





DIGILINK DLC156 FUNCTION MODULES

Six-Channel TDM Multiplexers for 3G, HD, SDI, and ASI

Installation and Operations Manual

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DLC156 Function Modules

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Revision history for the DLC156 Function Modules Installation and Operations Manual.

Revision History				
Revision	Document Number	Date	Reason for Change	
A	AR200-008201-00_A	May, 2013	Initial release.	
В	AR200-008201-00_B	May, 2015	Copy edits and new graphics.	
С	AR200-008201-00_C	July, 2015	Modified "Related Documentation" section.	
D	AR200-008201-00_D	February, 2016	Updated Artel logo.	
E	AR200-008201-00_E	December, 2016	Updated images, block diagram, copy edits.	
F	AR200-008201-00_E	September, 2017	Modified "Cabling the DLC156D Module" section and Table 9. DLC156D Front and Rear Panel Status LEDs	

Table 0-1.	Manual Revision History
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Table of Contents

About This Manual

Related Documentation
Symbols and Conventions
Artel Customer Service

DLC156 Function Modules

Information About the DLC156	1
Understanding and Using the DLC156M	2
DLC156M Module Functional Description	2
Overview of the DLC156M Module	3
Configuring the DLC156M Module	5
Configuring the Video Rate with SW1, SW2, and SW3	5
Enabling Channels with DIP Switch SW4	6
Configuring Repeater and EMS Features with DIP Switch SW5	7
Installing the DLC156 Module and XFP	8
Cabling the DLC156M Module	10
Monitoring the DLC156M Module Operation	10
Understanding the DLC156M Status LEDs	10
Using the DLC156M Monitor Jack	12
Removing the XFP and DLC156 Module	12
Removing the XFP	12
Removing the DLC156 Module	13
Understanding and Using the DLC156D	13
DLC156D Module Functional Description	13
Overview of the DLC156D Module	15
Configuring the DLC156D	16
Enabling Channels with Switch SW1	17
Enabling Video Alarm, Optical Repeater, and EMS with DIP Switch SW2	17
Installing the DLC156D Module and XFP	18
Cabling the DLC156D Module	18
Monitoring the DLC156D Module Operation	19
Understanding the DLC156D Status LEDs	19
Using the DLC156D Monitor Jack	21
Removing the XFP and DLC156D Module	21

Index



About This Manual

This manual provides instructions for installing, configuring, and operating the DLC156 function modules, which consist of the DLC156M (mux) and DLC156D (demux) modules.

Audience

This manual is intended for the following trained and qualified service personnel who are responsible for installing and operating the DLC156:

- System installer
- Hardware technician
- System operator

Related Documentation

The following documentation contains material related to the DLC156 function module:

Document	Provides
DLC156M/DLC156D Data Sheet	Product operating and environmental specifications, and regulatory conformance information.
DLC156M Quick Start Guide and DLC156D Quick Start Guide	Product configuration information using the DL Manager element management system and descriptions of the front panel status LED operations.
DigiLink Media Transport Platform Installation and Operations Manual	Overview and installation instructions for the DigiLink media transport platform chassis options, including the following:
	 DL4360x chassis—Installation of this 12-slot chassis, power supplies, switch module, and function modules.
	 DL4300 chassis—Installation of this 12-slot chassis, power supplies, and function modules.
	DL4000 chassis—Installation of this 4-slot chassis, power supplies, and function modules.
DigiLink Media Transport Platform Data Sheet	Overview of the DigiLink media transport platform chassis options.
DigiLink Manager Setup and Operations Manual	Overview and operating instructions for the DigiLink Manager element management system.

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

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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.



DLC156 Function Modules

Six-Channel TDM Multiplexer for 3G, HD, SDI, and ASI

Information About the DLC156

This manual introduces the two DLC156 function modules and includes information for installing and configuring the modules. The DLC156 can transport up to six HD-SDI or three 3G-SDI digital video services over a single optical wavelength. Using time division multiplexing (TDM), each channel is assigned a fixed time-slot, eliminating complex configurations.

The six-channel DLC156 is available in the following models:

- DLC156M—Multiplexer that can aggregate six independent, mixed format video signals onto a single wavelength. Two time slots can be combined to carry 3G-SDI. The electrical inputs are received using the module's six BNC connectors. Optionally, in a switched chassis, up to five of the inputs can be received from other modules using backplane connections.
- DLC156D—De-multiplexer that can receive the aggregated optical signals, separate them, and output them to six BNC connectors. Optionally, in a switched chassis, up to five of the channels can be output to other modules using backplane connections.

The DLC156D can be configured to operate as a repeater to extend the range of a link while demultiplexing signals for local use.

The DLC156 uses a 10.7 Gb/s XFP transceiver for WDM (1310 nm, 1550 nm), CWDM ITU G.694.2, and DWDM ITU G.694.1.

You provision and monitor the DLC156 using DIP switches, LEDs, front panel monitor jack, or Artel's DigiLink Manager (DL Manager), which is an element management system (for more information, see the *DigiLink Manager Setup and Operations Manual*).

This chapter contains the following additional major sections:

- "Understanding and Using the DLC156M" section on page 2
- "Understanding and Using the DLC156D" section on page 13

Understanding and Using the DLC156M

This section, which describes how the DLC156M works and how to configure, install, and cable the module, contains the following topics:

- DLC156M Module Functional Description (page 2)
- Overview of the DLC156M Module (page 3)
- Configuring the DLC156M Module (page 5)
- Installing the DLC156 Module and XFP (page 8)
- Cabling the DLC156M Module (page 10)
- Monitoring the DLC156M Module Operation (page 10)
- Removing the XFP and DLC156 Module (page 12)

DLC156M Module Functional Description

This section provides a functional description of the DLC156M, including Figure 1, which is a functional block diagram of the module.



Figure 1. DLC156M Module Functional Block Diagram

Electrical Inputs and Outputs

The DLC156M uses the following electrical inputs and outputs:

• Six rear panel BNC connectors for channels A to F inputs.



- Backplane connectors for receiving inputs from other host chassis modules.
- Front-panel monitor jack, which is a 75 Ohm HD-BNC connector that allows you to monitor the input video signals on each channel.

Optical Inputs and Outputs

A single XFP socket provides the optical interface for outputting the aggregated optical signal. The XFP modules use LC connectors. Optical performance is dependant on the quality of your optical fiber and fiber interconnects, and on the selected XFP module, which must be specifically qualified by Artel. Consult Artel for available XFP options.

Overview of the DLC156M Module

This section provides an overview of the components that make up the DLC156M.

Figure 2. DLC156M Module Major Components



ltem	DLC156M Element	for details, see
1	BNC channel connectors for receiving SD and HD video when used individually or SD, HD, and 3G when used as channel pairs as follows:	Cabling the Video Input BNC Connections (page 10)
	A—Paired with Channel B for 3G operation	
	• B	
	C—Paired with Channel D for 3G operation	
	• D	
	E—Paired with Channel F for 3G operation	
	• F	
2	Rear panel BNC channel input status LEDs:	Understanding the DLC156M Status LEDs
	STAT—Input status indicator	(page 10)
	RATE—Input rate indicator	
3	XFP socket for the following optical connections:	Cabling the XFP Connections (page 10)
	TX—Transmits the aggregated video signal	
	RX—Receive (not used)	
4	Rear panel module status LEDs:	Understanding the DLC156M Status LEDs
	EMS—Element management system indicator	(page 10)
	OK—Alarm indicator	
5	Rate selector switches SW1, SW2, and SW3.	Configuring the DLC156M Module (page 5)
6	Channel enable DIP switch SW4.	
7	Video alarm enable and EMS enable DIP switch SW5.	
8	Front panel status LEDs:	Understanding the DLC156M Status LEDs
	TX—XFP transmit status indicator	(page 10)
	RATE A–F—BNC receive rate indicator	
	OK—Alarm indicator	
	EMS—Element management system indicator	
	STATUS A–F—Channel status indicator	
9	Front panel Channel Select switch—Allows you to select the channel signal to monitor.	Using the DLC156M Monitor Jack (page 12)
10	Front panel monitor 75 Ohm HD-BNC output jack.	
11	Backplane connector—Provides power to the module, allows the module to share signals with other function modules, and is used for alarm and management signals.	N/A

Table 1. DLC156M Elements



Configuring the DLC156M Module

This section describes how to configure the operation of the DLC156M. You must configure the module while it is out of the chassis because the configuration switches are mounted to the top of the module printed circuit board.

Artel ships the DLC156M configured to operate as follows:

- All six channels enabled
- No video detected alarm disabled
- EMS override enabled (DL Manager can change the DLC156M configuration)
- All 3G inputs disabled

This section contains the following topics:

- Configuring the Video Rate with SW1, SW2, and SW3 (page 5)
- Enabling Channels with DIP Switch SW4 (page 6)
- Configuring Repeater and EMS Features with DIP Switch SW5 (page 7)

Configuring the Video Rate with SW1, SW2, and SW3

Switches SW1, SW2, and SW3 enable or disable 3G video rate operation for each channel. Each switch controls the operation of a channel pair. For example, SW1 controls the operation of Channels A and B as follows:

- **ON**—3G video rate operation is disabled and Channels A and B can independently transmit SD or HD video.
- **OFF**—3G video rate operation is enabled and Channel A only can transmit SD, HD, or 3G video. Channel B is disabled.

Figure 3. DLC156M Switches SW1, SW2, and SW3



Table 2 describes the switch SW1, SW2, and SW3 configuration options. The factory-set configuration settings are shown in bold type.

Switch	ON	OFF
SW1	Channels A and B support SD or HD.	Channel A supports SD, HD, or 3G. Channel B is disabled.
SW2	Channels C and D support SD or HD.	Channel C supports SD, HD, or 3G. Channel D is disabled.
SW3	Channels E and F support SD or HD.	Channel E supports SD, HD, or 3G. Channel F is disabled.

Table 2. DLC156M Switch SW1, SW2, and SW3 Settings

Enabling Channels with DIP Switch SW4

DIP Switch SW4 determines which video channels are enabled or disabled.

Figure 4. DLC156M DIP Switch SW4

LE ISGIDISA SW11 -	SLE SW4 OFF ON	SW5 OFFmON
ISW2		
	SS SS	
CHE		

Table 3 describes the DIP switch SW4 configuration options. The factory-set configuration settings are shown in bold type.

Note: All reserved switches must be left in the **ON** position.

Switch	Channel	ON	OFF	Switch	Channel	ON	OFF
S1	A	Enabled	Disabled	S5	E	Enabled	Disabled
S2	В	Enabled	Disabled	S6	F	Enabled	Disabled
S3	С	Enabled	Disabled	S7	Reserved (leave ON)	x	-
S4	D	Enabled	Disabled	S8	Reserved (leave ON)	x	-

Table 3. DLC156M DIP Switch SW4 Settings



Configuring Repeater and EMS Features with DIP Switch SW5

DIP Switch SW5 enables or disables the video alarm and EMS functions.

Figure 5. DLC156M DIP Switch SW5



Table 4 describes the DIP switch SW5 configuration options. The factory-set configuration settings are shown in bold type.

Note: All reserved switches must be left in the ON position.

Switch	Function	ON	OFF
S1	Reserved (leave ON)	Х	-
S2	Reserved (leave ON)	Х	_
S3	Video alarm	No alarm.	Loss of video on an enabled input causes a major alarm.
S4	Reserved (leave ON)	Х	_
S5	Reserved (leave ON)	Х	-
S6	Reserved (leave ON)	Х	_
S7	Reserved (leave ON)	Х	_
S8	EMS Enable	DL Manager can override the local switches.	DL Manager cannot override the local switches.

Table 4. DIP Switch SW5 Settings

Installing the DLC156 Module and XFP

The DLC156 and associated XFP are hot swappable, enabling you to safely install them while power is applied to the host chassis. Before you install the DLC156, see the DLC156 data sheet for a detailed description of the module specifications including environmental requirements that you must adhere to when installing the module.

Note: This procedure applies to the DLC156M and DLC156D modules, which are double-high function modules that require two host chassis slots each.

To install the DLC156 in the host chassis (see Figure 6), perform the following steps:

- 1. From the back of the chassis, determine the two slots that the module is to occupy.
- 2. Remove the two screws that secure the blank trays to two of the unused function module slots (if necessary). Use any available function module slots.
- 3. Slide the DLC156 into the double-high chassis slot using the printed circuit board guide rails on either side of the slot.
- 4. Push the DLC156 in until it is firmly seated into the backplane and flush with the chassis.
- 5. Tighten the two mounting screws that secure the module to the chassis.
 - **Note:** Failure to properly secure the DLC156 to the chassis with the two mounting screws can result in disconnecting the module from the backplane when you attach a cable to the monitor connector located on the front panel.
- 6. Install the Artel-approved XFP in the DLC156 with the handle on top as shown in Figure 6. Push the XFP into the socket located on the right side of the function module until it is firmly seated into the socket.
 - **Note:** When you do not install an XFP, the TX LED located on the DLC156 front panel will flash. See Table 5 (DLC156M) or Table 9 (DLC156D) for other LED status indications.
- 7. Insert a blank tray in any unused chassis module slots to maintain proper ventilation.





Figure 6. DLC156 Module and XFP Installation

Depending on the DLC156 model, proceed to one of the following sections:

- Cabling the DLC156M Module (page 10)
- Cabling the DLC156D Module (page 18)

Cabling the DLC156M Module

The DLC156M can receive video network signals over BNC electrical cable connections (see Figure 7) and optionally from the backplane connector for channels E and F. The DLC156M transmits signals through an optical XFP. The cabling configuration that you use depends on your application.

Figure 7. DLC156M BNC Connectors and XFP Socket



Cabling the Video Input BNC Connections

Use a high quality 75 Ohm precision video coax cable, such as Belden 1694A cable, when cabling to the DLC156M BNC connectors to the video source devices.

Cabling the XFP Connections

Use a single mode fiber when connecting to the LC connectors of the DLC156M XFP.

To cable the optical connections, perform the following tasks:

- 1. Remove the XFP safety plug that protects the TX port. Cover the unused RX optical port to keep the port clean.
- 2. Connect the fiber optic cable between the XFP transmit optical connector (TX) on the DLC156M and the destination video device.

Monitoring the DLC156M Module Operation

This section describes how to monitor the DLC156M operations using the front and rear panel LEDs and the front panel monitor connector.

This section contains the following topics:

- Understanding the DLC156M Status LEDs (page 10)
- Using the DLC156M Monitor Jack (page 12)

Understanding the DLC156M Status LEDs

Table 5 describes the different states of the DLC156M status LEDs as shown in Figure 8.



Figure 8. DLC156M Status LEDs and Monitor Connector



Table 5. DLC156M Front and Rear Panel Status LEDs

LED	Indicates	State	Description
ОК	DLC156M module status	Off	If power is applied to the system, an internal fault with the DLC156M may exist.
		Green	Normal operation.
		Yellow	Minor alarm condition exists.
		Red	Major alarm condition exists.
EMS	DL Manager system status	Off	The module's configuration is controlled by the onboard configuration switches.
		Green	The module's configuration has been set by DL Manager EMS. When green, the configuration switches have no effect on the module's operation.
ТХ	XFP transmitter status	Green	Normal TX operation.
(front panel only)		Red (flashing)	No XFP is installed or a transmitter fault exists.
RATE	Channel input rate	Off	SD-SDI or ASI input signal detected.
A–F		Green	HD-SDI input signal detected.
		Yellow	3G-SDI input signal detected.

LED	Indicates	State	Description
STATUS	Channel input status	Off	Channel disabled.
A–F		Green	Video detected on channel.
		Yellow	No video detected on channel.
		Red	Input signal rate is outside the frequency range (+/-100 PPM).
		Red (flashing)	3G-SDI detected when 3G is not enabled.
			See the "Configuring the Video Rate with SW1, SW2, and SW3" section on page 5 if needed.

Table 5. DLC156M Front and Rear Panel Status LEDs (Continued)

Using the DLC156M Monitor Jack

You can monitor the video that the DLC156M receives by using the front panel monitor port and associated Channel Select push button switch.

To connect a monitor the DLC156M to view the transmit and receive signals on Channels A and B, perform the following steps:

- 1. Connect the monitor cable between the monitor and the 75 Ohm HD-BNC monitor jack located on the DLC156M front panel (see Figure 8).
- 2. Push the **CHANNEL SELECT** button switch to sequentially monitor each channel's receive and transmit signals. When you push the switch, the selected signal's front panel LED blinks for 5 seconds to show which channel is being monitored. To advance to the next signal, push the switch again while it is blinking.

Removing the XFP and DLC156 Module

You can safely remove either the XFP from the DLC156 from the host chassis while power is applied to the module.

Note: This procedure applies to the DLC156M and DLC156D modules.

This section contains the following topics:

- Removing the XFP (page 12)
- Removing the DLC156 Module (page 13)

Removing the XFP

To remove the XFP from the DLC156, perform the following steps:

- 1. Remove the fiber optic cables from the XFP.
- 2. Pull down on the XFP handle to dislodge it from the DLC156.
- 3. Using the XFP handle, pull the XFP out of the module.



Removing the DLC156 Module

To remove the DLC156 from the host chassis, perform the following steps:

- 1. Remove the fiber optic cables from the XFP.
- 2. Remove the coaxial cables from the BNC connectors.
- 3. Loosen the two mounting screws that secure the DLC156 to the host chassis.
- 4. Using the two mounting screws, pull the DLC156 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.

Understanding and Using the DLC156D

This section, which describes how the DLC156D works and how to configure, install, and cable the module, contains the following topics:

- DLC156D Module Functional Description (page 13)
- Overview of the DLC156D Module (page 15)
- Configuring the DLC156D (page 16)
- Installing the DLC156D Module and XFP (page 18)
- Cabling the DLC156D Module (page 18)
- Monitoring the DLC156D Module Operation (page 19)
- Removing the XFP and DLC156D Module (page 21)

DLC156D Module Functional Description

This section provides a functional description of the DLC156D, including Figure 9, which is a functional block diagram of the module.



Figure 9. DLC156D Module Functional Block Diagram

Electrical Outputs

The DLC156D uses the following electrical outputs:

- Six rear panel BNC connectors for channels A to F outputs.
- Backplane connector for transmitting outputs to other host chassis modules.
- Front-panel monitor jack, which is a 75 Ohm HD-BNC connector that allows you to monitor the output video signals on each channel.

Optical Inputs and Outputs

A single XFP socket provides the DLC156D optical interface that receives the aggregated video signal. When configured to operate as a repeater, the XFP transmits the reclocked aggregated video signal. The XFP modules use LC connectors. Optical performance is dependent on the quality of your optical fiber and fiber interconnects, and on the selected XFP module, which must be specifically qualified by Artel. Consult Artel for available XFP options.



Overview of the DLC156D Module

This section provides an overview of the components that make up the DLC156D.

Figure 10. DLC156D Module Major Components



Table 6. DLC156D Elements

ltem	DLC156D Element	for details, see
1	BNC channel connectors for transmitting SD and HD video when used individually or SD, HD, and 3G when used as channel pairs as follows:	Cabling the Video Output BNC Connections (page 19)
	A—Paired with Channel B for 3G operation	
	• B	
	C—Paired with Channel D for 3G operation	
	• D	
	E—Paired with Channel F for 3G operation	
	• F	

ltem	DLC156D Element	for details, see	
2	 Rear panel BNC channel transmit status LEDs: STAT—Output status indicator RATE—Output rate indicator 	Understanding the DLC156D Status LEDs (page 19)	
3	XFP socket for the following optical connections:TX—TransmitRX—Receive	Cabling the XFP Connections (page 19)	
4	 Rear panel module status LEDs: EMS—Element management system indicator OK—Alarm indicator 	Understanding the DLC156D Status LEDs (page 19)	
5	Channel enable DIP switch SW4.	Configuring the DLC156D (page 16)	
6	Video alarm, optical repeater function, and EMS enable DIP switch SW5.		
7	 Front panel status LEDs: TX—XFP transmit status indicator RX—XFP receive status indicator RX ERR—Receive error indicator RATE A–F—BNC receive rate indicator OK—Alarm indicator EMS—Element management system indicator STATUS A–F—Channel status indicator 	Understanding the DLC156D Status LEDs (page 19)	
8	Front panel Channel Select switch—Allows you to select the channel signal to monitor.	Using the DLC156D Monitor Jack (page 21)	
9	Front panel monitor 75 Ohm HD-BNC output jack.		
10	Backplane connector—Provides power to the module, allows the module to share signals with other function modules, and is used for alarm and management signals.	N/A	

Table 6. DLC156D Elements (Continued)

Configuring the DLC156D

This section describes how to configure the operation of the DLC156D. You must configure the module while it is out of the chassis because the configuration DIP switches SW1 and SW2 are mounted to the top of the module printed circuit board.

Artel ships the DLC156D configured to operate as follows:

- All six channels enabled
- Optical transmit (TX) disabled
- Optical receive (RX) enabled



- Alarm for loss of video is disabled
- EMS override enabled (DL Manager can change the DLC156D configuration)

This section contains the following topics:

- Enabling Channels with Switch SW1 (page 17)
- Enabling Video Alarm, Optical Repeater, and EMS with DIP Switch SW2 (page 17)

Enabling Channels with Switch SW1

DIP Switch SW1 determines which video channels are enabled or disabled.

Figure 11. DLC156D DIP Switch SW1



Table 7 describes the DIP switch SW1 configuration options. The factory-set configuration settings are shown in bold type.

Note: All reserved switches must be left in the ON position.

Switch	Channel	ON	OFF	Switch	Channel	ON	OFF
S1	A	Enabled	Disabled	S5	E	Enabled	Disabled
S2	В	Enabled	Disabled	S6	F	Enabled	Disabled
S3	С	Enabled	Disabled	S7	Reserved (leave ON)	x	-
S4	D	Enabled	Disabled	S8	Reserved (leave ON)	x	-

Table 7. DIP Switch SW1 Settings

Enabling Video Alarm, Optical Repeater, and EMS with DIP Switch SW2

DIP Switch SW2 enables or disables the video alarm, optical repeater function, and EMS function.

Note: All reserved switches must be left in the **ON** position.

Figure 12. DLC156D DIP Switch SW2

SW QEF			OFF	W2	i in
125	(III)	frameti Zarneti Janet	1 2 3	KO	S123
125	and	11111	156	1	545 6 55 6
		A Same		1 11	\$7 \$8

Table 8 describes the DIP switch SW2 configuration options. The factory-set configuration settings are shown in bold type.

Switch	Function	ON	OFF
S1	Reserved (leave ON)	Х	-
S2	Reserved (leave ON)	Х	-
S3	Video alarm	No alarm.	Loss of video on an enabled input causes a major alarm.
S4	Repeater mode disabled	Repeater mode is disabled. TX laser is off.	Repeater mode is enabled. TX laser is on.
S5	Reserved (leave ON)	Х	-
S6	Reserved (leave ON)	Х	-
S7	Reserved (leave ON)	Х	-
S8	EMS Enable	DL Manager can override the local switches.	DL Manager cannot override the local switches.

Table 8. DIP Switch SW2 Settings

Installing the DLC156D Module and XFP

Installation of the DLC156D is the same as installing the DLC156M as described in the "Installing the DLC156 Module and XFP" section on page 8.

Cabling the DLC156D Module

The DLC156D receives optical video signals through an XFP and transmits electrical video signals over BNC cable connections (see Figure 13). The cabling configuration that you use depends on your application.



Figure 13. DLC156D BNC Connectors and XFP Socket



Cabling the Video Output BNC Connections

Use a high quality 75 Ohm precision video coax cable, such as Belden 1694A cable, when cabling to the DLC156D BNC connectors to the destination devices.

Cabling the XFP Connections

Use a single mode fiber when connecting to the LC connectors of the DLC156D XFP.

To cable the optical connections, perform the following tasks:

1. Remove the XFP safety plug that protects the RX and TX ports.

If you are not using the optical repeater function, cover the unused TX optical port to keep the port clean.

2. Connect the fiber optic cable between the XFP receive optical connector (RX) on the DLC156D and the source device.

If you are using the optical repeater function, connect the fiber optic cable between the XFP transmit optical connector (RX) on the DLC156D and the destination device.

Monitoring the DLC156D Module Operation

This section describes how to monitor the DLC156D operations using the front and rear panel LEDs and the front panel monitor connector.

This section contains the following topics:

- Understanding the DLC156D Status LEDs (page 19)
- Using the DLC156D Monitor Jack (page 21)

Understanding the DLC156D Status LEDs

Table 9 describes the different states of the DLC156D status LEDs as shown in Figure 14.



Figure 14. DLC156D Status LEDs and Monitor Connector

Table 9.DLC156D Front and Rear Panel Status LEDs

LED	Indicates	State	Description
ОК	DLC156D module status	Off	If power is applied to the system, an internal fault with the DLC156D may exist.
		Green	Normal operation.
		Yellow	Minor alarm condition exists.
		Red	Major alarm condition exists.
EMS	DL Manager system status	Off	The module's configuration is controlled by the onboard configuration switches.
		Green	The module's configuration has been set by DL Manager EMS. When green, the configuration switches have no effect on the module's operation.
ТХ	XFP transmitter status	Off	Repeater is disabled; laser is off.
(front panel only)		Green	Normal repeater operation; TX is enabled.
		Green (flashing)	Locked to 10 Gig Ethernet and repeating – Video outputs disabled
		Red (flashing)	No XFP is installed or a transmitter fault exists.



LED	Indicates	State	Description
RX	XFP receiver status	Green	Normal operation.
		Yellow	High receiver power.
		Red	No XFP installed or an invalid input signal detected.
RX ERR	Receive errors	Off	No optical errors detected.
		Green (flashing)	Error detected and corrected.
		Yellow (flashing)	Error detected and corrected; high error rate warning.
		Red	Error detected that could not be corrected.
RATE	Channel input rate	Off	SD-SDI or ASI input signal detected.
A–F		Green	HD-SDI input signal detected.
		Yellow	3G-SDI input signal detected.
STATUS	Channel input status	Off	Channel disabled.
A–F		Green	Video detected on channel.
		Yellow	No video detected on channel.
		Red	Input signal rate is outside the frequency range (+/-100 PPM).
		Red (flashing)	3G-SDI signal blocked at source (DLC156M).

Table 9. DLC156D Front and Rear Panel Status LEDs (Continued)

Using the DLC156D Monitor Jack

You can monitor the video that the DLC156D transmits out the BNC connectors by using the front panel monitor port and associated Channel Select push button switch.

To connect a monitor the DLC156D to view the transmit signals of a selected channel, perform the following steps:

- 1. Connect the monitor cable between the monitor and the 75 Ohm HD-BNC monitor jack located on the DLC156D front panel (see Figure 14).
- 2. Push the **CHANNEL SELECT** button switch to sequentially monitor each channel's receive signals. When you push the switch, the selected signal's front panel LED blinks for 5 seconds to show which channel is being monitored. To advance to the next signal, push the switch again while it is blinking.

Removing the XFP and DLC156D Module

Removing the DLC156M module or XFP is the same as removing the DLC156M as described in the "Removing the XFP and DLC156 Module" section on page 12.



Index

Α

audience <mark>ix</mark>

В

backplane connector DLC156D 16 DLC156M 4 block diagram DLC156D 13 DLC156M 2 BNC connectors DLC156D 15 DLC156M 4

C

cable interfaces DLC156D 18 DLC156M 10 caution definition x Channel Select switch DLC156D 16 DLC156M 4 conventions x Customer Service x

Е

e-mail address, Customer Service x

F

functional description DLC156D 13 DLC156M 2

L

LEDs front panel DLC156D 16 DLC156M 4 rear panel DLC156D 16 DLC156M 4

Μ

module cable DLC156D 18

DLC156M 10 components DLC156D 15 DLC156M 3 install DLC1568 remove DLC156 12 monitor jack DLC156D 21 DLC156M 12 monitor operations DLC156D 19 DLC156M 10 monitor output jack DLC156D 16 DLC156M 4

0

operations, monitor DLC156D 19 DLC156M 10

R

related documentation ix return authorization (RA) number x

S

shipment, damaged x status LEDs DLC156D 19 DLC156M 10 symbols x

W

warning definition x

X

XFP cable DLC156D 19 DLC156M 10 socket DLC156D 16 DLC156M 4

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