



# **DIGILINK DLC510 FUNCTION MODULE**



**Dual-Port L-Band Demodulator  
and Satellite Scanner**

**Installation and Operations  
Manual**





# **DLC510 Function Module**

**Dual-Port L-Band Demodulator and Satellite Scanner**

## **Installation and Operations Manual**

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Revision history for the *DLC510 Function Module Installation and Operations Manual*.

**Table 0-1. Manual Revision History**

Revision History			
Revision	Document Number	Date	Reason for Change
A	AR200-008510-00_A	May, 2016	Initial release.
B	AR200-008510-00_B	December, 2016	Updated images and copy.



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# About This Manual

This manual provides instructions for installing, configuring, and operating the DLC510 function module.

## Audience

This manual is intended for the following trained and qualified service personnel who are responsible for installing and operating the DLC510 module:

- System installer
- Hardware technician
- System operator

## Related Documentation

The following documentation contains material related to the DLC510 function module:

Document	Provides . . .
<i>DLC510 Data Sheet</i>	Product operating and environmental specifications, and regulatory conformance information.
<i>DLC510 Quick Start Guide</i>	Product configuration information and descriptions of the front and rear panel status LED operations.
<i>DigiLink Video Platform Chassis Installation and Operations Manual</i>	Overview and installation instructions for the DigiLink media transport platform chassis options, including the following: <ul style="list-style-type: none"><li>• DL4360x chassis—Installation of this 12-slot chassis, power supplies, switch module, and function modules.</li><li>• DL4300 chassis—Installation of this 12-slot chassis, power supplies, and function modules.</li><li>• DL4000 chassis—Installation of this 4-slot chassis, power supplies, and function modules.</li></ul>
<i>DigiLink Media Transport Platform Chassis Data Sheet</i>	Overview of the DigiLink media transport platform chassis options.
<i>DigiLink Manager Setup and Operations Manual</i>	Overview and operating instructions for the DigiLink Manager element management system.

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# Symbols and Conventions

This manual uses the following symbols and conventions.

## Caution

A caution means that a specific action you take or fail to take could cause harm to the equipment or to the data transmission.



## Warning

A warning describes an action you take or fail to take that could result in death, serious physical injury, or destruction of property.

**Note:** Important related information, reminders, and recommendations.

*Italics*—used for emphasis, for indicating the first occurrence of a new term, and for book titles

1. Numbered list—where the order of the items is important
  - Bulleted list—where the items are of equal importance and their order is unimportant

# Artel Customer Service

You can reach Customer Service by e-mail at [customer@artel.com](mailto:customer@artel.com) or by telephone:

In the US call (800) 225-0228, then select 1 for technical support.

Outside the US call (978) 263-5775, then select 1 for technical support.

When requesting assistance, please be ready to provide the following information:

- Your name and telephone number
- Product model and serial number
- Brief description of the problem
- List of symptoms
- Steps you have already taken to try to resolve the problem

## If the product is damaged

If any portion of the unit is damaged, forward an immediate request to the delivering carrier to perform an inspection of the product and to prepare a damage report. Save the container and all packing materials until the contents are verified.

Concurrently, report the nature and extent of the damage to Artel Customer Service so that action can be initiated to either repair or replace the damaged items.

Do not return any items to Artel until you obtain instructions from Customer Service.

Report the problem or deficiency to Customer Service along with the model number and serial number. Upon receipt of this information, Artel will provide service instructions, or a *Return Authorization Number* and shipping information.



# DLC510 Function Module

## Dual-Port L-Band Demodulator and Satellite Scanner

### Information About the DLC510 Module

This manual introduces the DLC510 function module and includes information for installing and configuring the module. The DLC510 provides two discrete channels for inputting and demodulating L-Band satellite signals and outputting the demodulated signals as DVB-ASI.

The DLC510 is a dual-port electrical L-Band RF receiver that enables tuning and demodulation of DVB-S and DVB-S2 signals. Both tuners support the full range of 950 to 2150 Megahertz and each tunes to a single transponder of C-Band or Ku-Band signals. The DLC510 is capable of demodulating two independent s. Each DVB-ASI transport stream is output to a rear panel BNC electrical connector and to the host chassis backplane. The front panel HD-BNC can also be selected from either of the two DVB-ASI outputs.

Additional features include the following:

- Operation is fully automatic requiring only downlink frequency and LNB power settings
- Two independent 950-2150 MHz RF inputs
- Support for Low Noise Block (LNB) power and Digital Satellite Equipment Control (DiSEqC)
- Automatic MOD/COD detection
- Advanced RF parameter and signal monitoring
- DVB-S and DVB-S2 compliant
- Enables the DigiLink platform to perform DVB-ASI to IP conversion and DVB-ASI routing

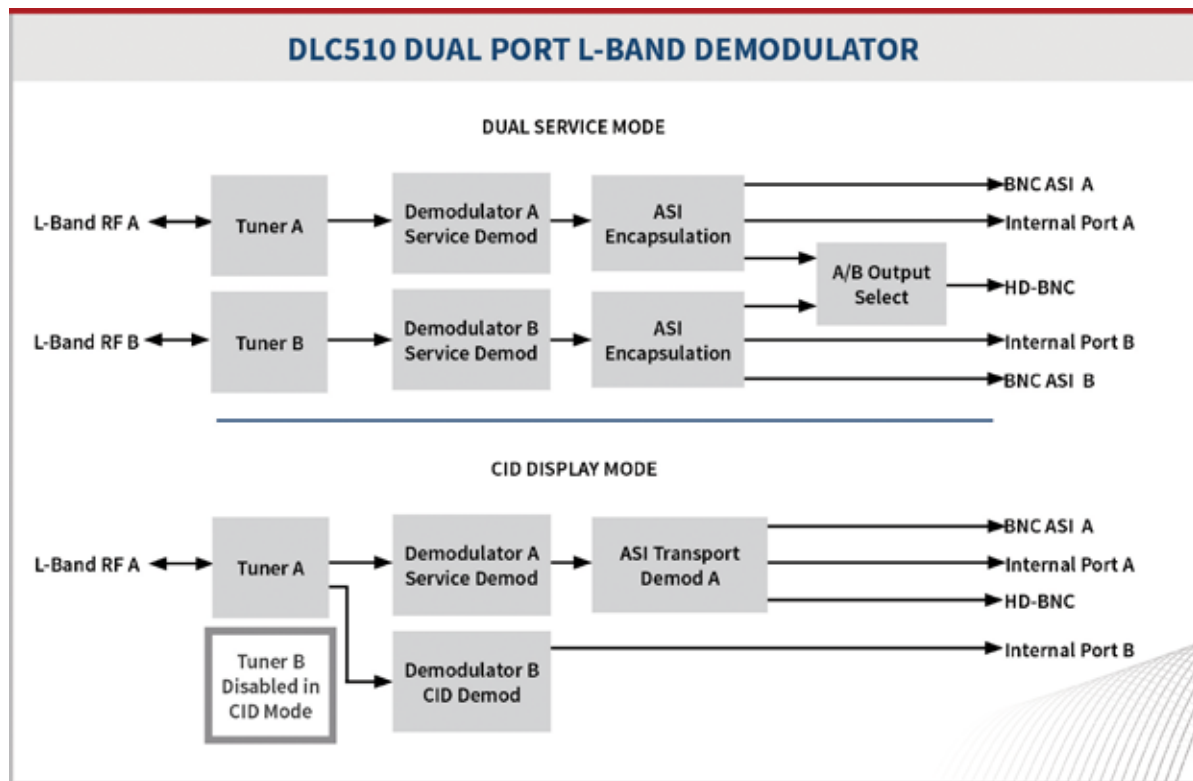
You provision and monitor the DLC510 module as follows:

- Provision and monitor the module remotely using DigiLink Manager, which is Artel's element management system (for more information, see the *DigiLink Manager Setup and Operations Manual*).
- Monitor the module locally using the front and rear panel status LEDs.

# DLC510 Module Functional Description

This section provides a functional description of the DLC510 module, including [Figure 1](#), which is a functional block diagram of the module's operation.

**Figure 1. DLC510 Module Functional Block Diagram**



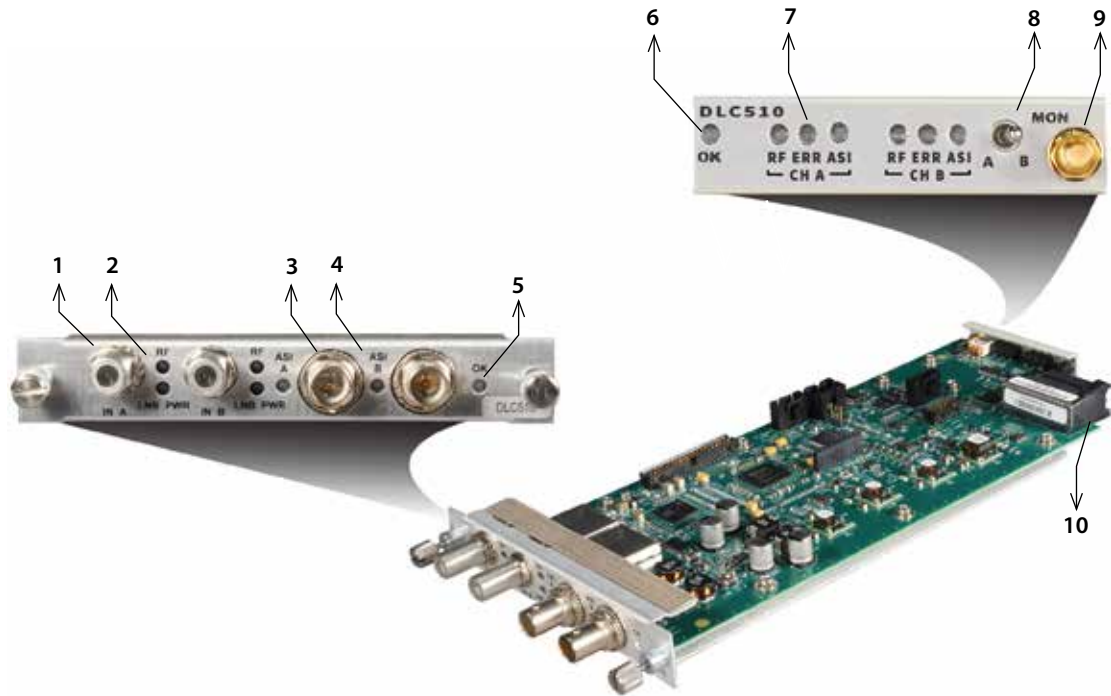
The DLC510 module uses the following inputs and outputs:

- Two 75-Ohm F-type connectors provide independent RF L-Band (950-2150 MHz) inputs: IN A and IN B. Input to these connectors is provided by LNB converters that shift satellite signals to the L-Band for demodulation. The recovered digital signals are MPEG-TS (transport streams) that the DLC510 formats into DVB-ASI outputs.
- Two 75-Ohm BNC connectors for outputting DVB-ASI streams: ASI A and ASI B.
- Backplane connections for sharing signals with other host chassis modules.
- Front panel 75 Ohm HD-BNC output jack (MON) for local signal monitoring (see the ["Monitoring Operations Using the Monitor Jack"](#) section on page 13).

# Overview of the DLC510 Module

This section provides an overview of the components that make up the DLC510 module.

**Figure 2. DLC510 Module Major Components**



**Table 1. DLC510 Elements**

Item	Module Element	for details, see...
1	Rear panel F-type connectors for the following connections: <ul style="list-style-type: none"> <li>IN A—L-Band input connector A</li> <li>IN B—L-Band input connector B</li> </ul>	<a href="#">Cabling the DLC510 Module (page 6)</a>
2	Rear panel IN A and IN B operating mode indicators: <ul style="list-style-type: none"> <li>RF—RF channel status indicators</li> <li>LNB PWR—LNB power status indicators</li> </ul>	<a href="#">Understanding the Rear Panel Status LEDs (page 12)</a>
3	Rear panel BNC connectors for the following connections: <ul style="list-style-type: none"> <li>ASI A—DVB-ASI output connector A</li> <li>ASI B—DVB-ASI output connector B</li> </ul>	<a href="#">Cabling the DLC510 Module (page 6)</a>
4	Rear panel ASI A and ASI B operating mode indicators.	<a href="#">Understanding the Rear Panel Status LEDs (page 12)</a>
5	Rear panel alarm indicator OK LED.	

**Table 1. DLC510 Elements (Continued)**

Item	Module Element	for details, see...
6	Front panel alarm indicator OK LED.	<a href="#">Understanding the Front Panel Status LEDs (page 11)</a>
7	Front panel CH A and CH B channel status LEDs: <ul style="list-style-type: none"> <li>• RF—RF channel status indicator</li> <li>• ERR—Bit error channel status indicator</li> <li>• ASI—DVB-ASI channel status indicator</li> </ul>	
8	Monitor select switch (SELECT) to select the output to the monitor jack: <ul style="list-style-type: none"> <li>• A—Channel A</li> <li>• B—Channel B</li> </ul>	<a href="#">Monitoring Operations Using the Monitor Jack (page 13)</a>
9	Front panel monitor mini 75 Ohm HD-BNC output jack (MON).	
10	Backplane connector that provides power to the module, allows the module to share signals with other function modules, and is used for alarm and management signals.	<a href="#">Configuring the Module with DigiLink Manager (page 6)</a>

# Installing the DLC510 Module

The DLC510 module is hot swappable, enabling you to safely install it while power is applied to the host chassis. Before you install the module, see the DLC510 data sheet for a detailed description of the module specifications, including environmental requirements, that you must adhere to when installing the module.

Note: You must install the DLC510 module in a chassis that includes DL Manager functionality as the module requires DL Manager for configuration and monitoring purposes. For more information, see the [“Configuring the Module with DigiLink Manager” section on page 6](#).

To install the DLC510 module in the host chassis (see [Figure 3](#)), perform the following steps:

1. From the back of the chassis, remove the two screws that secure the blank tray to the unused function module slot.  
Use any available function module slot.
2. Slide the module into the chassis slot using the printed circuit board guide rails on either side of the slot.
3. Push the module in until it is firmly seated into the backplane and flush with the chassis.
4. Tighten the two mounting screws that secure the module to the chassis.
5. Insert a blank tray in any unused chassis module slot to maintain proper ventilation.

**Figure 3. DLC510 Module Installation**



## Cabling the DLC510 Module

This section describes how to cable the external connections of the DLC510 module, which can receive and transmit external signals over its rear panel connectors. The cabling configuration that you use depends on your application.

**Figure 4. DLC510 Rear Panel Input/Output Connectors**



To cable the connections, perform the following tasks:

- L-Band input signals—Connect the L-Band coax cables to the DLC510 receive connectors (IN A, IN B) and the source device's transmit connectors.
- DVB-ASI output signals—Connect the coax cables to the DLC510 transmit connectors (ASI A, ASI B) and the destination device's receive connector.

For all connections, use a high quality 75 Ohm precision video coax cable, such as Belden 1694A cable.

## Configuring the Module with DigiLink Manager

You configure the DLC510 module operation using the DigiLink Manager (DL Manager) element management system.

Artel ships the DLC510 configured as follows:

- Mode set to Channel A Only
- RF A Input and RF B Input
  - LNB Mode set to Off
  - Local Oscillator set to L-Band
  - Frequency set to 1600.000 MHz
  - Video Alarms set to Disable

### **Prerequisites**

To configure the DLC510 module, you must access the DL Manager that manages the module. For details about accessing and setting up DL Manager, see the *DigiLink Manager Setup and Operations Manual*.

There are two methods for configuring the operation of the module's channels. One method is to manually configure the channels (either individually or both at the same time) by specifying the LNB mode, local oscillator, and frequency. The other configuration method is to use the frequency scanning feature of the DLC510 in which the module scans for available frequencies based on a user-specified range of frequencies. From the list of available frequencies, you select the frequency to apply to a channel.



This section includes the following topics:

- [Manually Configuring the DLC510 \(page 7\)](#)
- [Using the Frequency Scanner to Configure the DLC510 \(page 9\)](#)

## Manually Configuring the DLC510

To manually configure the DLC510 module operation, perform the following steps:

1. From a browser window, enter the IP address of the DL Manager that manages the module.  
The Home page displays.
2. From the Home page menu bar, click **Shelf View**.  
The Shelf View page displays, which shows the rear chassis panel along with the Installed Modules table.
3. From the Installed Modules table, click the **DLC510** link listed in the Module Type column.  
The Module Status page displays, which shows the module's current configuration and alarm conditions (if any). For details, see "[Monitoring DLC510 Operations](#)" section on page 11.
4. From the menu bar, click **Configuration**.  
The Configuration page displays.
5. From the Mode panel, configure the DLC510 to operate in one of the following modes:
  - **Channel A Only**—Only input signals on IN A are demodulated and output to ASI A.
  - **Channel B Only**—Only input signals on IN B are demodulated and output to ASI B.
  - **Channel A and B**—Signals input on both IN A and IN B are demodulated and output to ASI A and ASI B respectively.
  - **Channel A with Carrier ID**—Only input signals on IN A are demodulated and output to ASI A. This selection also enables the Carrier Identification (CID) feature for identifying satellite service provider information.
6. From the RF A Input and RF B Input panels, configure the DLC510 inputs as follows:
  - From the LNB Mode field, select one of the following options to set the signaling to the LNB:
    - **Off**—Sends no voltage or control signals to the LNB.
    - **13V (Vert)**—Sets LNB to vertical polarization.
    - **18V (Horiz)**—Sets LNB to horizontal polarization.
    - **13V (Vert) / 22kHz**—Sets LNB to vertical polarization and includes the 22 kHz control tone.
    - **18V (Horiz) / 22kHz**—Sets LNB to horizontal polarization and includes the 22 kHz control tone.

Some LNBs have more than one local oscillator frequency. The control over which local oscillator frequency is used is determined by a 22 kHz control signal from the DLC510. Table 2 shows an example of how the 22 kHz signal might be used to set the local oscillator frequency in a compatible LNB.

**Table 2. Example of 22 kHz Control for Low Band and High Band Switching of a Ku-Band LNB**

	22 kHz Signal Off	22 kHz Signal On
<b>Local Oscillator Frequency</b>	9,750 MHz	10,600 MHz
<b>Input Satellite Frequency</b>	10.7 - 11.7 GHz	11.7 - 12.75 GHz
<b>Resulting L-Band into DLC510</b>	950 - 1,950 MHz	1,100 - 2,150 MHz

- From the Local Oscillator field, select one of the following options to specify the frequency of the oscillator inside the satellite receiver LNB, which determines the L-Band frequency that displays on the Module Status page:
  - **L-Band**—L-Band Frequency
  - **C-5150**—L-Band Frequency = Local Oscillator Frequency - Satellite Carrier Frequency
  - **Ku-band**—L-Band Frequency = Satellite Carrier Frequency - Local Oscillator Frequency band = **11300, 10750, 10600, 10000, 9750, or 9600**
- From the Frequency (MHz) field, enter the satellite carrier frequency. The following table contains the frequency ranges for valid entries, which vary depending on the local oscillator.

Local Oscillator	Minimum Frequency	Maximum Frequency
L-Band	950.000	2150.000
C-5150	3000.000	4200.000
Ku-11300	12250.000	13450.000
Ku-10750	11700.000	12900.000
Ku-10600	11550.000	12750.000
Ku-10000	10950.000	12150.000
Ku-9750	10700.000	11900.000
Ku-9600	10550.000	11750.000

- From the Video Alarms field, enable or disable the alarm feature. When enabled, the alarm indicates when the DLC510 is not outputting video. Causes for no video output include the following:
  - No RF input (RF Carrier not locked)
  - High error rate (FEC not locked)
  - No video present in the demodulated signal (DVB-ASI not locked)

7. Click **Submit**.

The configuration is saved and the module is ready to process input signals.

## Using the Frequency Scanner to Configure the DLC510

The DLC510 includes a scanning feature that scans for frequencies based upon a user-specified start and end frequency range. During the scan process, the DLC510 builds a table of detected frequencies from which you can select and apply a specific frequency to one of the module's inputs. The applied frequency will override any previously configured channel input frequency.

### Caution

Use of the frequency scan feature will interrupt normal operation on the selected channel. You should only use this feature on a channel that is not providing services.

### Prerequisites

To use the DLC510 frequency scanner, you must access the DL Manager that manages the module. For details about accessing and setting up DL Manager, see the *DigiLink Manager Setup and Operations Manual*.

To use the frequency scanner, perform the following steps:

1. From a browser window, enter the IP address of the DL Manager that manages the module.  
The Home page displays.
2. From the Home page menu bar, click **Shelf View**.  
The Shelf View page displays, which shows the rear chassis panel along with the Installed Modules table.
3. From the Installed Modules table, click the **DLC510** link listed in the Module Type column.  
The Module Status page displays, which shows the module's current configuration and alarm conditions (if any). For details, see "[Monitoring DLC510 Operations](#)" section on page 11.
4. From the menu bar, click **Frequency Scan**.  
The Frequency Scan page displays.
5. From the Scan Parameters panel, determine which channel you want to perform the scan (Channel A or Channel B) and then configure the following parameters:
  - From the LNB Mode field, select one of the following options to set the signaling to the LNB:
    - **Off**—Sends no voltage or control signals to the LNB.
    - **13V (Vert)**—Sets LNB to vertical polarization.
    - **18V (Horiz)**—Sets LNB to horizontal polarization.
    - **13V (Vert) / 22kHz**—Sets LNB to vertical polarization and includes the 22 kHz control tone.
    - **18V (Horiz) / 22kHz**—Sets LNB to horizontal polarization and includes the 22 kHz control tone.

Some LNBs have more than one local oscillator frequency. The control over which local oscillator frequency is used is determined by a 22 kHz control signal from the DLC510. [Table 2](#) shows an example of how the 22 kHz signal might be used to set the local oscillator frequency in a compatible LNB.

  - From the Start Frequency (MHz) and End Frequency (MHz) fields, specify the scan start and end frequencies.

- From the Scan Step (MHz) field, specify the scan step size.
  - Select the Scan **Channel A** (or **B**) option of the channel that you are configuring.
  - Click **Start Scan**.  
The following actions occur:
    - The Scan Status panel displays the following scan status of both channels:
      - Scan State (IN PROGRESS or STOPPED)
      - Current Frequency
      - Current Polarity
      - Progress (%)
    - The Frequency Scan Channel panel displays the frequencies and associated details as they are detected during the scan session.
    - The Frequency Scan page updates itself every 10 seconds.
6. To apply a frequency, select the desired frequency from the Frequency Scan Channel panel and click **Apply Selection**.  
The DLC510 switches the channel to the selected frequency and polarization and then displays the Module Status page, which reflects the change (see the [“Monitoring Operations Using DL Manager”](#) section on page 13).
7. (Optional) To modify the configuration settings or enable the video alarm for the channel, click **Configuration**.

# Monitoring DLC510 Operations

This section describes how to monitor DLC510 operations using the front and rear panel status LEDs or Digilink Manager and contains the following topics:

- [Monitoring Operations Using the Module Status LEDs \(page 11\)](#)
- [Monitoring Operations Using the Monitor Jack \(page 13\)](#)
- [Monitoring Operations Using DL Manager \(page 13\)](#)

## Monitoring Operations Using the Module Status LEDs

This section describes how to monitor the module's operations using the front and rear panel LEDs and contains the following topics:

- [Understanding the Front Panel Status LEDs \(page 11\)](#)
- [Understanding the Rear Panel Status LEDs \(page 12\)](#)

### Understanding the Front Panel Status LEDs

Table 3 describes the states of the DLC510 front panel status LEDs as shown in Figure 5.

**Figure 5. DLC510 Front Panel Status LEDs**



**Table 3. DLC510 Front Panel Status LEDs**

LED	Indicates ...	State	Description
OK	Module status	Off	If power is applied to the system, an internal fault with the module may exist.
		Green	Normal operation.
		Yellow	Minor alarm condition exists.
		Red	Major alarm condition exists.

**Table 3. DLC510 Front Panel Status LEDs (Continued)**

LED	Indicates ...	State	Description
CH A, B: RF	RF channel status	Off	Channel off.
		Green	Channel on, carrier locked, demodulator locked.
		Red	Channel on, carrier not locked (the DLC510 channel is configured for a specific carrier frequency, but the carrier is too weak or not found).
		Red (Flashing)	Channel on, demodulator not locked (the DLC510 channel is configured for a specific carrier frequency, the carrier is found, but the DLC510 is unable to demodulate the signal).
CH A, B: ERR	Bit error channel status	Off	Channel off.
		Green	FEC locked, no errors.
		Yellow	Low carrier-to-noise (C/N) margin.
		Red	FEC not locked, errors detected.
CH A, B: ASI	DVB-ASI channel status	Off	Channel off.
		Green	DVB-ASI locked.
		Red	DVB-ASI unlocked.

- Note:**
- If all LEDs are off, the card is unpowered or unprogrammed and is considered defective.
  - If a channel is enabled and the carrier is not locked, all three LEDs (RF, ERR, and ASI) will be red.
  - When red, the ERR LED indicates that the FEC process will not correct errors because the proper FEC information has not been found. When yellow, the ERR LED indicates that the carrier-to-noise margin is small and any further drop in the carrier-to-noise could result in errors. Neither case quantifies any amount of errors.

### Understanding the Rear Panel Status LEDs

Table 4 describes the states of the DLC510 rear panel status LEDs as shown in Figure 6.

**Figure 6. DLC510 Rear Panel Status LEDs**

**Table 4. DLC510 Rear Panel Status LEDs**

LED	Indicates ...	State	Description
OK	Module status	--	Same operation as the front panel OK (see <a href="#">Table 3</a> ).
RF A, B	RF channel status	--	Same operation as the front panel CH A, B RF LED (see <a href="#">Table 3</a> ).
LNB PWR A, B	LNB Power Status	Off	Power off.
		Green	Power on.
		Red	Current overload.
ASI A, B	DVB-ASI channel status	Off	Channel off.
		Green	DVB-ASI locked.
		Yellow	DVB-ASI unlocked.

- Note:**
- If all LEDs are off, the card is unpowered or unprogrammed and is considered defective.
  - If a channel is enabled and the carrier is not locked, all three LEDs (RF, ERR, and ASI) will be red.
  - If DVB-ASI is unlocked, there will not be a valid DVB-ASI output.

## Monitoring Operations Using the Monitor Jack

You can monitor the DVB-ASI streams that the DLC510 outputs by using the front panel monitor jack (MON).

To connect a DVB-ASI analyzer or other device to the DLC510 to view the output signal, connect the monitor cable between the monitor and the 75 Ohm HD-BNC monitor jack located on the DLC510 front panel (see [Figure 2](#)).

Use the front panel monitor select switch to select which channel is output to the monitor: A or B.

## Monitoring Operations Using DL Manager

This section shows how to use DL Manager to view the module's current configuration and major and minor alarm status.

### Prerequisites

To monitor the DLC510 module using DL Manager, you must access the DL Manager that manages the module. For details about accessing and setting up DL Manager, see the *DigiLink Manager Setup and Operations Manual*.

To monitor the DLC510 module operation, perform the following steps:

1. From a browser window, enter the IP address of the DL Manager that manages the module.  
The Home page displays.

From the Home page menu bar, click **Shelf View**.

The Shelf View page displays, which shows the rear chassis panel along with the Installed Modules table.

2. From the Installed Modules table, click the **DLC510** link listed in the Module Type column.

The Module Status page displays, which shows the following information:

**Table 5. Module Status Page**

Pane	Field	Description
Channel Configuration (A and B)	Channel A (or B)	Configured operating state: Enabled or Disabled.
	LNB Power Mode	Configured LNB power mode: Off, 13V (Vert), 18V (Horiz), 13V (Vert) / 22kHz, or 18V (Horiz) / 22kHz.
	Local Oscillator	Configured local oscillator setting: L-Band, C-5150, Ku-Band (band = 11300, 10750, 10600, 10000, 9750, or 9600).
	Downlink Frequency	Configured satellite download frequency input to the DLC510.
	L-Band Frequency	Configured frequency to which the DLC510 input is tuned.
	Video Alarm	Configured video alarm setting: Enabled or Disabled.



**Table 5. Module Status Page (Continued)**

Pane	Field	Description
Channel Status (A and B)	Standard	Detected modulation standard: DVB-S or DVB-S2.
	Symbol Rate	Rate at which the detected carrier is modulated.
	RF Level	Detected carrier level (in dBm) at the input to the DLC510.
	Roll-Off	<p>Slope of the bandwidth cutoff for the received DVB-S2 L-Band signal. The possible values are as follows:</p> <ul style="list-style-type: none"> <li>• 0.15 or less</li> <li>• 0.20</li> <li>• 0.25</li> <li>• 0.35</li> </ul> <p><b>Note:</b> Roll-Off is valid for DVB-S2 signals only. This field is blank for DVB-S signals.</p>
	ModCod	<p>Modulation coding that is determined from the received L-Band signal. The possible values are as follows:</p> <ul style="list-style-type: none"> <li>• DVB-S:                             <ul style="list-style-type: none"> <li>QPSK: 1/2, 3/5, 2/3, 3/4, 5/6, 7/8</li> </ul> </li> <li>• DVB-S2:                             <ul style="list-style-type: none"> <li>– QPSK: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 6/7, 7/8, 8/9, 9/10</li> <li>– 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10</li> <li>– 16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10</li> <li>– 32APSK: 3/4, 4/5, 5/6, 8/9, 9/10</li> </ul> </li> </ul> <p>QPSK, 8PSK, 16APSK, and 32APSK are modulation schemes and the fraction represents the FEC coding method.</p>
	Spectral Inversion	<p>State of the received L-Band signal spectrum as compared to the original signal. The possible values are as follows:</p> <ul style="list-style-type: none"> <li>• Normal</li> <li>• Inverted</li> </ul>

**Table 5. Module Status Page (Continued)**

Pane	Field	Description
Channel Status (A and B) continued	Pilots	Pilot operating state as determined from the received DVB-S2 L-Band signal. Pilots are used by the demodulator to reduce errors and can be included in the modulated signal. The possible values are as follows: <ul style="list-style-type: none"> <li>• On</li> <li>• Off</li> </ul> <p><b>Note:</b> Pilots are valid for DVB-S2 signals only. This field is blank for DVB-S signals.</p>
	FEC Frame Length	Length (number of bits) of the FEC in the modulated signal as determined from the received DVB-S2 L-Band signal. The possible values are as follows: <ul style="list-style-type: none"> <li>• Normal</li> <li>• Short</li> </ul> <p><b>Note:</b> FEC frame length is valid for DVB-S2 signals only. This field is blank for DVB-S signals.</p>
	C/N	Carrier-to-noise-ratio of the modulated signal.
	C/N Margin	Ratio of the minimum required signal for error free reception and the actual measured input. If the signal fades more than this amount, then transmission errors occur.
	RF Carrier	Carrier locked state that indicates whether the DLC510 is locked to a carrier at the selected frequency.
	FEC	FEC state that indicates whether the DLC510 has found FEC and is processing the received data.
	ASI	DVB-ASI state that indicates whether the DLC510 is outputting video on the DVB-ASI output.
Channel Output (A and B)	ASI Output Total Rate	Total DVB-ASI output bit rate. This includes any part of the transmission added to adjust the total bit rate.
	ASI Output Useful Rate	Part of the DVB-ASI output that has actual MPEG video.
Alarms	Major Alarms	Detected major alarm status of monitored entities as follows: <ul style="list-style-type: none"> <li>• Green—No alarms detected.</li> <li>• Red—Alarm detected that requires immediate attention. When the alarm indicator is red, DL Manager provides a descriptive list of any detected alarms to indicate the source of the problem.</li> </ul>
	Minor Alarms	Detected minor alarms (if any).
Routing Labels	Channel	Labels that you specify for the interfaces.
	Label	
	Description	

## Removing a Module

You can safely remove the DLC510 module from the host chassis while power is applied to the module.

### Removing a Module

To remove a DLC510 module from the host chassis, perform the following steps:

1. Remove the cables from the RF and BNC connectors.
2. Loosen the two mounting screws that secure the module to the host chassis.
3. Using the two mounting screws, pull the module out of the host chassis.

### Caution

To avoid problems associated with overheating, do not leave a function module slot open when power is applied to the chassis. Every module slot must contain a module or blank tray to ensure proper ventilation when power is applied.





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