INFINITYLINK ILC410

SD-SDI or ASI 2 Channel Bi-Directional IP Gateway

Installation and Operations Manual

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ILC410 Function Module

SD-SDI or ASI 2 Channel Bi-Directional IP Gateway

Installation and Operations Manual

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Revision history for the *ILC410 Function Module Installation and Operations Manual*.

		Revision History	
Revision	**Document Number**	**Date**	**Reason for Change**
A	AR200-006410-C00_A	November, 2016	Initial release.

Table of Contents

About This Manual

This manual provides instructions for installing, configuring, and operating the ILC410 function module.

Audience

This manual is intended for the following trained and qualified service personnel who are responsible for installing and operating the ILC410:

- System installer
- Hardware technician
- System operator

Related Documentation

The following documentation contains material related to the ILC410 function module:

Document	Provides . . .
ILC410 Data Sheet	Product operating and environmental specifications, and regulatory conformance information.
ILC410 Quick Start Guide	Product configuration information using the InfinityLink Manager element management system and descriptions of the front panel status LED operations.
InfinityLink IL6000 Chassis Installation and Operations Manual	Overview and installation instructions for the InfinityLink media transport platform chassis options, including the following: • IL6000 chassis—Installation of this 4-slot chassis, power supplies, and function modules.
InfinityLink IL6000 Data Sheet	Overview of the InfinityLink media transport chassis options.
InfinityLink Manager Setup and Operations Manual	Overview and operating instructions for the InfinityLink 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

You can reach Customer Service by e-mail at customercare@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.

ILC410 Function Module

SD-SDI or ASI 2 Channel Bi-Directional P Gateway

Information About the ILC410

This manual introduces the ILC410 function module and includes information for installing and configuring the module. The ILC410 is an IP transport module that can transmit and receive 270 Mb/s SDI or ASI video signals over 1 Gigabit Ethernet (GbE) networks that meet SMPTE 2022-1, 2022-2, 2022-5, and 2022-6 standards for video transmission over IP networks. The ILC410 supports two full duplex SDI or ASI video circuits using dual input and output BNC connectors. The managed IP network connection is made using a Small Form Factor Pluggable (SFP) module.

Additional supported features include:

- User-selectable ASI or SDI module operation

- Multicast or unicast operation

- Configurable forward error correction (FEC) for recovery of dropped or corrupted packets

- Configurable tolerance level for late arriving packets

- Withstands burst outages in excess of 3 ms

- Artel-approved SFPs available to support the following connection types:

    – Optical—Supports 1000Base-LX and 1000Base-ZX formats and WDM, CWDM, and DWDM wavelengths

    – Electrical—Supports 1000Base-T format

- Standard 1000Base-X (IEEE802.3z) methods to indicate the presence of the fiber optic link but no active data being transmitted

You provision and monitor the ILC410 using Artel's InfinityLink Manager (IL Manager), which is an element management system (EMS). You can also monitor the ILC410 operating status using the module's status indicators and front panel monitor jack.

ILC410 Module Functional Description

This section provides a functional description of the ILC410. Figure 1 shows the functional block diagram for the ILC410.

Figure 1.   ILC410 Module Functional Block Diagram
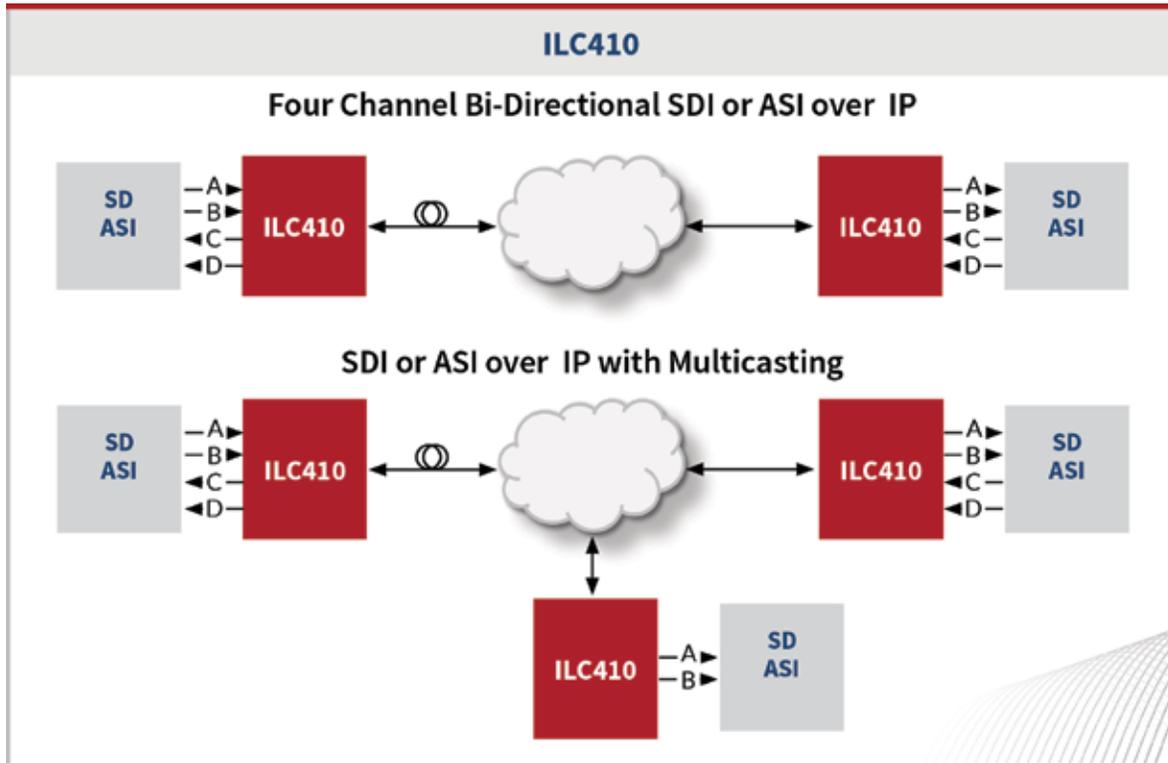
This section contains the following topics:

Video Network Input to IP Network Output

This section describes how the ILC410 receives a signal from the video network and processes the signal for output to a managed IP network (see Figure 1).

Video Network Input

The ILC410 accepts SDI or ASI video signals from the following sources:

- Two 75 Ohm BNC input connectors—Located on the rear panel of the module, these are the most commonly used inputs. The connectors are labeled INA and INB and each one is dedicated to a specific video channel: CHA or CHB.

- Another chassis module—Signals from other modules in the host chassis can be received through the backplane.

You select the digital video source using IL Manager (see the "Configuring the ILC410 Module" section on page 11). The ILC410 blocks any video signals that are not of the type selected to process (either SDI or ASI). When no input signal is present, the front panel's corresponding IN status LED illuminates yellow (solid) when the video channel is enabled.

The video input is also made available at the front-panel monitor jack, which is a 75 Ohm HD-BNC connector that allows you to monitor the input and output video signals.

Video Processing

To prepare the input video for transportation over an Ethernet network, the ILC410 processes the input signal from the video network in accordance with SMPTE 2022-1/2/5/6 as follows:

1. Real-time Transport Protocol (RTP) Encapsulation—Video packet payload and header are encapsulated in RTP packets.

2. FEC Encoding and Encapsulation—(Optional) FEC is applied and the RTP packets are encapsulated in FEC packets.

3. User Datagram Protocol (UDP) and IP Encapsulation—FEC packets are encapsulated in UDP packets, which are then encapsulated in IP packets.

4. Ethernet MAC—IP packets are encapsulated in Ethernet packets.

Figure 2 shows a model of encapsulated video packets ready for transmission over an Ethernet network.

Figure 2.   Encapsulating Video Packets for Ethernet Networks
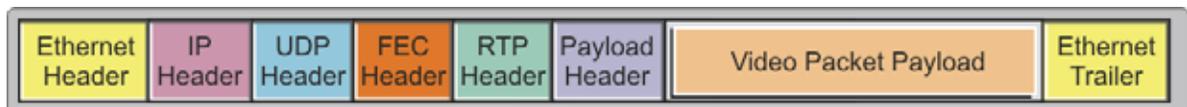
IP Network Video Output

The ILC410 transmits encapsulated video to the managed IP network using an SFP.

IP Network Input to Video Network Output

This section describes the process by which the ILC410 receives encapsulated video signals from a managed IP network and outputs the decapsulated video signals to a video network (see Figure 1).

IP Network Input

The ILC410 receives encapsulated video from the managed IP network using an SFP, which can be:

- Optical—LC connector with optics that support WDM, CWDM, or DWDM wavelengths.

- Electrical—RJ45 connector.

Video Processing

The ILC410 processes the SMPTE 2022-1/2/5/6 from the IP network as follows:

1. Ethernet MAC—Ethernet header and trailer are removed from the IP packets.

2. IP and UDP Decapsulation—IP header and then the UDP header are removed.

3. FEC Decoding and Decapsulation—(Optional) FEC is applied to recover lost packets.

4. RTP Decapsulation—RTP header is removed.

Video Network Output

The ILC410 outputs the decapsulated SDI or ASI video signals to the following destinations:

- Two 75 Ohm BNC output connectors—Located on the rear panel of the module, these are the most commonly used outputs. The connectors are labeled OUTA and OUTB and each one is dedicated to a specific video channel: CHA or CHB.

- Another chassis module—Output signals can be transmitted to other modules in the chassis through the backplane connector.

You select the digital video destination using IL Manager (see the "Configuring the ILC410 Module" section on page 11).

The video output is also made available at the front-panel monitor jack, which is a 75 Ohm HD-BNC connector that allows you to monitor the input and output video signals.

Electrical Inputs and Outputs

The ILC410 uses the following electrical inputs and outputs:

- Rear panel BNC connectors.

- Backplane connector.

- Rear panel SFP socket that can accommodate an electrical SFP with RJ45 connector (if an optical SFP is not used).

- Front-panel monitor jack, which is a 75 Ohm HD-BNC connector that allows you to monitor the input and output video signals.

Optical Inputs and Outputs

A single SFP socket provides the ILC410 optical Ethernet interface (if an electrical SFP is not used). The optical SFP modules use LC connectors. Optical performance is dependant on the quality of your optical fiber and fiber interconnects and on the selected SFP module, which must be specifically qualified by Artel. Consult Artel for available SFP options.

Ethernet Interface Characteristics

The ILC410 Ethernet interface characteristics are as follows:

- Operates with 1 GbE full-duplex Ethernet only.

- Supports Internet Protocol version 4 (IPv4) only (IPv6 is not supported).

- Supports the following networking protocols: ARP, ICMP, IP, UDP, TCP, and RTP.

- Employs static IP addresses for the video and control IP addresses (DHCP is not supported). Transmit channels A and B each have a dedicated, user-defined IP address or multicast group specification register. Receive channels A and B each have one user-defined receive IP address or receive multicast group register and a multicast source IP address register.

  Note: Artel ships the ILC410 configured with a set of default IP addresses and port numbers. You must configure these items with values that are specific to your IP network (see the "Configuring the ILC410 Module" section on page 11).

Overview of the ILC410 Module

This section provides an overview of the major components that make up the ILC410.

Figure 3.   ILC410 Module Major Components
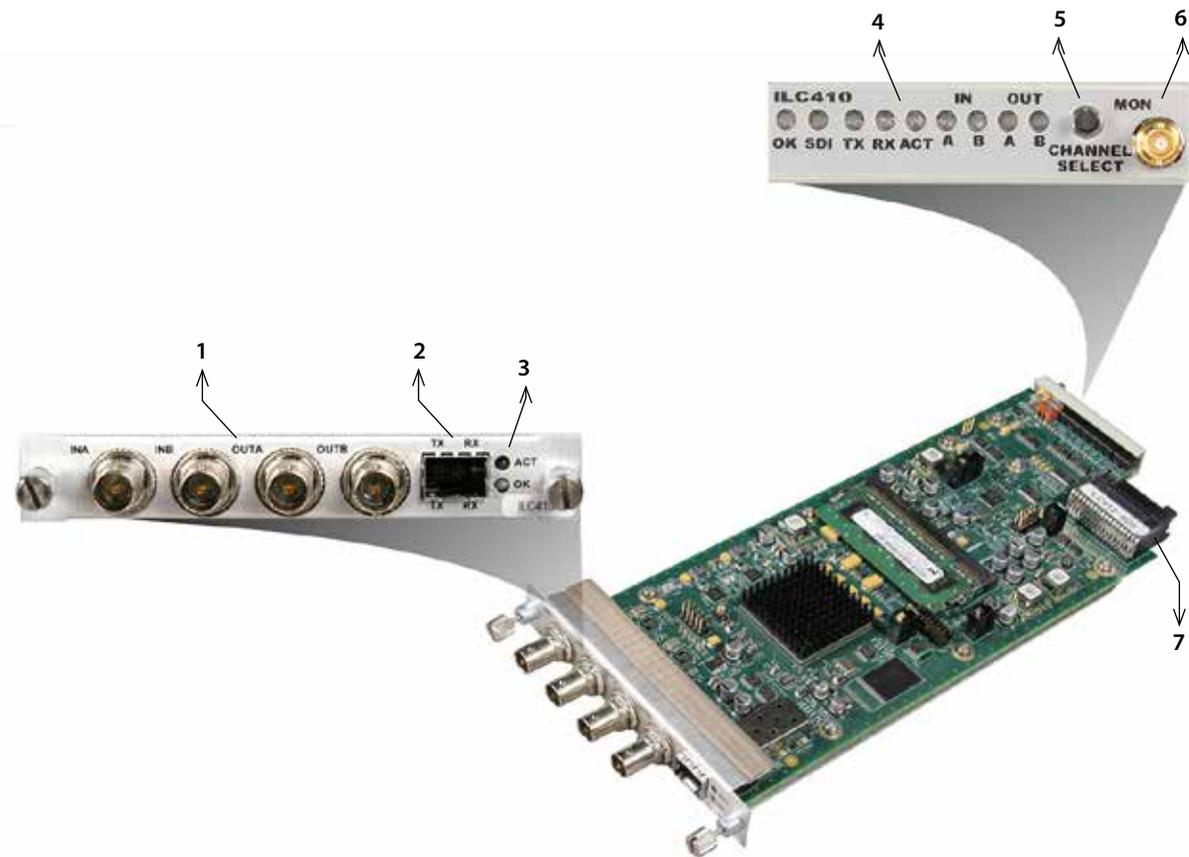
Table 1 describes the components called out in Figure 3.

Table 1.   ILC410 Elements

Item	ILC410 Element	for details, see...
1	BNC connectors for receiving and transmitting SDI or ASI video as follows: • INA—Input channel A • INB—Input channel B • OUTA—Output channel A • OUTB—Output channel B	Cabling the BNC Video Network Electrical Connections (page 10)
2	SFP socket for the following optical or electrical connections: • TX—Transmit • RX—Receive	Cabling the SFP IP Network Connections (page 10)

Table 1. **ILC410 Elements** **(Continued)**

Item	ILC410 Element	for details, see...
3	Rear panel status LEDs: • ACT—SFP Ethernet port status indicator • OK—Alarm indicator	Understanding the Status LEDs (page 17)
4	Front panel status LEDs: • OK—Alarm indicator • SDI—Video type indicator (SDI-On/ASI-Off) • TX—SFP transmit status indicator • RX—SFP receive status indicator • ACT—SFP Ethernet port status indicator • IN—Receive signal status indicators for channels A and B • OUT—Transmit signal status indicators for channels A and B	Understanding the Status LEDs (page 17)
5	Front panel Channel Select switch—Allows you to select the receive or transmit signal to monitor or reset the module.	Using the Monitor Jack (page 18)
6	Front panel monitor 75 Ohm HD-BNC output jack.	
7	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

Installing the ILC410 Module

The ILC410 and associated SFP are hot swappable, enabling you to safely install them while power is applied to the host chassis.

Note: Before you install the ILC410, see the ILC410 data sheet for a detailed description of the module specifications including environmental requirements that you must adhere to when installing the module.

To install the ILC410 in the host chassis, perform the following steps:

1.   From the back of the chassis (see Figure 4), remove the two screws that secure the blank tray to one of the unused function module slots (if necessary).

    You can use any available function module slot.

2.   Slide the ILC410 into the slot using the printed circuit board guide rails on either side of the slot.

3.   Push the ILC410 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.

    Note: Failure to properly secure the ILC410 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.

5.   Install the Artel-approved SFP into the ILC410 with the handle on top as shown in Figure 4.

    Push the SFP into the socket located on the right side of the function module until it is firmly seated in the socket.

    Note: When you do not install an SFP, the TX LED located on the ILC410 front panel will flash. See Table 5 for other LED status indications

Figure 4.   **ILC410 Module Installation**

ILC410 Module

Mounting Screws
(2)

SFP
(handle on top)
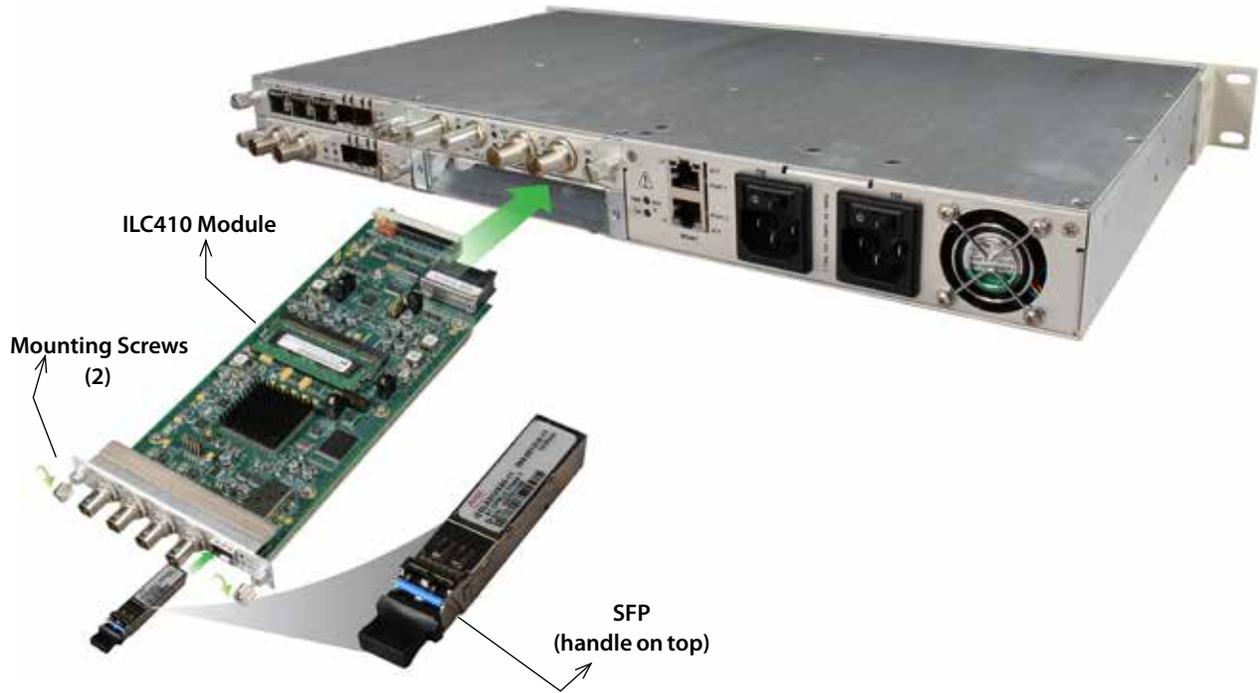
Note: Insert a blank tray in any unused chassis module slots to maintain proper ventilation.

Cabling the ILC410 Module

The ILC410 can transmit and receive video network signals over the BNC electrical cable connections. For IP network connectivity, the ILC410 transmits and receives signals through an SFP using either electrical (copper) or fiber optic cable connections. The cabling configuration that you use depends on your application. All external connectors are located on the rear panel of the ILC410.

Figure 5.   **ILC410 BNC Connectors and SFP Socket**

Note: When handling fiber optic cables, adhere to the standard safety practices for handling a Class 1 laser product.

This section contains the following topics:

Cabling the BNC Video Network Electrical Connections

Use a high quality 75 Ohm precision video coax cable, such as Belden 1694A cable, when cabling to the ILC410 BNC connectors.

Cabling the SFP IP Network Connections

The type of SFP that you use determines whether you are connecting to the managed IP network using an electrical or an optical connection.

This section contains the following topics:

Cabling Optical SFP Connections

Use a single mode fiber when connecting to the LC connectors of the ILC410 SFP.

To cable the optical connections, perform the following tasks:

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

    Cover any unused optical port to keep the port clean.

2. Cable the optical connections as follows:

    - Receive signal—Connect the fiber optic cable between the IP network optical transmit connector and the SFP receive optical connector (RX) on the ILC410.

- Transmit signal—Connect the fiber optic cable between the IP network optical receive connector and the SFP transmit optical connector (TX) on the ILC410.

Cabling Electrical SFP Connections

To connect to the SFP's RJ45 connector, use a CAT5e cable.

Configuring the ILC410 Module

This section describes how to configure the operation of the ILC410 using IL Manager.

Prerequisites

- You must use IL Manager to configure the ILC410. Refer to the *InfinityLink Manager Setup and Operations Manual.*

- Your network administrator must provide you with the following items for configuring the ILC410 IP network connection:

  - IP Address

  - Netmask

  - Gateway

  - VLAN

  - VLAN Priority

  See Table 2 for item descriptions.

To configure the ILC410, perform the following steps:

1. From a browser window, enter the IP address of the IL Manager that manages the module.

    The Home page appears.

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

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

3. From the Installed Modules table, click the **ILC410** link listed in the Module Type column.

    The Module Status page appears, which shows the module's current configuration and alarm conditions if any exist.

4. From the menu bar, click **Configuration**.

    The Configuration page appears.

5. Configure the module operation as follows (click **?** for related online help):

- From the Module Settings pane, configure the module settings as described in Table 2.

Table 2.   Module Settings

Item	Description
IP Address	ILC410 IP address. This address responds to Internet Control Message Protocol (ICMP) echo requests (pings) and is the source IP address of video transmissions. Enter a value using dotted-decimal format (for example, 10.10.10.1). **Note:** The module IP address is independent of the video Destination IP Address that you configure for the transmitter and the video Source IP Address that you configure for the receiver.
Netmask	Subnet mask for the ILC410 IP address (for example, 255.255.0.0).
Gateway	Network gateway IP address. If the network does not have a gateway, leave this field blank.

Auto-Negotiate	Auto-negotiate function for the ILC410 Ethernet interfaces, which are set to operate at 1 GbE, full-duplex only. Choose one of the following:
	
	• **Enable**—The ILC410 does the following:
	  – Auto-negotiates a link with another device set to auto-negotiate and 1 GbE, full-duplex.
	  – Attempts to link with a device that is not set to auto-negotiate.
	
	    Note: Even when a link appears to be made, the ILC410 does not reliably transfer data.
	
	• **Disable**—The ILC410 does the following:
	  – Establishes a link with another device that is not set to auto-negotiate but is set to 1 GbE, full duplex.
	  – Attempts to link with another device that is set to auto-negotiate.
	
	    Note: Even when a link appears to be made, the ILC410 does not reliably transfer data.

VLAN	VLAN operating state. When enabled, the ILC410 appends the specified VLAN ID to the outgoing Ethernet frames. Choose one of the following: • **Enable** • **Disable**
VLAN ID	VLAN identifier that the ILC410 appends to the outgoing Ethernet frames. Enter a value from **0** to **4095**. **Note:** This parameter requires the VLAN setting to be **Enable**.
VLAN Priority	Class of service (CoS), or traffic prioritization, assigned to the traffic on the VLAN. Enter a value from **0** to **7**, with 0 being the lowest priority and 7 the highest. **Note:** This parameter requires the VLAN setting to be **Enable**.

Table 2.   Module Settings (Continued)

Item	Description
Video Mode	Video mode for Channels A and B. Choose one of the following: • **ASI** • **SD/SDI**
Video Alarm	Video alarm operating state. When enabled, the ILC410 issues an alarm when the active video signal is lost. Choose one of the following: • **Enable** • **Disable**
SFP Alarm	SFP alarm operating state. When enabled, the ILC410 issues an alarm when the SFP is not installed. Choose one of the following: • **Enable** • **Disable**

• From the Receiver Channel A and B panes, configure the receiver settings as described in Table 3.

Table 3.   Receiver Channel Settings

Field	Description
Receiver	Operating state of the receivers for Channels A and B. When enabled, the ILC410 can receive video on the associated channel. Choose one of the following: • **Enable** • **Disable**
Source IP Addr	IP address of the source ILC410 or SMPTE 2022-based Ethernet transmitter. Enter a value using dotted-decimal format (for example, 10.10.10.1).
Multicast Group	Special IP multicast group address that the ILC410 is to receive traffic from during multicast reception. Enter a value using dotted-decimal format (for example, 10.10.10.1).
Port	Logical TCP/IP port address on which the ILC410 receives IP packets. Enter a value from **1** to **65535**.
Recovery Buffer	Size of the buffer that handles late arriving and misordered packets. The ability of the ILC410 to handle late or misordered buffers increases with the size of the buffer. Choose one of the following: • **Sm** (small) • **M** (medium) • **Lg** (large) Recovery buffer size and FEC Mode settings determine ILC410 latency.

- From the Transmitter Channel A and B panes, configure the transmitter settings as described in .

Table 4. Transmitter Channel Settings

Field	Description
Transmitter	Operating state of the transmitters for Channels A and B. When enabled, the ILC410 can transmit video on the associated channel. Choose one of the following: • **Enable** • **Disable**
Video Source	Source connection that the ILC410 uses for the video that it receives and processes. Choose one of the following: • Backplane chassis slot. The available choices depend on the host chassis type as follows: – For IL6000, displays backplane slots 1–4. • BNC IN connector—**InA** or **InB** depending on the channel being configured.
Destination IP Addr	IP address of the destination ILC410 or SMPTE 2022-based Ethernet receiver. Enter a value using dotted-decimal format (for example, 10.10.10.1).
Port	Logical port address on which the ILC410 transmits IP packets. Enter a value from **1** to **65535**.
Type of Service	Type of service (ToS) bits for the data that the ILC410 transmits. ToS specifies the IP priority level with which to route traffic through the IP network to the destination device. Enter a value from **0** to **7**. The higher the value, the better the service.

FEC Mode	Forward error correction (FEC) settings. Choose one of the following:
	
	• **Col**—Enables column FEC in which packets are mapped into columns. In the Column field, specify the number of columns. Valid ranges are as follows:
	
	   – **1** to **1023** (this is the entire valid range).
	   – **1** to **1020** for interoperability.
	   – **4** to **1020** for interoperability when using RowColumn FEC.
	
	• **RowCol**—Enables row/column FEC in which packets are mapped into a matrix of rows and columns. In the Column and Row fields, specify the number of columns and rows. The maximum matrix size allowed is as follows:
	
	   ROW X Col = 1500
	
	• **None**—Disables FEC.
	
	The FEC Mode and Recovery Buffer settings determine ILC410 latency.

ASI Bandwidth Limit	(ASI mode only) Maximum ASI bandwidth allowed. If the bandwidth exceeds the specified limit, the traffic is throttled. Enter the ASI bandwidth limit.

Table 4.   Transmitter Channel Settings (Continued)

Field	Description
M2TS Packing	(ASI mode only) Number of MPEG-2 Transport Stream (M2TS) frames per IP frame.
	Inserting a small number of M2TS frames per IP frame minimizes the amount of lost video frames when an IP frame is dropped or corrupted; however, this packing method reduces bandwidth efficiency because of the overhead associated with the additional IP frames required to transport a set amount of M2TS frames.
	Inserting a large number of M2TS frames per IP frame increases the possibility of losing larger amounts of video frames for each dropped or corrupted IP frame; however, this packing method increases bandwidth efficiency because it takes fewer IP frames to transport a set amount of M2TS frames.
	Choose one of the following values:
	• **1**—Least efficient use of bandwidth but least susceptible to lost video when IP frames are dropped or corrupted.
	• **4**—Moderately efficient use of bandwidth and moderately susceptible to lost video.
	• **7**—Most efficient use of bandwidth but greatest susceptibility to lost video when IP frames are dropped or corrupted.

6.   Click one of the following buttons:

-    **Submit**—Saves the displayed configuration information.

-    **Reload Page**—Ignores any modifications that you made and reloads the module's current configuration.

Labeling the ILC410 Interfaces

You can assign custom labels and descriptions to each of the ILC410 input and output interfaces, which makes it easier for you to track the source and destination of the traffic that is routed through the ILC410.

To assign labels to the ILC410 interfaces, perform the following steps:

1.   From the IL Manager client device, access the IL Manager home page (see the *InfinityLink Manager Setup and Operations Manual*).

2.   From the IL Manager home page, click **Shelf View**.

The Shelf View page appears, which displays a table of the installed function modules, including the installed ILC410 modules.

3.   From the Module Type column of the Shelf View page, click the ILC410 to configure.

The ILC410 Module Status page appears, displaying the module's current configuration.

4.   From the ILC410 Module Status page, click **Edit Labels**.

The ILC410 Edit Labels page appears.

5. Define a label and description for each interface as follows using the specified number of alphanumeric characters (special characters are permitted):

    - **Name**—16 characters maximum.

    - **Description**—40 characters maximum.

6. Click one of the following buttons:

    - **Submit**—Saves the displayed label information.

    - **Reset**—Resets the information that you modified back to its previous value.

Monitoring the ILC410 Module Operation

You can monitor the ILC410 operations locally using the front panel LEDs and monitor connector or remotely using IL Manager.

This section contains the following topics:

Monitoring the ILC410 Status Using the Front Panel

This section describes how to monitor the ILC410 operations using the front panel LEDs and the monitor connector.

Figure 6.   **ILC410 Status LEDs and Monitor Connector**

This section contains the following topics:

Understanding the Status LEDs

Table 5 describes the different states of the ILC410 status LEDs as shown in Figure 6.

Table 5. ILC410 Status LEDs

LED	Indicates . . .	State	Description
OK (also located on the rear panel (see Figure 5))	ILC410 module status	Off	If power is applied to the system, an internal fault with the ILC410 may exist.
		Green	Normal operation.
		Yellow	Minor alarm condition exists.
		Red	Major alarm condition exists.
SDI	Detected video type	Off	ASI operating mode.
		Green	SDI operating mode.
TX	SFP transmitter status	Green	Normal operation; optical output on, able to send IP traffic.
		Red	SFP Tx fault detected (major alarm).
		Red (flashing)	SFP not installed.
RX	SFP receiver status	Green	Normal operation; incoming Rx signal detected.
		Yellow (flashing)	Optical Rx power too high.
		Red (flashing)	Optical Rx SFP power too low/LOS or SFP not installed.
ACT (also located on the rear panel (see Figure 5))	SFP Ethernet activity status	Off	No Ethernet link detected.
		Green	Ethernet link present.
		Green (flashing)	Ethernet link activity detected.
IN A and B	TX channel status	Off	Channel is disabled.
		Green	Video is received.
		Yellow	No signal detected.
		Red	Improper video input.
		Red (flashing)	DVB-ASI rate limited.

Table 5.   ILC410 Status LEDs   (Continued)

LED	Indicates . . .	State	Description
OUT A and B	RX channel status	Off	Channel is disabled.
		Green	Video is received.
		Green (flashing)	Successful FEC.
		Green/Red (alternate)	Unsuccessful FEC.
		Yellow	Provisioned but not receiving IP packets.
		Red	Improper video input.

Using the Monitor Jack

You can monitor the video that the ILC410 receives or transmits by using the front panel monitor port and associated Channel Select push button switch.

To connect a monitor the ILC410 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 ILC410 front panel (see Figure 6).

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.

   Note: The CHANNEL SELECT button switch can also be used to reboot the ILC410 (see the "Rebooting the ILC410 Module" section on page 22).

Monitoring the ILC410 Status Using IL Manager

IL Manager's ILC410 Module Status page provides a detailed view of the ILC410 module's current configuration and operating status, including the operating states of channels A and B and any detected alarm conditions.

   Note: Each of the reported parameter values has either been *assigned* or *installed* as part of the manufacturing process, *detected* by the ILC410, or *configured* by you. For more information about the configured parameters, see the "Configuring the ILC410 Module" section on page 11.

To display the ILC410 Module Status page, perform the following steps:

1. From the IL Manager client device, access the IL Manager home page (see the *InfinityLink Manager Setup and Operations Manual*).

2. From the IL Manager home page, click **Shelf View**.

   The Shelf View page appears, which displays a table of the installed function modules, including the installed ILC410 modules.

3. From the Module Type column of the Shelf View page, click the ILC410 to configure. The ILC410 Module Status page appears, displaying the module's current configuration and operations.

See the following sections for information about each pane in the ILC410 Module Data page:

- Current Configuration Pane (page 19)
- Channels A and B Status Panes (page 19)
- Alarms Pane (page 20)
- SFP Status (page 20)
- Routing Labels Status (page 20)

Current Configuration Pane

Table 6 describes the content of this pane.

Table 6.　　Current Configuration Status

Field	Description
Video Mode	Mode setting: **ASI** or **SDI**.
SFP Alarms	Alarm operating state: **Enabled** or **Disabled**.
Video Alarms	Alarm operating state: **Enabled** or **Disabled**.
Backplane outputs	Receiver backplane output slot number: • Slots 1–4 (IL6000 chassis)

Channels A and B Status Panes

Table 7 describes the content of this pane.

Table 7.　　Channels A and B Status

Field	Description
IP Link	IP link status: • **OK**—Link established. • **NONE**—No link established.
Receive Video	Video receive status: • **DISABLED**—Receive function disabled. • **ENABLED**—Receive function enabled. • **NOT DETECTED**—Video not detected.
Video Input	Video input status: • **DETECTED**—Video input detected. • **NOT DETECTED**—Video input not detected.

Table 7. **Channels A and B Status**

Field	Description
Transmit Video	Transmit video state: • **LOCKED**—Signal is received or transmitted. • **UNLOCKED**—Indication that the input signal rate is outside the standard rate requirements or the signal type does not match the selected mode. • **DISABLED**—No video data can be received or transmitted.
Transmit Source	Transmit source connection: • **BNC**—Rear panel BNC. • **Slot** *number* **port** *number*—Backplane selection (for example, Slot 1 port C)

Alarms Pane

Table 8 describes the content of this pane.

Table 8. **Alarms Status**

Field	Description
Major Alarms	Detected major alarms (if any).
Minor Alarms	Detected minor alarms (if any).

SFP Status

Table 9 describes the content of this pane.

Table 9. **Optical Status Pane**

Field	Description
Model Number	SFP model number.
Wavelength/Cable Type	Wavelength in nm or Cable Type CAT 5.
Serial Number	SFP serial number.

SFP Type	SFP information depending on SFP type:
	• Copper SFP: **Copper SFP present**
	• Optical SFP:
	  – **RX power in dBM**
	  – **TX power in dBM**

Routing Labels Status

The Routing Labels pane displays each of the module's I/O connections and any custom label or description assigned to each one. For information about configuring the labels, see the "Labeling the ILC410 Interfaces" section on page 15.

Monitoring the ILC410 Statistics Using IL Manager

The IL Manager's ILC410 Statistics page provides a detailed statistical analysis of the ILC410 video processing operations, including information that the ILC410 compiles for the SDI video signals that it receives on Channel A and Channel B.

To display the module ILC410 statistical data, perform the following steps:

1. From the IL Manager client device, access the IL Manager home page (see the *InfinityLink Manager Setup and Operations Manual*).

2. From the IL Manager home page, click **Shelf View**.

    The Shelf View page appears.

3. From the Module Type column of the Shelf View page, click the ILC410 that has the statistical data that you want to view.

    The ILC410 Module Status page appears.

4. From the main menu, click **Statistics**.

    The ILC410 Statistics page appears. Table 10 describes the information that displays.

Table 10.   ILC410 Channel Statistics

Field	Description
Module Statistics	
Rejected RTP Packet Count	Number of rejected Real-time Transport Protocol (RTP) packets. The most common cause of packets being rejected is when the ports between the transmitter and receiver devices are not configured correctly. **Note:** To reset the rejected RTP packet counter, click **Reset**.
Receive Channel Statistics	
Video Packet Count	Number of received packets since the channel began receiving video.
Row FEC Packet Count	Number of received row FEC packets since the channel began receiving video.
Col FEC Packet Count	Number of received Column FEC packets since the channel began receiving video.
Uncorrected Video Packets	Number of FEC uncorrected errors since the channel began receiving video.
Corrected Video Packets	Number of FEC corrected errors since the channel began receiving video.
Transmit Channel Statistics	
SD SDI	(SDI only) Indicator that the ILC410 is configured to process SDI video.
ASI Rate	(ASI only) Indicator that the ILC410 is configured to process ASI video and is transmitting the packets at the rate shown.

5. (Optional) To update the displayed data at any time, click the browser's **Refresh** button.

Monitoring the ILC410 Diagnostics Data Using IL Manager

The IL Manager's ILC410 Diagnostic page displays information related to the module hardware and the detected internal voltage readings.

To display the module ILC410 diagnostics information, perform the following steps:

1. From the IL Manager client device, access the IL Manager home page (see the *InfinityLink Manager Setup and Operations Manual*).

2. From the IL Manager home page, click **Shelf View**.

   The Shelf View page appears.

3. From the Module Type column of the Shelf View page, click the ILC410 that has the diagnostics information that you want to view.

   The ILC410 Module Diagnostics page appears.

4. From the main menu, click **Diagnostics**.

   The ILC410 Diagnostics page appears. For details about the information that displays, see the *InfinityLink Manager Setup and Operations Manual*.

5. (Optional) To force a refresh of the displayed data, click **Refetch Data from Module**.

6. (Optional) To initiate a warm start of the IL Manager agent, click **Restart Module Management Agent**.

Rebooting the ILC410 Module

You can reboot the ILC410 module, which does not affect the current module configuration. You may need to reboot the module to ensure that it is operating with the latest saved configuration.

To reboot the module, press and hold the **CHANNEL SELECT** button switch located on the ILC410 front panel (see Figure 6) for 5 seconds.

Removing the SFP and ILC410 Module

You can safely remove either the SFP from the ILC410 or the ILC410 from the host chassis while power is applied to the module.

This section contains the following topics:

Removing the SFP

To remove the SFP from the ILC410, perform the following steps:

1. Remove the IP network cables from the SFP.

2. Pull down on the SFP handle to dislodge the SFP from the ILC410.

3. Using the SFP handle, pull the SFP out of the module.

Removing the ILC410 Module

To remove the ILC410 from the host chassis, perform the following steps:

1. Remove the IP network cables from the ILC410 SFP.

2. Remove the video network coaxial cables from the BNC connectors.

3. Loosen the two mounting screws that secure the ILC410 to the host chassis.

4. Using the two mounting screws, pull the ILC410 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.

Index

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