*AUXILIARY main menu, CONFIGURATIONS category).

You can enter a device's address:

- At the front panel, using numeric entry (refer to Chapter 3)
- From another 35XX device on the network, using **Set Remote Address** (*AUXILIARY main menu, SET REMOTE ADDR category)

NOTE: Contact your network manager before entering an address.

NC Mode (Network Control Mode)

Default:

Normal

Options:

Normal, Passthru, Disable

Description:

This parameter determines NC port characteristics.

Normal: With this option, messages on the NC port are interpreted as Motorola NMS format.

- Messages for this device are not passed on. (This reduces the number of user data interruptions in interruptive DDS applications)
- Messages for remote units are buffered, then transmitted at the full line rate. (This minimizes main-channel data interruptions in non-interruptive DDS applications)

Passthru: Use this option to minimize propagation delay in multi-tier applications. All messages on the NC port are passed on, without buffering. (This minimizes time-outs in multi-tier, interruptive network management applications, where the manager may time out waiting for device responses due to cumulative tier-boundary buffering delays.)

Disable: Use this option only in non-network-managed environments. This option lets you use the NC ports for non-network-managed data.

NOTE: With 56 kbps DDS-II SC type service, the network overwrites secondary-channel data whenever the main-channel data is all zeros.

NC Retrans (Network Control Retransmit)

Default:

On

Options:

Off, On

Description:

This parameter specifies whether to pass secondary-channel data to remote devices.

On: Retransmits secondary-channel data to remote devices as specified by **NC Mode**. To poll a downstream device, use this option.

Off: Prevents secondary-channel data retransmission. Use this option when a downstream device receives network management data from an alternate source (such as a port on an external multiplexer).

NC Restoral (Network Control Restoral)

Default:

On

Options:

On, Off

Description:

NC Restoral manages the transmission of network control data to remote devices in restoral. When **Method**=Integral (*RESTORAL, RESTORAL METHOD), **DTE**=Normal (*RESTORAL, RESTORAL CONFIG), and the 3512 is connected to another device, use Off to avoid data errors.

NOTES:

- 1) **NC Restoral** displays only if you have the SLR or TDM features.
- 2) When configuring restoral using SLR at one device and A/B (external) restoral at another, set **NC Restoral**=Off at the SLR device.
- 3) The **DTE** parameter applies to restoral as follows:

<i>When DTE=...</i>	<i>The 3512...</i>
Normal	Provides a non-interruptive secondary channel
Muxed	Provides a multiplexed secondary channel

If the local 3512 is restoring with another kind of device, and **DTE**=Normal, set **NC Restoral**=Off, and disable other devices' secondary channel, to avoid interference with the 3512.

On: Allows transmission of secondary-channel data.

Off: Prevents transmission of secondary-channel data.

NC Port (Network Control Port)

Default:

In

Options:

In, Out

Description:

This parameter specifies the source of network control commands. It is used in tiered applications, where multiple NC ports must use a single port. Figure 4-3 shows a tiered application with **NC Port** options in first and second tier, master and slave devices.

In: Accepts network control commands at the NC IN connector. The commands propagate to the DDS secondary channel.

Out: Accepts network control commands through the DDS secondary channel, and passes them on through the NC OUT connector.

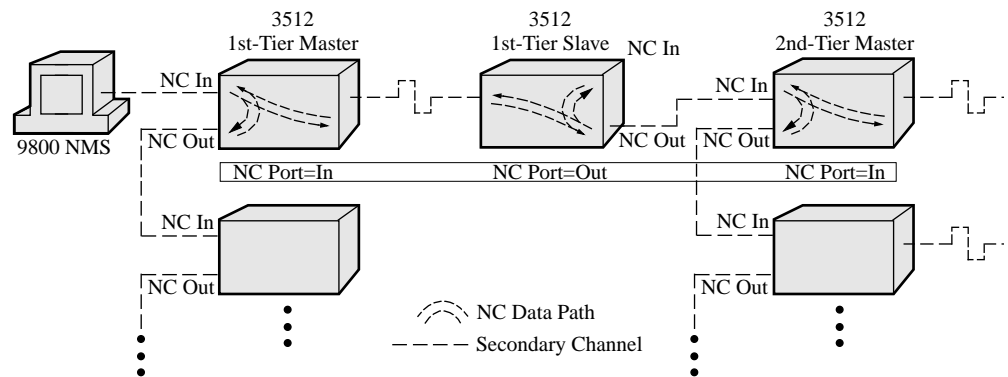


Figure 4-3. NC Port Settings

NC Type (Network Control Type)

Default:

Normal

Options:

Normal, Reserved

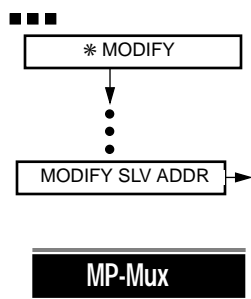
Description:

This parameter specifies how the 3512 is viewed and supported by a network management system (NMS).

Normal. This option enables the NMS to manage the 3512 as a 3512.

Reserved. This option enables the NMS to manage the 3512 as a 3500.

MODIFY SLV ADDR Category



MODIFY SLV ADDR parameters set slave addresses at a multipoint master unit. This category displays only when **DTE Con**=MPM-Mux or MPM-BitS.

MODIFY SLV ADDR (Modify Slave Address)

Default:

Slv-A Addr *nnn*

Options:

Slv-A Addr *nnn* through Slv-T Addr *nnn*

For *nnn*, 000–250

Description:

This parameter allows you to specify the network control (NC) addresses of up to 20 devices—Slv-A through Slv-T—in the network.

To enter a slave address, press **F4** until MODIFY SLV ADDR displays. Press **F3** to scroll through the slave addresses.

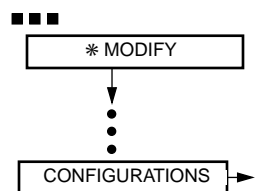
To enter a slave's NC address, refer to “Alphanumeric Entry” in Chapter 3.

The slave address list in the master device is *not* cleared by the **Factory** parameter (CONFIGURATIONS category).

NOTES:

- 1) A slave address entered in this category must be the slave's network control address as it appears in **NC Address** (MODIFY NETWORK).
- 2) A slave with an address of 000 is not trained by the master device.
- 3) After master or slave devices addresses, initiate a training sequence to ensure that they can recognize one another.

CONFIGURATIONS Category



The single parameter in this category, **Factory**, changes parameters to their factory defaults. If all the parameters are *already* at their default settings,

Factory = Yes

displays. If any parameters have been changed,

Factory = No

displays. To change all parameters to factory default settings, change this parameter to Yes. The message

= Loading

displays briefly before the selection changes to Yes.

NOTE: This procedure does *not* alter:

- Phone numbers (*RESTORAL main menu, PHONE NUMBER category)
- The phone number linked list (PHONE NUMBER category)
- **NC Address** (*MODIFY, MODIFY NETWORK category)
- **Password** (*AUXILIARY main menu, PROTECTION category)
- **PSW Time** (PROTECTION category)
- **Msg** (*AUXILIARY main menu, FRONT PANEL category)
- The slave address list in the master device (*MODIFY main menu, MODIFY SLAVE ADDR category)

*AUXILIARY

The *AUXILIARY main menu categories are as follows (see Figure 4-4):

- **PROTECTION** provides password protection to prevent unauthorized people from changing the configuration or running tests
- **FRONT PANEL** modifies the front panel display properties
- **RMT FRONT PANEL** begins and ends an RFP session
- **SRCH REMOTE ADDR** locates a 35XX on the network by serial number
- **SET REMOTE ADDR** locates a 35XX on the network by serial number, and copies its **NC Address** value to the **Remote Addr** parameter

RFP

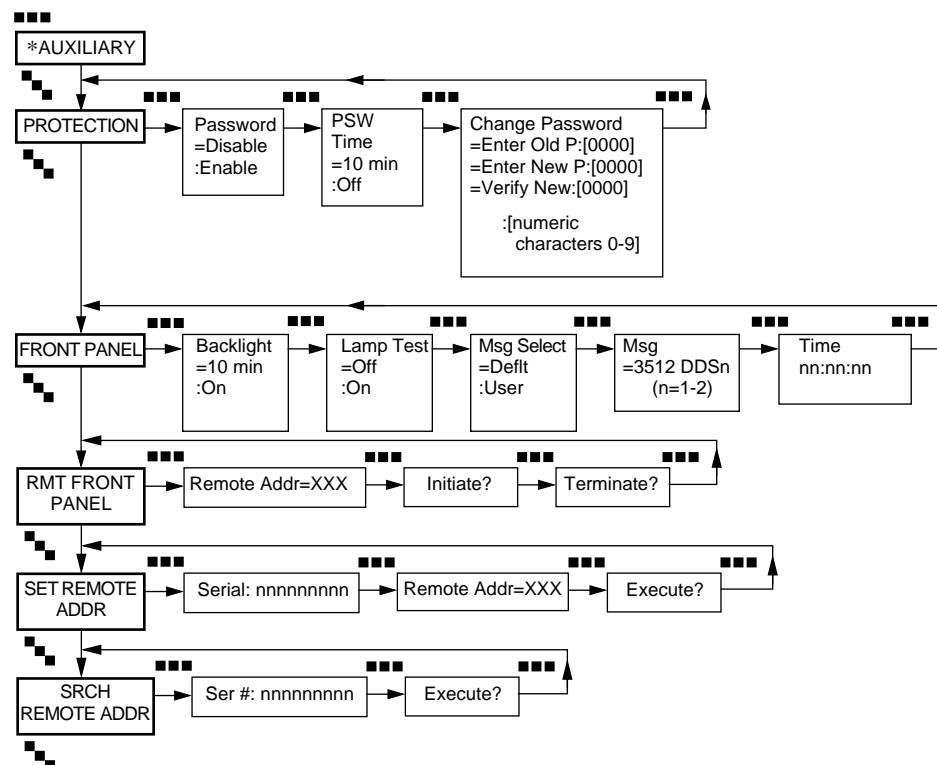
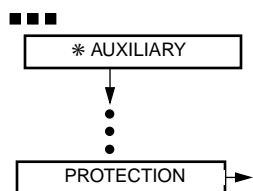


Figure 4-4. *AUXILIARY Categories, Parameters, and Options

PROTECTION Category




The PROTECTION category lets you control and modify the password functions.

NOTE: When the password function is enabled:

- Any user can *display* parameter values; the user must enter the password before *changing* a value
- When a user attempts to select or enter a new value, the 3512 displays:

PASSWORD?

The user must enter the password, then press , to proceed. The 3512 displays the parameter the user was about to change.

Password

Default:

Disable

Options:

Disable, Enable

Description:

This parameter lets you set a password on the 3512.

Disable: Lets a user change parameters without entering a password.

Enable: Prompts a user to enter a password before initiating tests or making configuration changes. Enter the password using the alphanumeric entry procedure described in Chapter 3.

NOTES:

- 1) The **PSW Time** option determines how often you use the password.
- 2) This parameter is *not* altered by the **Factory** parameter (CONFIGURATIONS category).

PSW Time (Password Time-out)

Default:

10 min

Options:

10 min, Off

Description:

Password Timeout determines how long the front panel keys can be idle before the password must be entered again. When set to Off, the password must be entered before each change is made. **NOTE:** This parameter is *not* altered by the **Factory** parameter (CONFIGURATIONS category).

Change Password

Options:

Alphanumeric characters

Description:

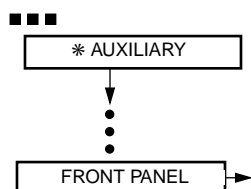
This parameter lets you change the password, as follows:

- 1) Press ⊕. “Old P 0000” displays. Enter the old password and press ⊙.
- 2) “Enter New P 0000” displays. Enter the new password and press ⊙.
- 3) “Verify New 0000” displays. Reenter the new password.
- 4) If you make an error entering the old password, or if there is a discrepancy between the second and third entries, “No Change” displays and no change is made.

IMPORTANT: The factory default password setting is 0000. If you change it, be sure to write down the new password. If you forget the new password, the unit will have to be returned to Motorola to be unlocked. This is not covered under warranty.

NOTE: This parameter is *not* altered by the **Factory** parameter (CONFIGURATIONS category).

FRONT PANEL Category



The parameters in the FRONT PANEL category modify the front panel display.

Backlight

Default:

10 min

Options:

10 min, On

Description:

This parameter controls a timeout for the backlight on the display screen.

10: The light goes off and the default display appears if the control keys are left idle for 10 minutes. The backlight comes on when any front panel key is pressed or an alarm is received.

On: The backlight stays on while the unit is powered up, and the screen shows the last display that was accessed. **NOTE:** This parameter operates independently of **PSW Time**.

Lamp Test


Default:

Off

Options:

Off, On

Description:

This is a two-second test of the display lights. When set to On, LCD characters display for two seconds. LEDs turn on for two seconds, then return to their previous state. After you select On, press  to initiate the test.

Msg (Message) Select

Default:

Deflt

Options:

Deflt, User

Description:

This parameter, along with **Msg**, next, lets you overwrite the default display with your own message.

Deflt: The default message displays on the front panel.

User: Lets you write your own message.

Msg (Message)

Default:

[Depends on 3512 feature configuration]

Options:

Alphanumeric characters

Description:

When **Msg Select**=User, you can replace the default message (*STATUS).

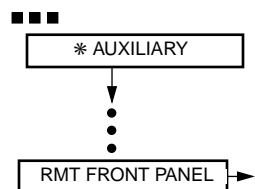
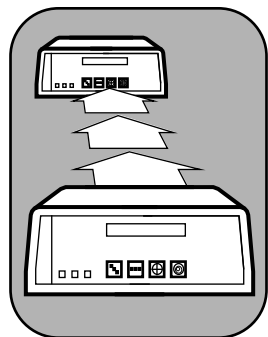
To change the message, use the alphanumeric entry procedure described in Chapter 3. To display a message, display the *STATUS menu.

Time

Description:

The 3512 has a 24-hour clock. At power-up, the time is 00:00:00, (hours:minutes:seconds). Set the time with the alphanumeric entry procedure described in Chapter 3.

RMT FRONT PANEL (RFP) Category



REMOTE FRONT PANEL (RFP) parameters let you begin and end an RFP session, and search and set remote addresses. In an RFP session, you can display and modify a *remote* 35XX's parameters from the *local* front panel. For details on operating the RFP feature, refer to Chapter 3, The Front Panel.

To have a an RFP session, both devices must have the RFP feature. For information on RFP status and error messages, refer to Appendix B.

Remote Addr (Remote Address)

Default:

0

Options:

0-250

Description:

This parameter specifies the network control address of a 3512 to control with RFP. The address is the value of its **NC Address** parameter (*MODIFY main menu, MODIFY NETWORK category).

Initiate?/Terminate?

Default:

Initiate?

Options:

Initiate?, Terminate?

Description:

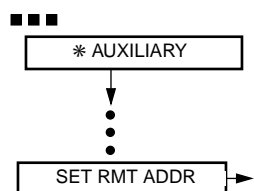
This parameter begins and ends an RFP session. The ST LED blinks throughout an RFP session. Only one session may be active at a time.

Initiate?: Select this option to begin a session with a 3512 whose NC address is already entered in the **Remote Addr** parameter.

Terminate?: Select this option to end an RFP session.

NOTE: Initiating an RFP session while the remote device is running a user-initiated test cancels the test and begins an RFP session. Initiating a service-provider-supported loop during an RFP session ends the session at the device that detected the loop and begins the test. The other device times out after three minutes; its RFP session then ends.

SET REMOTE ADDR (ADDRESS) Category



SET REMOTE ADDRESS parameters set a remote device's **NC Address**. These parameters do not operate *during* an RFP session, nor do they operate in RFP-escape mode. For details on using the RFP feature, refer to Chapter 3, The Front Panel.

Ser # (Serial Number)

Description:

This parameter *specifies the serial number* of a remote 3512 in your network. Use it to select a device whose **NC Address** parameter you want to set or change with RFP. After entering a serial number, use the **Execute?** parameter (SET REMOTE ADDR category) to effect the **NC Address** change.

Remote Addr (Remote Address)

Default:

0

Options:

0-250

Description:

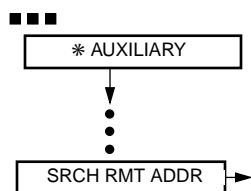
This parameter *specifies the network control address (NC Address)* of a remote 3512 in your network. Enter the address to assign to a device whose serial number is specified in **Serial** (SET REMOTE ADDR category).

Execute?

Description:

This parameter sends a command to *assign the network control address* specified in **Remote Addr** to the device specified in **Serial**. Use it to change a remote device's **NC Address** value, after entering values in the **Remote Addr** and **Serial** parameters.

SRCH REMOTE ADDR Category



SRCH REMOTE ADDRESS parameters allow you to *find a remote device's NC Address* by providing its serial number. These parameters do not operate *during* an RFP session nor in RFP-escape mode. For details on RFP, refer to Chapter 3, The Front Panel.

Ser # (Serial Number)

Description:

This parameter *specifies the serial number* of a remote 3512 connected to your network. Use it to find the **NC Address** option of a remote device. After entering a serial number, use the **Execute?** parameter (SRCH REMOTE ADDR category) to begin the search. When found,

ADDR FOUND

displays, and the **NC Address** value is put in the **Remote Addr** parameter.

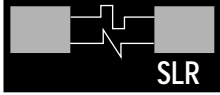
Execute?

Description:

This parameter displays the **NC Address** value of the unit specified in **Ser #**.

*RESTORAL

The *RESTORAL main menu configures restoral functions, which enable 3512s to resume transmission over an alternate line when the primary line fails. The 3512 supports the following types of restoral:



- *Integral analog Single Line Restoral (SLR).* A3512 can automatically restore transmission over the Public Switched Telephone Network (PSTN). SLR supports CCITT V.32 and V.32 bis protocols, at main channel rates of 14.4, 12.0, and 9.6 kbps. With **SLR**, **MODEM CONFIG** (Figure 4-5) displays under *RESTORAL when **Method**=Integral (**RESTORAL METHOD**).
- *Integral digital restoral.* A 3512 can automatically restore transmission over the public digital network, at a main channel rate of 56 kbps. The 3512 supports Switched-56 (**SW 56**) and leased digital services. **DIGITAL CONFIG** (Figure 4-5), displays under *RESTORAL when **Method**=Integral (**RESTORAL METHOD**).
- *External (A/B) restoral.* the 3512 redirects the aggregate data from the primary line (A) to Port 2, which can be connected to a digital transmission device (B).

NOTES:

- 1) A 3512 unit cannot have SLR *and* SW 56. When **Method**=Integral, *either* **MODEM CONFIG** *or* **DIGITAL CONFIG** displays.
- 2) The *RESTORAL menu itself displays only if you have the **time-division multiplexing (TDM)** feature or an integral restoral feature.

Refer to Chapter 6 for details and examples of restoral operations. Appropriate parameter options are also provided.

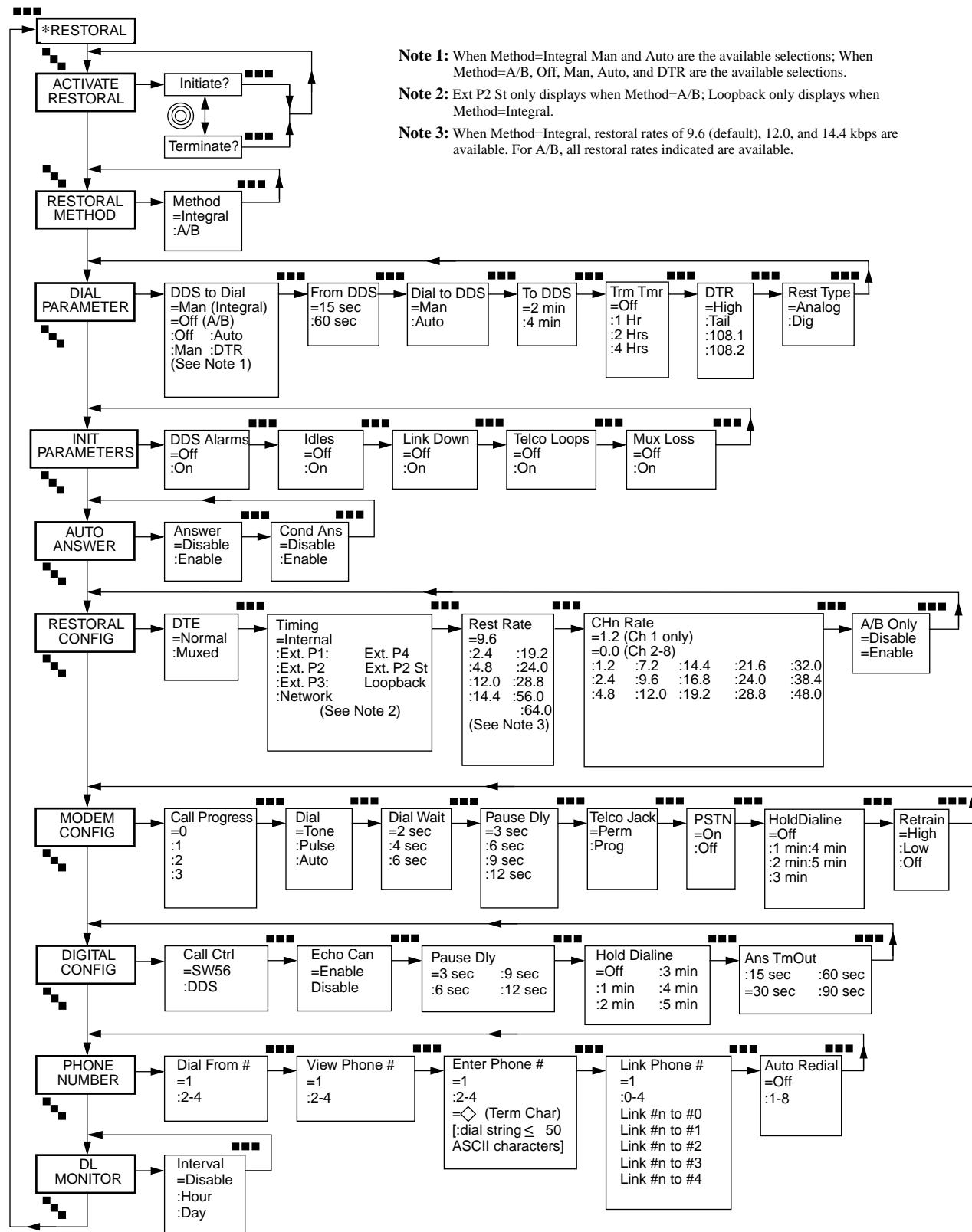
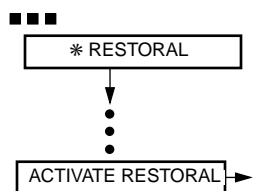


Figure 4-5. *RESTORAL Categories and Parameters

ACTIVATE RESTORAL Category



This category lets you manually initiate or terminate dial restoral. When ACTIVATE RESTOR displays, press ***. Initiate? or Terminate? displays.

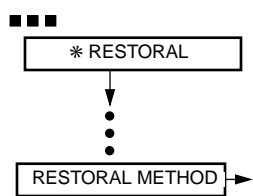
If Initiate? displays, the primary line is active. To initiate restoral on the alternate line (by Port 2), press ☉. Terminate? displays.

If Terminate? displays, the unit is either attempting to switch to the secondary line or using it already. To terminate restoral and use the primary line, press ☉. Initiate? displays.

NOTES:

- 1) If automatic restoral or termination parameters are enabled, they may override the ACTIVATE RESTOR function.
- 2) At the receiving end of any restoral call, you must set **Answer=Enable** (AUTO ANSWER category).

RESTORAL METHOD Category



This category specifies the type of restoral to use. It displays only when the 3512 is configured with more than one restoral feature.

Method

Default:

Integral

Options:

Integral, A/B

Description:

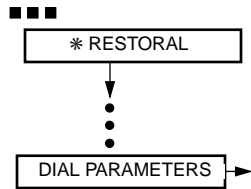
This parameter specifies the type of restoral to use.

Integral: With this option, in the event of primary line failure, the 3512 can establish a connection to another device. It reroutes data over the alternate connection until the primary line is restored.

NOTE: When using an integral digital restoral option in a network that does not have sealing current from the service provider, set **LD Detect=On** so the 3512 can detect a restoral-line failure. Refer to **LD Detect** (*MODIFY, MODIFY DSU).

A/B: With this option, in the event of primary DDS line failure, the 3512 can redirect data from the primary line (“A”) to Port 2, which is cabled to an external transmission device (“B”), such as a dial modem or a switched 56K device. **NOTE:** With A/B restoral, some operational considerations apply to the use of the **port-to-channel mapping** feature. Refer to **P-to-CH** (*MODIFY, MODIFY DSU).

DIAL PARAMETERS Category



The parameters in the DIAL PARAMETERS category specify how and when restoral is initiated and terminated.

DDS To Dial

Default:

Off (when **Method**=A/B)

Man (when **Method**=Integral)

Options:

Off, Man, Auto, DTR (when **Method**=A/B)

Man, Auto (when **Method**=Integral)

Description:

This parameter determines how restoral is initiated.

Off: When **Method**=A/B, this option disables the A/B restoral feature, so you can use Port 2 as a data port.

Man (Manual): This option prevents the 3512 from automatically initiating a restoral session. You can initiate restoral from the front panel or an NMS.

Auto (Automatic): This option allows restoral to be automatically initiated after the unit detects a condition specified in the restoral-initialization parameters. **NOTE:** You can initiate restoral manually with this option.

DTR (Data Terminal Ready): When **Method**=A/B, this option sends a DTR signal to an external device to initiate, answer, or terminate dial calls. It must be configured accordingly.

<i>If the DTR signal is...</i>	<i>The external restoral device...</i>
Asserted	Answers incoming call
De-asserted	Does not answer incoming calls

NOTE: To use DTR, set **Auto Answer**=Enable at the backup device.

From DDS

Default:

15 sec

Options:

15 sec, 60 sec

Description:

This parameter specifies, when **DDS to Dial**=Auto, how soon to initiate dial restoral upon detecting an initiate condition. **NOTE:** If **DDS to Dial**=Auto in the local *and* remote devices, they should have different **From DDS** settings to avoid call collisions.

Dial To DDS

Default:

Man

Options:

Man, Auto

Description:

This parameter specifies, when **DDS to Dial**=Auto, how the 3512 returns to the DDS (primary) line. If **Trm Tmr**=Enable, its setting overrides this parameter.

Man (Manual): Restoral must be manually terminated.

Auto (Automatic): The unit automatically returns to the primary line after INIT PARAMETER conditions are cleared. **NOTE:** If **Dial to DDS**=Auto and **Restoral Method**=Integral, dial restoral is terminated if 10 or more retrains occur within 15 minutes.

To DDS

Default:

2 min

Options:

2 min, 4 min

Description:

This parameter specifies, when **Dial to DDS**=Auto, how soon the unit returns to the primary line after INIT PARAMETER conditions are cleared.

Trm Tmr (Terminate Timer)

Default:

Off

Options:

Off, 1 Hr, 2 Hrs, 4 Hrs

Description:

The terminate timer ends restoral after the period of time you select.

When **Mux Loss**=On and **Trm Tmr**=Off, the 3512 automatically uses a **Trm Tmr** setting of 4 (hours).

DTR (Data Terminal Ready)

Default:

High

Options:

High, Tail, 108.1, 108.2

Description:

This parameter specifies how the 3512 initiates and terminates restoral in response to a DTE's DTR signal on Port 1, Pin 20. **NOTE: DTR** displays only when **Method**=Integral (RESTORAL METHOD category).

To determine the appropriate option for your DTE:

<i>With this option...</i>	<i>Initiate Restoral When DTR Asserted</i>	<i>Initiation Requires DTR</i>	<i>Automatic Initiation Requires DTR</i>
High	No	No	No
Tail	Yes	No	No
108.1	Yes	Yes	Yes
108.2	No	Yes	Yes

Rest Type (Restoral Type)

Default:

Analog

Options:

Analog, Dig

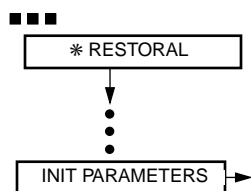
Description:

This parameter, which displays only when **Method**=A/B (RESTORAL METHOD category), specifies how the unit makes and answers dial calls.

Analog: The 3512 monitors RTS to determine when to initiate restoral on an analog dial circuit. The restoral modem's DCD is crossed over to the 3512's RTS pin.

Dig (digital): The 3512 monitors DTR to determine when to initiate restoral on an a digital circuit. CTS is crossed over to the 3512's DTR pin.

INIT (Initialization) PARAMETERS Category



These parameters specify when to automatically initiate and terminate restoral.

IMPORTANT: *For these parameters to operate, **DDS to Dial** must be set to Auto.*

DDS Alarms

Default:

Off

Options:

Off, On

Description:

With the On option and **DDS to Dial**=Auto, the 3512 automatically initiates restoral upon detecting any of these codes and alarms: Out of Service (OS), Abnormal Station (ABN Station), and No Sealing Current (NSC) on all services, and Out of Frame (OOF) only on DDS-I.

Idles

Default:

Off

Options:

Off, On

Description:

This parameter monitors Idle signals. When **DDS to Dial**=Auto, the On option makes the 3512 automatically initiate dial restoral.

NOTES:

- 1) In switched carrier applications, Idle codes may *not* indicate circuit problems (**DTE Con**=Normal and **Pn RTS**=Off).
- 2) Do *not* enable **Idles** in when **DTE Con**=MP-Mux.

MP-Mux

Link Down

Default:

Off

Options:

Off, On

Description:

When **Link Down**=On and **DDS to Dial**=Auto, the 3512 automatically initiates restoral when Link Down occurs. **NOTE:** To use **Link Down**, use you must set **Link Down Detect**=On (MODIFY DSU category).

Telco Loops

Default:

Off

Options:

Off, On

Description:

When On, this parameter monitors loopback signals from the service provider. When they occur, if **DDS to Dial**=Auto, the 3512 automatically initiates restoral. Refer to the **RT or LTCH LB** parameter description, above, for important information.

NOTES:

- 1) Set this parameter with care. An LL (CSU) Loopback signal starts a loopback and triggers restoral, if the 3512 is enabled to do so.
- 2) If an RT makes the 3512 auto-initiate restoral, the unit does not execute the RT during the restoral session.

Mux Loss

Default:

Off

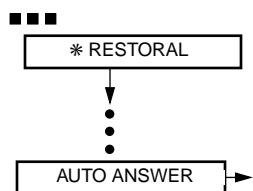
Options:

Off, On

Description:

When **Mux Loss**=On and **DDS to Dial**=Auto and the 3512 detects loss of mux framing synchronization, it automatically initiates restoral, in accordance with the **From DDS** option. Automatic termination of restoral can only occur in accordance with the **Trm Tmr** option. **Dial to DDS** auto-termination does not apply.

AUTO ANSWER Category



The parameters in the AUTO ANSWER category specify whether the unit answers a restoral call. **NOTE:** Refer to the **DTR** parameter (DIAL PARAMETERS).

Answer

Default:

Disable

Options:

Disable, Enable

Description:

Enable: With this option, the 3512 automatically answers a call as follows:

- With integral restoral: when the 3512 detects an incoming restoral call
- With A/B restoral: when the 3512 detects DTR or RTS on Port 2

Answering can be further refined by **Conditional Answer**, next.

NOTE: Set **Answer**=Enable in at least one 3512, so a call can be answered.

Cond Answer (Conditional Answer)

Default:

Disable

Options:

Disable, Enable

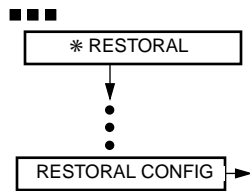
Description:

Specifies whether the unit answers a call. At least one INIT PARAMETER condition must be enabled for **Conditional Answer** to operate.

Disable: The 3512 answers according to the **Answer** parameter setting.

Enable. When **Answer** is also enabled, the 3512 answers based on line conditions. If one or more of the enabled INIT PARAMETER conditions are present when a call is received, the unit answers.

RESTORAL CONFIG Category



RESTORAL CONFIG parameters define how the 3512 operates during restoral.

DTE (Data Terminal Equipment)

Default:

Normal

Options:

Normal, Muxed

Description:

This parameter determines how DTE data is transmitted.

Normal (Main Channel mode): With this option, the DTE rate is equal to the full restoral line rate.

<i>When...</i>	<i>There is...</i>
DTE =Normal and Method =A/B	No secondary channel
Method =Integral	A secondary channel

Muxed: With this option, the 3512 uses TDM or Rate Adaptation to provide secondary-channel transmission as well as data transmission.

For details on Normal and Muxed modes, refer to **DTE Con** (MODIFY PORT). **NOTE:** Bitstealing is not available in restoral. As an alternative, set this parameter to Muxed and specify the highest available port rate.

Timing

Default:

When **Method**=SW 56 (RESTORAL METHOD), Network
Internal

Options:

Internal, Ext. P_n ($n=1-4$), Ext P2 St, Loopback, Network

Description:

This parameter specifies the 3512's timing source.

Internal: The 3512 generates timing internally.

Ext P_n ($n=1-4$): The DTE on Port n provides timing.

Ext P2 St: An external restoral device on Port 2 provides timing.

Loopback: The received analog signal provides timing.

NOTE: The Ext P2 St and Loopback options operate only when **Method**=Integral (RESTORAL METHOD) and SLR is available.

Network: The received digital signal provides timing. **NOTE:** This option operates only when **Method**=Integral (RESTORAL METHOD) and the digital restoral feature is available.

Rest Rate (Restoral Rate)

Default:

9.6

Options:

When **Method**=A/B: 2.4, 4.8, 9.6, 12.0, 14.4, 19.2, 24.0, 28.8, 38.4, 48.0, 56.0, and 64 kbps

When **Method**=Integral: 9.6, 12.0, and 14.4

Description:

This parameter specifies the restoral line rate (or, when **Method**=A/B, the Port 2 data rate). The rates are those available for common dial backup devices, such as 2- and 4-wire modems and switched digital units. This parameter does not display when **Call Control**=SW56 or DDS; with these options, **Rest Rate** is automatically set to 56.0. This parameter does not display when the integral digital restoral feature is installed.

SLR Automatic Rate-Negotiation Feature

Automatic rate negotiation enables the 3512 to adapt its line rate to another's, as follows: during the modem training sequence at the start of restoral, each device transmits its **Rest Rate** value to the other. If they are not equal, the devices use the lower rate. This lets a 3512 access a restoral pool, such as a mix of 14.4 kbps V.32 bis and 9.6 kbps V.32 modems.

For example, if a 3512 with **Rest Rate**=14.4 kbps trains with one whose value is 9.6, the resulting rate is 9.6.

In *single-channel operations* (where **DTE Con**=Normal), rate negotiation sets Port 1's line rate.

In *TDM applications*, (where **DTE**=Muxed), rate negotiation subtracts channel bandwidth, until the channels' aggregate bandwidth is less than the restoral line rate. Starting with the highest-numbered channel that is assigned bandwidth, the 3512 decrements its rate in the following steps: 14.4, 12.0, 9.6, 7.2, 4.8, 2.4, 1.2, 0, until the aggregate bandwidth is less than the restoral line rate. If it decrements to 0 without matching the restoral line rate, the 3512 selects the next-highest numbered channel and decrements as above.

Example 1: A local 3512 with **Rest Rate**=14.4, and remote unit with **Rest Rate**=12.0. The local unit initiates restoral and negotiates a line rate of 12.0, and its Channel 4 rate changes to 1.2 kbps.

Local Channel	Rate Before Negotiation	Rate After Negotiation
1	4.8	4.8
2	2.4	2.4
3	2.4	2.4
4	2.4	1.2

Example 2: A local 3512 with **Rest Rate**=14.4, and remote unit with **Rest Rate**=9.6. The local unit initiates restoral and negotiates a line rate of 9.6.

Local Channel	Rate Before Negotiation	Rate After Negotiation
1	4.8	4.8
2	2.4	2.4
3	2.4	1.2
4	2.4	0.0

CH_n Rate (n=1-8)

Default:

Varies with configuration and features

Options:

When Restoral Method=...	And Restoral Type Is...	Channel Rate Options Are (kbps):
A/B	External	0.0, 1.2, 2.4, 4.8, 7.2, 9.6, 12.0, 14.4, 16.8, 19.2, 21.6, 24.0, 28.8, 32.0, 38.4, 48.0, 56.0
Integral	Digital	0.0, 1.2, 2.4, 4.8, 7.2, 9.6, 12.0, 14.4, 16.8, 19.2, 21.6, 24.0, 28.8, 32.0, 38.4, 48.0
Integral	SLR	0.0, 1.2, 2.4, 4.8, 7.2, 9.6, 12.0

Description:

This parameter sets the restoral data rate for channel *n*. The option may be any standard rate, as long as the sum of channel rates is less than the aggregate data rate. (When **Method**= A/B, Channel 2 is not shown.)

NOTES:

- 1) **CH_n Rate** displays only when **DTE**=Muxed (RESTORAL CONFIG).
- 2) Asynchronous data rates up to 19.2 kbps are supported. Refer to “Port-to-Channel Mapping” in Chapter 6 for details on mapping ports to channels, along with application examples.
- 3) The automatic rate negotiation feature enables the unit to adapt its line rate to that of another unit. Refer to **Restoral Rate**, above.

A/B Only

Default:

Disable

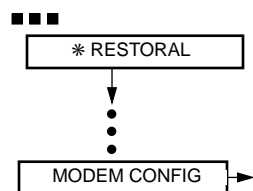
Options:

Disable, Enable

Description:

Set this parameter to Enable if your application runs only on an alternate (“B”) line and there is no application on the primary (“A”) line.

MODEM CONFIG Category



MODEM CONFIG parameters define how the 3512 operates in analog dial restoral. This category displays on 3512s with the SLR feature when **Method**=Integral.

Call Progress

Default:

0

Options:

0, 1, 2, 3

Description:

Call Progress determines how the 3512 establishes calls.

0: Call Progress with Busy Detect. The 3512 goes off-hook and waits for dial tone:

- Dial tone: the 3512 dials
- No dial tone: the 3512 hangs up

After processing the phone number characters, including dial modifiers, the 3512 waits for answer-back tone or busy detect:

- Answer-back tone: the 3512 starts its training sequence
- No answer-back tone, or busy tone: the 3512 hangs up

1: Call Progress. The 3512 goes off-hook and waits for dial tone:

- Dial tone: the 3512 dials
- No dial tone: the 3512 hangs up

After processing the phone number characters, including dial modifiers, the 3512 waits for answer-back tone:

- Answer-back tone: the 3512 starts its training sequence
- No answer-back tone: the 3512 hangs up

2: Blind Dial with Busy Detect. The 3512 goes off-hook, waits several seconds and dials. After processing the phone number characters, including dial modifiers, the 3512 looks for answer-back tone or busy detect:

- Answer-back tone: the 3512 starts its training sequence
- No answer-back tone, or busy tone: the 3512 hangs up

3: Blind Dial. The 3512 goes off-hook, waits several seconds, and dials. After processing the phone number characters, including dial modifiers, the 3512 looks for answer-back tone.

- Answer-back tone: the 3512 starts its training sequence
- No answer-back tone: the 3512 hangs up

Dial

Default:

Tone

Options:

Tone, Pulse, Auto

Description:

This parameter specifies how the 3512 dials phone numbers that do not have the **T** or **P** modifier.

Tone: The unit tone (DTMF) dials.

Pulse: The unit pulse dials.

Auto: The unit attempts to tone dial; if tone dialing is not possible, it pulse dials. **NOTE:** Do not use this option in a PBX environment.

Dial Wait

Default:

2 sec

Options:

2 sec, 4 sec, 6 sec

Description:

This parameter determines how long the 3512 waits for a dial tone when it encounters a dial wait modifier. (Table 4-2 describes dial modifiers in detail.)

NOTE: You cannot enter lowercase dial modifiers through the front panel; however, the 3512 reacts to these characters if they are sent from an NMS.

Pause Dly (Pause Delay)

Default:

3 sec

Options:

3 sec, 6 sec, 9 sec, 12 sec

Description:

This parameter determines how long the 3512 pauses when it encounters pause delay dial modifiers in a phone number (refer to Table 4-2).

NOTE: You cannot enter lowercase dial modifiers through the front panel; however, the 3512 reacts to these characters if they are sent from an NMS.

Telco Jack

Default:

Perm

Options:

Perm, Prog

Description:

This parameter specifies the type of jack to which the 3512 is connected; this distinction controls the line transmit level.

Perm: Specifies a permissive voice jack, where the transmit level is -9 dBm.

Prog: Specifies a programmable data jack, where the transmit level is determined by the jack.

PSTN (Public Switched Telephone Network)

Default:

On

Options:

On, Off

Description:

This parameter determines how the 3512 handles disconnect signaling when operating in the V.32 or V.32 bis modulation mode.

On: The 3512 signals the remote device before it disconnects.

Off: The 3512 disconnects without signaling the remote device.

HoldDiaLine (Hold Dial Line)

Default:

Off

Options:

Off, 1min, 2min, 3min, 4min, 5min

Description:

This parameters lets the 3512 automatically hold a dial connection when it returns to the primary line. If restoral is re-initiated within the time specified, the 3512 retrains, and data transmission resumes on the restoral line. This feature eliminates the need to redial the remote phone number to reestablish the restoral connection.

NOTES:

- 1) To function properly, **HoldDiaLine** must be enabled in both the local and remote device.
- 2) The 3512's **HoldDiaLine** function is not compatible with the 326X Series modem's **HoldDiaLine** function.

Retrain

Default:

High

Options:

High, Low, Off

Description:

This parameter controls the automatic retrain feature. Use the Off option *only* for testing.

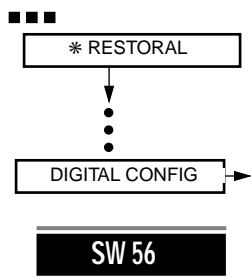
High: Using V.32 or V.32 bis, the 3512 retrains when the BER > 10^{-3} for eight seconds. This option is less sensitive than the Low option.

NOTE: Motorola recommends this setting for most applications.

Low: Using V.32, or V.32 bis, the 3512 retrains when the BER > 10^{-4} for eight seconds. This option is more sensitive than the High option.

Off: The 3512 does not automatically initiate retrains, but responds to retrains from the remote 3512.

DIGITAL CONFIG Category



This category displays on 3512s that have the digital restoral feature when **Method**=Integral. DIGITAL CONFIG parameters define how the 3512 operates in digital restoral.

Call Cntrl (Call Control)

Default:

SW56

Options:

SW56, DDS

Description:

Call Control selects the restoral-line type.

SW56: Selects a switched digital 56 kbps line.

DDS: Selects a digital 56 kbps DDS-I line.

Echo Can (Echo Cancel)

Default:

Enable

Options:

Enable, Disable

Description:

This parameter displays only when **Call Control**=SW56. It determines whether to transmit an Echo Canceller signal during a call set-up sequence.

Pause Dly (Pause Delay)

Default:

3 sec

Options:

3 sec, 6 sec, 9 sec, 12 sec

Description:

Pause Dly displays only when **Call Control**=SW56. It determines how long the 3512 pauses for pause delay dial modifiers in a phone number (refer to Table 4-2). SW 56 supports the following dial modifiers:

Modifier	Symbol	Description
Digits	0 through 9	Telephone number
Letter K, less-than, comma	K k < ,	Instructs the 3512 to pause during dialing and specifies how long to pause

HoldDialine

Default:

Off

Options:

Off, 1min, 2min, 3min, 4min, 5min

Description:

HoldDiaLine displays only when **Call Control**=SW56. It lets the 3512 automatically hold the dial connection when it returns to the primary line.

If restoral is re-initiated within the time specified, data transmission resumes on the dial line. This feature eliminates the need to redial the remote 3512 phone number to reestablish the dial connection. **NOTE:** To function properly, **HoldDiaLine** must be enabled in *both* the local and remote device.

Ans Timeout (Answer Timeout)

Default:

30 sec

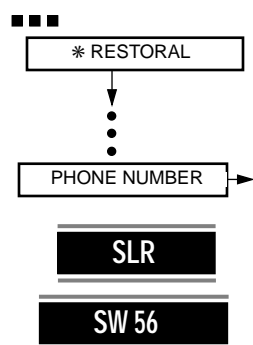
Options:

15 sec, 30 sec, 60 sec, 90 sec

Description:

Answer Timeout displays only when **Call Control**=SW 56. It determines how long the originate device waits for the answer device to answer its call before disconnecting.

PHONE NUMBER Category



PHONE NUMBER parameters let you enter phone numbers and specify how the 3512 accesses and dials them. This category displays only when either:

- **Method**=Integral (RESTORAL METHOD category) and SLR is available
- **Method**=Integral (RESTORAL METHOD category), integral digital restoral is available, and **Call Control**=SW 56

Table 4-2 lists the 3512's dial modifiers. **NOTE:** You can enter only uppercase dial modifiers through the 3512's front panel; however, the 3512 reacts to lowercase dial modifiers sent from an NMS.

Table 4-2.
3512 Dial Modifiers

Modifier	Symbol	Description
Digits	0 through 9	Used for phone number.*
Dial Wait	W w:	Instructs the 3512 wait for a dialtone; specifies how long to wait. When the 3512 detects a dialtone, it dials the remaining digits/characters as if the call had been initiated from that point. If the 3512 does not detect a dialtone after a dial wait modifier, it hangs up. (*RESTORAL main menu, MODEM CONFIG category).
Pause Delay	, K k <	Instructs the 3512 to pause during dialing; specifies how long to wait. (*RESTORAL main menu, MODEM CONFIG or DIGITAL CONFIG category).
Pulse	P p	Instructs the 3512 to pulse dial the numbers that follow it. Without pulse modifiers in the number stream, the 3512 dials according to the Dial parameter setting. (*RESTORAL main menu, MODEM CONFIG category).
Tone	T t	Instructs the 3512 to tone dial the numbers that follow it. Without tone modifiers in the number stream, the 3512 dials according to the Dial parameter setting. (*RESTORAL main menu, MODEM CONFIG or DIGITAL CONFIG category).
Flash	&!	Instructs the 3512 to flash hook (a PBX control signal to enable special dialing features).
Space	(space)	Presentation characters, ignored by the 3512.
Period	.	
Hyphen	-	
Diamond	(Diamond)	
ABCD * #	ABCD * #	Special tones for telephone systems that use DTMF (tone) dialing.
Quiet Answer	@	Instructs the 3512 to wait for ringback followed by 5 seconds of silence.
Disconnect	;H	Instructs the unit to hang up; used in conjunction with Quiet Answer to communicate with a Motorola 326X Series modem that uses Quiet Answer Password Security.
Termination	◇	Indicates the end of a dial string, which may consist of up to 50 alphanumeric characters.

*SW 56 supports only these modifiers; it ignores other characters

Dial From

Default:

1

Options:

1, 2, 3, 4

Description:

Dial From # specifies the phone number (1, 2, 3, or 4) the 3512 dials first.

Use ⊕ to scroll through the selections, and ◎ to select a number.

NOTE: Before using this parameter, enter at least one telephone number into the 3512, using **Enter Phone#**, below.

View Phone

Default:

1

Options:

1, 2, 3, 4

Description:

View Phone # lets you select a phone number to view. To view a number:

- 1) From the *RESTORAL menu, press ■ until PHONE NUMBER displays.
- 2) Press ■ until
View Phone #=n
displays, where n equals 1-4.
- 3) Press ⊕ until the number you want displays. Press ◎ to select it. The number displays (if a number has not been entered, 16 ◇s display).
- 4) Press ■ to scroll through the number until the ◇ displays.
- 5) Press ■ to return to the beginning of the dial string. Press ■ again and View Phone #=n displays (where n is the number you chose to view).

NOTE: Before using parameter, enter a telephone number into the 3512, using **Enter Phone#**, below.

Enter Phone

Default:

1

Options:

1, 2, 3, 4

Description:

This parameter stores up to four alphanumeric phone numbers of up to 50 characters each. To enter or overwrite numbers in the 3512:

- 1) From the *RESTORAL menu, press **■** until PHONE NUMBER displays.
- 2) Press **■** until
Enter Phone #=n
displays (where n equals 1-4).
- 3) Press **⊕** until the number to enter is displayed. Press **⊙**.
The LCD clears with the exception of the **◇** in the rightmost position.
- 4) You can now enter the phone number. Press **⊕** to scroll through the numerals (0-9) and dial modifiers available at each position.
- 5) When you reach the number or dial modifier to select, press **■**, which moves each character one space to the left, leaving a **◇** at the right.
- 6) Continue, using the **⊕** and the **■** keys until you have entered the complete dial string (refer to Table 4-2).
If you make a mistake, press **■** *once*. This displays the first number you entered, at the right. Press **■** to scroll through the characters you have entered. When you reach the position of the error, use the **⊕** key to select the correct character.
- 7) Press **⊙** to save the dial string.
Enter Phone #=n
displays, where n equals the phone number (1-4) you entered.

If, while entering a number, you want to display **Enter Phone #=n**, press **■** twice. The message:

Entry Cancelled!

displays briefly, indicating that the old string was retained.

Enter Phone #=n

displays, where n equals the phone number (1-4) you started to enter.

NOTES:

- 1) The 3512 ignores characters that are not in its character set (Table 4-2).
- 2) You can enter only uppercase dial modifiers through the front panel. However, the 3512 responds to lowercase characters from an NMS.
- 3) A space, period, or hyphen between characters is not required for operation; it is used for display only.

Link Phone

Default:






1

Options:

0, 1, 2, 3, 4


Description:

This parameter specifies the order in which the 3512 dials telephone numbers (specified by **Enter Phone #**), if the first call cannot be completed.


- 1) From the *RESTORAL menu, press  until PHONE NUMBER displays.
- 2) Press  until
Link Phone #=*n*
displays, where *n* is the phone number, 1-4, that you can choose to link.
- 3) Press  until the number to link displays. Press .
- 4) Press  again.



Link #*n* to #: *m*

displays, where *n*=the number you selected in Step 3, and *m*=the number to which you can link *n*.

Press  to scroll through the numbers (0-4) to which you can link.

NOTE: The number to which you are linking (chosen in Step 3) does not display, because a number cannot be linked to itself.

- 5) *n* the number you want displays, press . The following displays:
Link #*n* to #=*m*

- 6) The  and  keys return you to the main parameter display:
Link Phone #=*n*

- 7) Repeat Steps 1 through 7 to link the remaining phone numbers.

NOTES:

- 1) A number can be linked to any other number, in any order.
For example, you can link 1 to 2, 2 to 3, 3 to 4, and 4 to 0.
- 2) You can select to *not* link a number (choose Link #*n* to #=0). If you do this, the 3512 redials the number of times specified by **Auto Redial**.
- 3) When enabled, linking occurs regardless of the reason for the failed call.

Auto Redial

Default:

Off

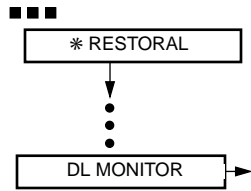
Options:

Off, 1, 2, 3, 4, 5, 6, 7, 8

Description:

Auto Redial specifies the number of times the 3512 redials. With linked numbers, the 3512 dials all numbers before it auto redials. **NOTE:** Redial occurs regardless of the reason for the failed call.

DIAL LINE MONITOR (DLM) Category



The single Dial Line Monitor (DLM) parameter specifies how often to test the alternate line, to help you ensure that it is available when needed. This category displays only when the 3512 has an integral-restoral feature configured.

Interval

Default:

Disable

Options:

Disable, Hour, Day

Description:

This parameter determines how often the 3512 tests the alternate line for the appropriate “live line” signal:

<i>With this alternate line...</i>	<i>And this restoral....</i>	<i>DLM monitors for...</i>	<i>For this:</i>
Analog	SLR	Interval specified in Dial Wait	Dial tone
Digital	SW 56	Five seconds	Wink signal

After a failed test, the 3512 generates the appropriate message or alarm, and notifies the NMS, if configured to do so:

<i>If the line is...</i>	<i>This message displays...</i>	<i>This alarm goes to the queue and NMS...</i>	<i>And this LED goes on:</i>
OK	DL Monitor Pass	[none]	[none]
Not OK	DL Monitor Fail	DLMF	Alarm

If the line passes the DLM test, DLM clears any open DLM alarms.

You can set DLM from the front panel, from an NMS, or through Remote Front Panel (RFP). The test runs as follows:

- When the unit is powered up
- Each time you select the Hour or Day options
- At the specified interval (hourly or daily)

When the test is initiated, it interacts with other conditions as follows:

<i>If...</i>	<i>DL Monitor...</i>
The alternate line is active	Does not run; initiates at next scheduled interval
A service-provider initiated SW 56 test is active	Does not run; initiates at next scheduled interval
Hold Dial Line is in progress	Does not run; initiates at next scheduled interval
Restoral is triggered while DLM is running	Completes; restoral begins

Disable: With this option, DLM does not run.

Hour: With this option, DLM is initiated once per hour, beginning at power-up or when the option is set, whichever occurred later.

Day: With this option, DLM is initiated once per 24 hours, beginning at power-up or when the option is set, whichever occurred later.

*DUALVIEW

The DualVIEW feature controls certain 3512 functions from IBM's NetView Network Management System, from a Motorola 9800 or 9300 Network Management System (NMS), or from both, concurrently. From NetView, you can access 3512 status information and run a transmit-receive test. From an NMS, you can do these functions, run additional tests, and configure the 3512. DualVIEW is *not* available:

- When 64k CC service is configured
- When **Data Rate**=64LDM
- On the 3512 SDC Port 3, when **P3**=Compress

SDC only

Figure 4-6 shows *DUALVIEW categories and parameters.

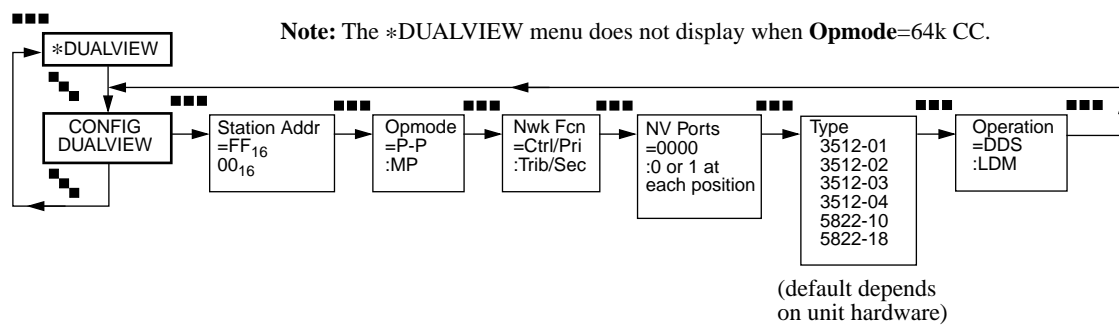
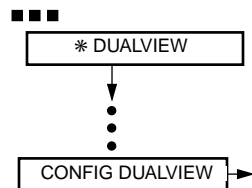


Figure 4-6. *DUALVIEW Category and Parameters

CONFIG DUALVIEW Category



CONFIG DUALVIEW parameters let you manage the DualVIEW feature.

Station Addr (Station Address)

Default:

FF₁₆

Options:

01₁₆ to FF₁₆, excluding FB₁₆, FC₁₆, FD₁₆, and FE₁₆

Description:

This parameter assigns a two-digit address to the 3512 for NetView addressing. Local devices should be addressed as either 01₁₆ or 02₁₆, because with LPDA the 3512 can only send to the first or second tier.

This parameter is *not* altered by the **Factory** parameter (*MODIFY main menu, CONFIGURATIONS category).

Opmode (Operating Mode)

Default:

P-P

Options:

P-P, MP

Description:

P-P: P-Indicates that the 3512 is installed in a point-to-point application.

MP: Indicates that the 3512 is installed in a multipoint application.

Refer to Chapter 9, DualVIEW, for details on each option's rules.

Nwk Fnc (Network Function)

Default:

Ctrl/Pri

Options:

Ctrl/Pri, Trib/sec

Description:

This parameter specifies from which direction the 3512 receives NetView commands.

Ctrl/Pri: (Control/Primary). Specifies that this 3512 receives LPDA-2 network management commands at the DTE interface.

Trib/Sec: (Tributary/Secondary). Specifies that this 3512 receives LPDA-2 network management commands at the DDS line interface.

In a point-to-point configuration, NetView identifies the local device as Primary and the remote device as Secondary.

In a multipoint configuration, NetView identifies the local device as Control and the remote devices as Tributary.

NV Ports (NetView Ports)

Default:

1-port unit: 0
2-port unit: 00
3-port unit: 000
4-port unit: 0000

Options:

0, 1 at each position

Description:

NV Ports identifies which physical ports permit for NetView monitoring.

NOTE: This parameter displays only when **Nwk Func**=Ctrl/Pri.

On the display, each *position* represents a port, with Port 1 represented by the leftmost character. The number of digits corresponds to the number of physical ports (TDM or channel sharing) in the 3512. At each position:

0: Disables NetView monitoring.

1: Enables NetView monitoring.

Type

Default:

1-Port 3512: 3512-01
2-Port 3512: 3512-02
3-Port 3512: 3512-03
4-Port 3512: 3512-04

Options:

3512-01, 3512-02, 3512-03, 3512-04, 5822-10, 5822-18

Description:

This parameter indicates the device information that is sent to NetView.

3512: NetView shows 3512 as model type.

5822-10: NetView shows IBM 5822 as DSU type and 10 as model.

5822-18: NetView shows IBM 5822 as DSU type and 18 as model.

Operation

Default:

DDS

Options:

DDS, LDM

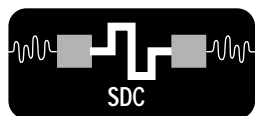
Description:

This parameter indicates to the NetView manager whether the 3512 is operating over DDS or private wire, limited-distance circuits. (For timing options, refer to the **Timing** parameter in this chapter.)

DDS: The 3512 operates over a DDS network.

LDM: The 3512 operates as a limited distance modem or line driver.

*COMPRESSION



You configure the 3512 SDC's data-compression operating characteristics under the *COMPRESSION menu (Figure 4-7). Only 3512 SDCs display this menu.

NOTE: There is a special reference card to use with the 3512 SDC: *3512 SDC DSU/CSU Reference Card* (Part No. 09831-5, Rev B).

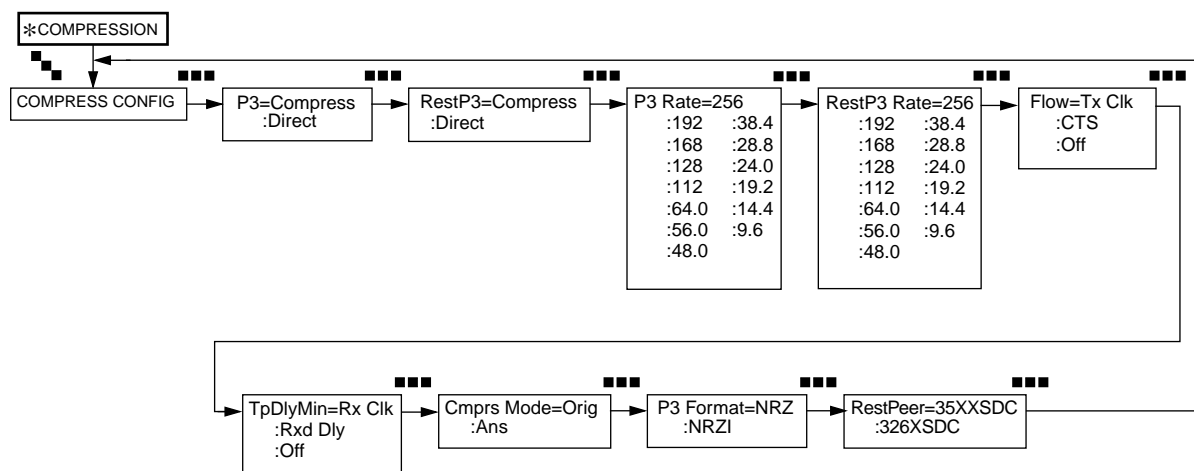
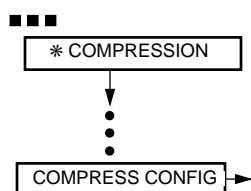


Figure 4-7. *COMPRESSION Categories, Parameters, and Options



COMPRESS CONFIG Category

This section describes the parameters under COMPRESS CONFIG, the only category under the *COMPRESSION main menu.

P3 (Port 3)

Default:

Compress

Options:

Compress, Direct

Description:

P3 options specify whether Port 3 compresses and decompresses data that it passes to and from the leased line. Port 3 provides a V.35 interface.

Direct: Port 3 does not compress and decompress data; it provides a standard protocol-transparent DTE port.

Compress: Port 3 accepts *only* High-level Data Link Control (HDLC) synchronous, framed data. It compresses transmit data, decompresses received data, and performs error-correction and error-detection functions.

RestP3 (Restoral Port 3)

Default:

Compress

Options:

Compress, Direct

Description:

RestP3 specifies whether Port 3 compresses and decompresses data when operating in restoral mode.

Direct: Port 3 does not compress and decompress data; it provides a standard protocol-transparent DTE port.

Compress: Port 3 accepts *only* High-level Data Link Control (HDLC) synchronous, framed data. It compresses transmit data, decompresses received data, and performs error-correction and error-detection functions.

P3 Rate (Port 3 Rate)

Default:

256

Options:

256, 192, 168, 128, 112, 64.0, 56.0, 48.0, 38.4, 28.8, 24.0, 19.2, 14.4, 9.6

Description:

P3 Rate specifies the clock rate provided to the DTE on Port 3 when operating in leased line mode.

Rest P3 Rate (Restoral Port 3 Rate)

Default:

256

Options:

256, 192, 168, 128, 112, 64.0, 56.0, 48.0, 38.4, 28.8, 24.0, 19.2, 14.4, 9.6

Description:

Rest P3 Rate specifies the clock rate provided to the DTE on Port 3 when operating in restoral mode.

Flow (Flow Control)

Default:

Tx Clk (Transmit Clock)

Options:

Tx Clk, CTS, Off

Description:

Flow Control specifies how the 3512 SDC responds when the DTE transfers data to Port 3 at a faster rate than the 3512 can compress and transmit. When this happens, the unit's *data buffer*, or temporary storage area, fills up. **Flow Control** provides ways to slow down DTE input to prevent data loss.

Tx Clk (Transmit Clock Stopping): The unit temporarily stops Port 3's transmit clock when the buffer fills. This stops the flow of incoming data long enough to clear the buffer.

CTS (Clear To Send): The unit temporarily de-asserts the CTS signal when the buffer fills. This signals the DTE to stop sending data until CTS is re-asserted. This function overrides the **P3** CTS parameter setting (*MODIFY main menu, MODIFY PORT category).

Off: The unit discards user data when the buffer fills.

TpDlyMin (Throughput Delay Minimization)

Default:

Rx Clk

Options:

Rx Clk, Rxd Dly, Off

Description:

This parameter specifies how the 3512 SDC re-assembles received data-frame fragments in order to transfer whole frames to the DTE. Compared to standard, or data-transparent, DSUs, data compression adds throughput delay. **TpDlyMin** minimizes this delay.

Rx Clk (Receive Clock): The unit begins transferring received frame fragments to the DTE port when it receives the first fragment. If subsequent fragments do not arrive before the frame is completely transferred, the Port 3 receive clock stops until the next fragment is received to prevent a data underrun from occurring. Use this option if your DTE supports receive clock stopping.

RxD Dly (Receive Data Delay): The unit begins transferring frame fragments to the DTE port when the results of a statistical algorithm indicate that the unit will receive remaining fragments in time to transfer a full frame to the DTE port. With this setting, occasional underruns may occur. Use this setting only if your DTE does not support receive-clock stopping and you have a delay-sensitive application.

Off: The unit begins transferring a frame to the DTE port when it has received an entire frame. Use this option if your DTE does not support receive clock stopping and the application is not delay-sensitive.

Cmprs Mode (Compress Mode)

Default:

Orig

Options:

Orig, Ans

Description:

Compress Mode identifies the A ends of a leased-line link. It does not apply to restoral modes, which automatically determine ends.

Orig (Originate): Specifies that the local unit is the Originate end.

Ans (Answer): Specifies that the local unit is the Answer end.

P3 Format (Port 3 Data-Signaling Format)

Default:

NRZ

Options:

NRZ, NRZI

Description:

P3 Format specifies the Port 3 data signaling format in compression mode.

NRZ: Standard non-return to zero encoding.

NRZI: Non-return to zero inverted encoding.

RestPeer (Restoral Peer)

Default:

35XXSDC

Options:

35XXSDC, 326XSDC

Description:

Restoral Peer specifies the remote compression/decompression device type for restoral-mode operation.

35XXSDC: Specifies that the remote device is a 35XX SDC.

326XSDC: Specifies that the remote device is a 326X SDC.

