Camera Fiber-Link™

*Powered by MRTS Technology

Product Series Brochure

Camera Fiber-Link CFL-4000
(frame grabber side)

Camera Fiber-Link CFL-4000
(camera side)

Designed For High Performance Vision Applications

Machine-vision and security applications often need cameras to be located in different locations from the controlling computers. Long distance image transmission, security and resolution become top priority in these environments. The Thinklogical Camera Fiber-Link extension system addresses this need and is an ideal solution for industrial applications which rely on high-resolution and image acquisition. This state-of-the-art camera link system guarantees a constant sensitivity of the image thanks to **MRTS technology (Multi-Rate Transmission System)**, a unique patent pending optic platform.

Developed for the Camera-Link™ standard for high performance digital cameras and frame grabbers, the Camera Fiber-Link system transmits signals from 350 meters up to 10 kilometers over multi-mode or single-mode fiber, without picking up electromagnetic interference that is common in these environments. This allows users to position a camera in any manufacturing setting or hostile factory floor environment, while keeping the computer secure in a controlled location. With industrial enhancements such as screw lock (threaded) input and 5 to 12V or 12 to 24V, it is the ideal for rugged industrial environments. Addition options allow customers to use their own DC input and utilize din rail connectors for mounting and chassis grounding. All models are housed in a compact metallic enclosure small enough to mount easily in cramped environments.

Series Includes:

- Camera Fiber-Link 3000 - TX/RX CFL- 3000 **Supports Base Configurations**
- Camera Fiber-Link 4000 - TX/RX CFL- 4000 **Supports Full/Medium/Base Configurations**
- Camera Fiber-Link 5000 - TX/RX CFL - 5000 **Supports Dual-Base Configurations**
- Camera Fiber-Link 6000 - RX only CFL - 6000 **Supports Dual-Base Configurations with Two Independent Cameras**

thinklogical™

www.thinklogical.com

Camera Fiber-Link 3000 System Overview

Camera Fiber-Link CFL-3000
(camera side TX and frame grabber side RX)

Each system consists of a Camera side unit and a Frame Grabber side unit (both units are similar in appearance, but are labeled differently). Each extender supports the camera signals, as well as serial connections (both the SerTFG and SerTC within the MDR cable, and three pairs of RS-232 lines). The CFL-3000 supports Base configurations and requires two fibers. The CFL-3000 is available with SC-, ST-, or LC-type fiber connectors.

Features

- Supports Camera-Link™ base configurations with pixel clocks from 20-85MHz
- Extend camera signals up to:
  - 350 meters using standard multi-mode fiber
  - 1000 meters using eSX+ fiber
  - 10 kilometers using single-mode fiber
- Transparent Camera-Link™ operation
- Small form factor, units are self-contained and do not require user adjustments
- Signal transmission via fiber optic cable – no RF interference
- Serial Port (RJ45) with RS232 interface
- Class 1 laser product
- Industrial Options also include:
  - * Power Input: 5 to 12V or 12 to 24V
  - * Screw lock (threaded) power connector
  - * Use of users own DC input
  - * Din rail connectors for mounting
  - * Chassis ground post

Specifications

Pixel Clock	20-85 MHz
Supply Voltage	+5.0 VDC
Operating Temp.	0°-50°C; (32°-122°F)
Humidity	5-95% RH, non-condensing
Dimensions	Height: 1.25" (3.2cm)
And Weights	Depth: 5.44" (13.8cm)
	Width: 6.88" (17.5cm)
	Weight: 1lb (0.45kg) each
	Shipping Weight: 6lb (2.72kg) pair
	(Tolerance: ± .039"; .100cm)

Specifications (continued)

Optical Cable	Single-mode over two fibers
	Multi-mode over two fibers
	(Fiber is available, not supplied)
Optical Distance	Up to 50 meters with type OM1
	Up to 350 meters with type OM2
	Up to 1000 meters with OM3 enhanced
	Up to 40 kilometers with type OS2
	(single-mode)
Power Consumption	<10 watts per unit
DC Adapter	AC/DC adapter universal
Input	100-240VAC, 50-60Hz (supplied)
Compliance	Approvals for US, Canada,
	and European Union
Warranty	12 months from date of shipment
	Extended warranties available

Copper Connectors:

Camera Side	
Video	MDR-26 (1)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (2)
Frame Grabber Side	
Video	MDR-26 (1)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (2)

Cables Included:

MDR-26 Camera-Link™ Cable, 2 meters (2)
KIT-000013-R which contains:
DB9 Male to RJ45 Female Adaptor (1)
DB9 Female to RJ45 Female Adaptor (1)
CAT 5 Cable, 3 meters (2)

www.thinklogical.com

Camera Fiber-Link 4000 System Overview

Camera Fiber-Link CFL-4000
(camera side TX and frame grabber side RX)

Each system consists of a Camera side unit and a Frame Grabber side unit (both units are similar in appearance, but are labeled differently). Each extender supports the camera signals, as well as serial connections (both the SerTFG and SerTC within the MDR cable, and three pairs of RS-232 lines). The CFL-4000 supports Full/Medium/ Base configurations and requires three fibers. The CFL-4000 is available with SC-, ST-, or LC-type fiber connectors for multi-mode fiber extension and SC/APC for single-mode fiber extension.

Features

- Supports all Camera-Link™ full/medium/base configurations with pixel clocks from 20 -85MHz
- Extend camera signals up to:
  - 350 meters using standard multi-mode fiber
  - 1000 meters using eSX+ fiber
  - 10 kilometers using single-mode fiber
- Transparent Camera-Link™ operation
- Small form factor, units are self-contained and do not require user adjustments
- Signal transmission via fiber optic cable – no RF interference
- Serial Port (RJ45) with RS232 interface
- Class 1 laser product
- Industrial Options also include:
  - * Power Input: 5 to 12V or 12 to 24V
  - * Screw lock (threaded) power connector
  - * Use of users own DC input
  - * Din rail connectors for mounting
  - * Chassis ground post

Specifications

Pixel Clock	20-85 MHz
Supply Voltage	+5.0 VDC
Operating Temp.	0°-50°C; (32°-122°F)
Humidity	5-95% RH, non-condensing

Specifications (continued)

Dimensions And Weights	Height: 1.25" (3.2cm) Depth: 5.44" (13.8cm) Width: 6.88" (17.5cm) Weight: 1lb (0.45kg) each Shipping Weight: 6lb (2.72kg) pair (Tolerance: ± .039"; .100cm)
Optical Cable	Single-mode over two fibers Multi-mode over two fibers (Fiber is available, not supplied)
Optical Distance	Up to 50 meters with type OM1 Up to 350 meters with type OM2 Up to 1000 meters with OM3 enhanced Up to 40 kilometers with type OS2 (single-mode)
Power Consumption	<10 watts per unit
DC Adapter	AC/DC adapter universal
Input	100-240VAC, 50-60Hz (supplied)
Compliance	Approvals for US, Canada, and European Union
Warranty	12 months from date of shipment Extended warranties available

Copper Connectors:

Camera Side	
Video	MDR-26 (2)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (3)
Frame Grabber Side	
Video	MDR-26 (2)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (3)

Cables Included:

MDR-26 Camera-Link™ Cable, 2 meters (4)
KIT-000013-R which contains:
DB9 Male to RJ45 Female Adaptor (1)
DB9 Female to RJ45 Female Adaptor (1)
CAT 5 Cable, 3 meters (2)

Camera Fiber-Link 5000 System Overview

Camera Fiber-Link CFL-5000
(camera side TX and frame grabber side RX)

Each system consists of a Camera side unit and a Frame Grabber side unit (both units are similar in appearance, but are labeled differently). Each extender supports the camera signals, as well as serial connections (both the SerTFG and SerTC within the MDR cable, and three pairs of RS-232 lines). The CFL-5000 supports one or two base Camera-Link™ cameras or one dual-base Camera-Link™ camera configurations. Each configuration requires three fibers. The CFL-5000 receives data from each camera and converts the data into optical signals and sends them to the CFL-5000 transmitter. The transmitter in turn converts the optical signals into video data and sends them out to the one dual-base frame grabber (PC). The CFL-5000 is available with SC-, ST-, or LC-type fiber connectors for multi-mode fiber extension and SC/APC for single-mode fiber extension.

Features

- Supports all Camera-Link™ dual-base configurations with pixel clocks from 20-85MHz
- Extend camera signals up to:
  - 350 meters using standard multi-mode fiber
  - 1000 meters using eSX+ fiber
  - 10 kilometers using single-mode fiber
- Transparent Camera-Link™ operation
- Small form factor, units are self-contained and do not require user adjustments
- Signal transmission via fiber optic cable – no RF interference
- Serial Port (RJ45) with RS232 interface
- Class 1 laser product
- Industrial Options also include:
  - * Power Input: 5 to 12V or 12 to 24V
  - * Screw lock (threaded) power connector
  - * Use of users own DC input
  - * Din rail connectors for mounting
  - * Chassis ground post

Specifications

Pixel Clock	20-85 MHz
Supply Voltage	+5.0 VDC
Operating Temp.	0°-50°C; (32°-122°F)
Humidity	5-95% RH, non-condensing

Specifications (continued)

Dimensions And Weights	Height: 1.187" (3cm) Depth: 5.44" (13.8cm) Width: 9.00" (22.9cm) Weight: 1lb (0.45kg) each Shipping Weight: 6lb (2.72kg) pair (Tolerance: ± .039"; .100cm)
Optical Cable	Single-mode over two fibers Multi-mode over two fibers (Fiber is available, not supplied)
Optical Distance	Up to 50 meters with type OM1 Up to 350 meters with type OM2 Up to 1000 meters with OM3 enhanced Up to 40 kilometers with type OS2 (single-mode)
Power Consumption	<10 watts per unit
DC Adapter	AC/DC adapter universal
Input	100-240VAC, 50-60Hz (supplied)
Compliance	Approvals for US, Canada, and European Union
Warranty	12 months from date of shipment Extended warranties available

Copper Connectors:

Camera Side	
Video	MDR-26 (2)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (3)
Frame Grabber Side	
Video	MDR-26 (2)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (3)

Cables Included:

MDR-26 Camera-Link™ Cable, 2 meters (4)
KIT-000013-R which contains:
DB9 Male to RJ45 Female Adaptor (1)
DB9 Female to RJ45 Female Adaptor (1)
CAT 5 Cable, 3 meters (2)

Camera Fiber-Link 6000 System Overview

The CFL-6000 Dual Camera Fiber-Link™ Frame Grabber is a unique component that addresses users who have two cameras in different locations and are tight on space. The CFL-6000 Frame Grabber Side Unit (RX) receives optical data from two CFL-3000 Camera Side Units (TX - two CFL-3000 TXs, sold separately) and converts them back into video data and sends them out to the CLF-6000 frame grabber base.

The CFL-6000 RX and the two CFL-3000 TXs are interconnected using multi-mode or single-mode fiber optic cable, allowing Camera-Link™ video support up to 10 kilometers from the host computer. Each extender supports the camera signals, as well as serial connections (both the SerTFG and SerTC within the MDR cable, and three pairs of RS-232 lines (Note: RS232 signals are broadcast from the PC to both CFL-3000 units, but RS232 signals to the PC can only be sent from Camera 1 Extender). The CFL-6000 is available with SC-, ST-, or LC-type fiber connectors for multi-mode fiber extension and SC/APC for single-mode fiber extension.

Features

- Supports two independent Camera-Link™ base configurations with pixel clocks from 20-85MHz
- Extend camera signals up to:
  - 350 meters using standard multi-mode fiber
  - 1000 meters using eSX+ fiber
  - 10 kilometers using single-mode fiber
- Transparent Camera-Link™ operation
- Small form factor, units are self-contained and do not require user adjustments
- Signal transmission via fiber optic cable – no RF interference
- Serial Port (RJ45) with RS232 interface
- Class 1 laser product
- Industrial Options also include:
  - * Power Input: 5 to 12V or 12 to 24V
  - * Screw lock (threaded) power connector
  - * Use of users own DC input
  - * Din rail connectors for mounting
  - * Chassis ground post

Specifications

Pixel Clock	20-85 MHz
Supply Voltage	+5.0 VDC
Operating Temp.	0°-50°C; (32°-122°F)
Humidity	5-95% RH, non-condensing

Camera Fiber-Link CFL-6000
(frame grabber side - RX)

Specifications (continued)

Dimensions And Weights	Height: 1.187" (3cm) Depth: 5.44" (13.8cm) Width: 9.00" (22.9cm) Weight: 1lb (0.45kg) each Shipping Weight: 6lb (2.72kg) (Tolerance: ± .039"; .100cm)
Optical Cable	Single-mode over two fibers Multi-mode over two fibers (Fiber is available, not supplied)
Optical Distance	Up to 50 meters with type OM1 Up to 350 meters with type OM2 Up to 1000 meters with OM3 enhanced Up to 40 kilometers with type OS2 (single-mode)
Power Consumption	<10 watts per unit
DC Adapter	AC/DC adapter universal
Input	100-240VAC, 50-60Hz (supplied)
Compliance	Approvals for US, Canada, and European Union
Warranty	12 months from date of shipment Extended warranties available

Copper Connectors:

Camera Side - CFL-3000 TX 2 Units

Video	MDR-26 (1)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (2)

Frame Grabber Side - CFL-6000 RX 1 Unit

Video	MDR-26 (2)
Serial	RJ45
Power	2.5mm connector
Fiber Connectors	SC, ST, or LC (4)

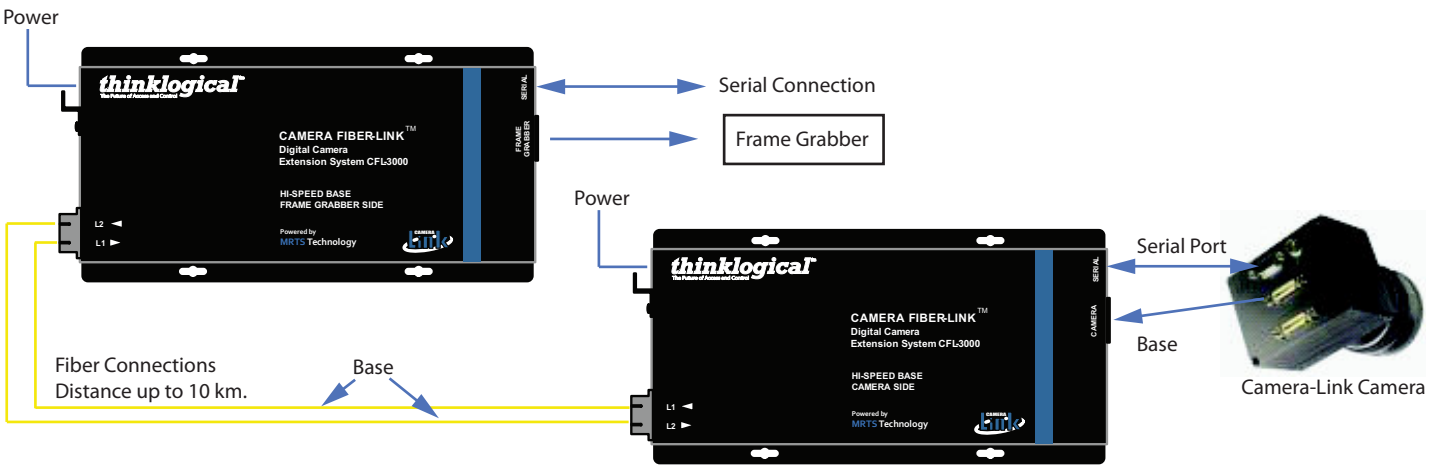
Cables Included:

MDR-26 Camera-Link™ Cable, 2 meters (4)
KIT-000016-R which contains:
DB9 Male to RJ45 Female Adaptor (1)
DB9 Female to RJ45 Female Adaptor (2)
CAT 5 Cable, 3 meters (3)

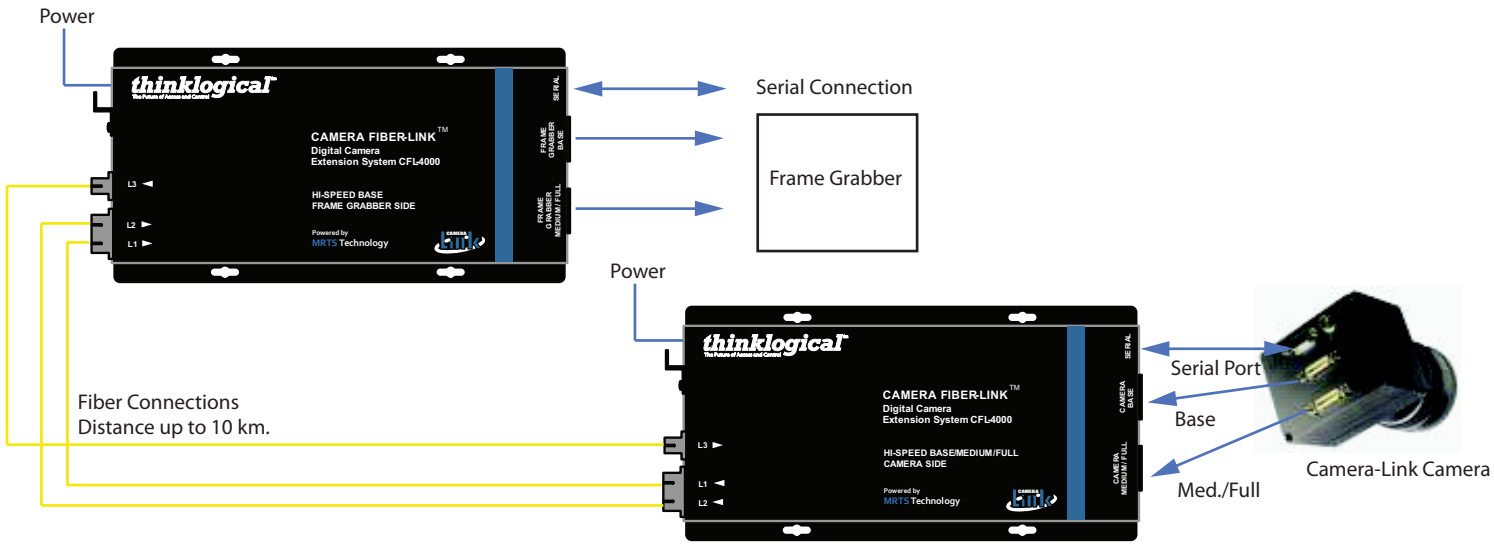
www.thinklogical.com

Camera Fiber-Link Application Diagrams

Camera Fiber-Link 3000 Base Connections

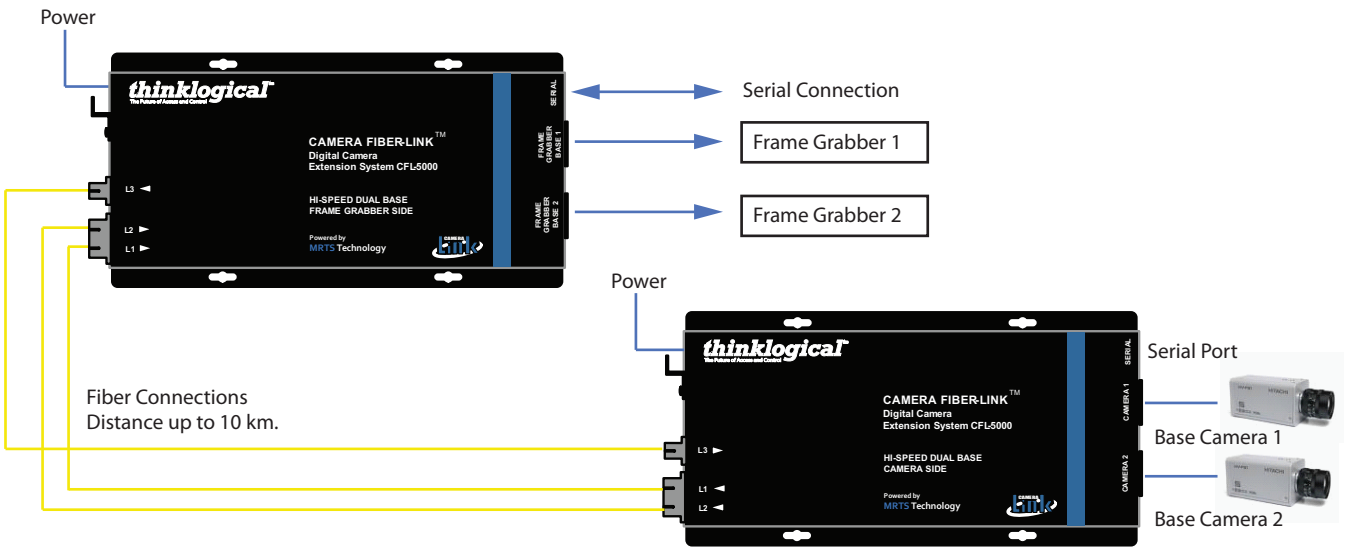


Camera Fiber-Link 4000 Full/Medium/Base Connections



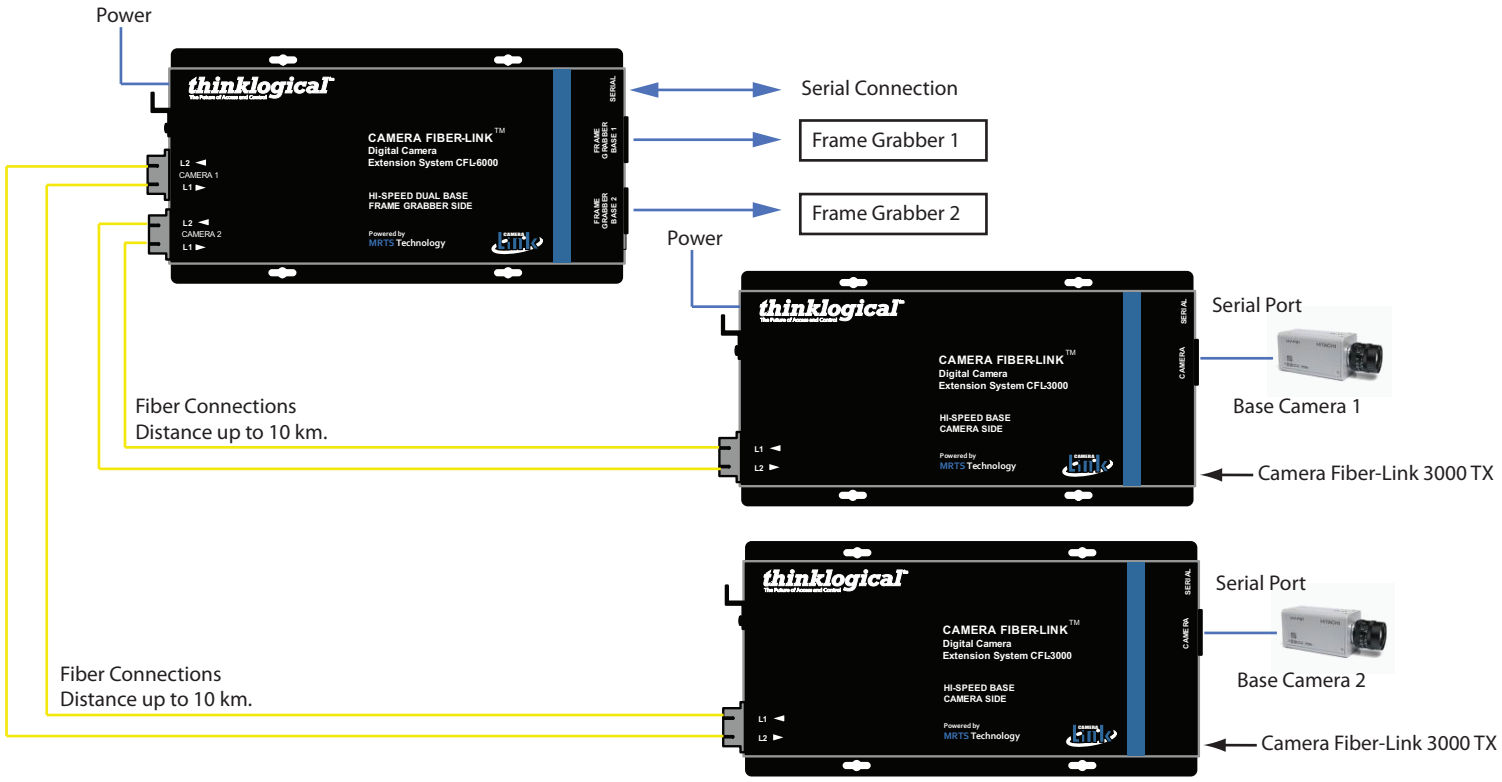
Camera Fiber-Link Application Diagrams

Camera Fiber-Link 5000 Dual Base Connections - Supporting Two Base Cameras



Camera Fiber-Link 6000 RX Dual Base Camera Connections

Using two Camera Fiber-Link 3000 TX's and Supporting Two Base Cameras in Different Locations



Camera Fiber-Link Ordering Information

PART NUMBER AND DESCRIPTION

CAMERA LINK 3000: SINGLE MODE

CFL-000S03-SCRX	Camera Fiber Link 3000, Base, Frame Grabber Side, Single Mode, SC/APC
CFL-000S03-SCTX	Camera Fiber Link 3000, Base, Camera Side, Single Mode, SC/APC

CAMERA LINK 3000 OPTICS OPTION for SINGLE MODE

VOP-S05	Camera Fiber Link 3000 Optics Option for Transmitter or Receiver, Single Mode, Dual Fiber, 10KM

CAMERA LINK 3000: MULTI-MODE

CFL-000M03-LCRX	Camera Fiber Link 3000, Base, Frame Grabber Side, Multi-Mode, LC
CFL-000M03-LCTX	Camera Fiber Link 3000, Base, Camera Side, Multi-Mode, LC
CFL-000M03-SCRX	Camera Fiber Link 3000, Base, Frame Grabber Side, Multi-Mode, SC
CFL-000M03-SCTX	Camera Fiber Link 3000, Base, Camera Side, Multi-Mode, SC
CFL-000M03-STRX	Camera Fiber Link 3000, Base, Frame Grabber Side, Multi-Mode, ST
CFL-000M03-STTX	Camera Fiber Link 3000, Base, Camera Side, Multi-Mode, ST

CAMERA LINK 3000 OPTICS OPTIONS for MULTI-MODE

VOP-M04	Camera Fiber Link 3000 Optics Option for Transmitter or Receiver, Multi-Mode, Dual Fiber, 50M or 350M or 1000M, LC
VOP-M01	Camera Fiber Link 3000 Optics Option for Transmitter or Receiver, Multi-Mode, Dual Fiber, 50M or 350M or 1000M, SC or ST

CAMERA LINK 4000: SINGLE MODE

CFL-000S04-SCRX	Camera Fiber Link 4000, Full, Frame Grabber Side, Single Mode, SC/APC
CFL-000S04-SCTX	Camera Fiber Link 4000, Full, Camera Side, Single Mode, SC/APC

CAMERA LINK 4000 OPTICS OPTION for SINGLE MODE

VOP-S08	Camera Fiber Link 4000 Optics Option for Transmitter or Receiver, Single Mode, 3 Fibers, 10KM

CAMERA LINK 4000: MULTI-MODE

CFL-000M04-LCRX	Camera Fiber Link 4000, Full, Frame Grabber Side, Multi-Mode, LC
CFL-000M04-LCTX	Camera Fiber Link 4000, Full, Camera Side, Multi-Mode, LC
CFL-000M04-SCRX	Camera Fiber Link 4000, Full, Frame Grabber Side, Multi-Mode, SC
CFL-000M04-SCTX	Camera Fiber Link 4000, Full, Camera Side, Multi-Mode, SC
CFL-000M04-STRX	Camera Fiber Link 4000, Full, Frame Grabber Side, Multi-Mode, ST
CFL-000M04-STTX	Camera Fiber Link 4000, Full, Camera Side, Multi-Mode, ST

CAMERA LINK 4000 OPTICS OPTION for MULTI-MODE

VOP-M05	Camera Fiber Link 4000 Optics Option for Transmitter or Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, LC
VOP-M02	Camera Fiber Link 4000 Optics Option for Transmitter or Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, SC or ST

Camera Fiber-Link Ordering Information

PART NUMBER AND DESCRIPTION

CAMERA LINK 5000: SINGLE MODE

CFL-000S05-SCRX	Camera Fiber Link 5000, High Speed Dual Base, Frame Grabber Side, Single Mode, SC/APC
CFL-000S05-SCTX	Camera Fiber Link 5000, High Speed Dual Base, Camera Side, Single Mode, SC/APC

CAMERA LINK 5000 OPTICS OPTION for SINGLE MODE

VOP-S08	Camera Fiber Link 5000 Optics Option for Transmitter or Receiver, Single Mode, 3 Fibers, 10KM

CAMERA LINK 5000: MULTI-MODE

CFL-000M05-LCRX	Camera Fiber Link 5000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, LC
CFL-000M05-LCTX	Camera Fiber Link 5000, High Speed Dual Base, Camera Side, Multi-Mode, LC
CFL-000M05-SCRX	Camera Fiber Link 5000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, SC
CFL-000M05-SCTX	Camera Fiber Link 5000, High Speed Dual Base, Camera Side, Multi-Mode, SC
CFL-000M05-STRX	Camera Fiber Link 5000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, ST
CFL-000M05-STTX	Camera Fiber Link 5000, High Speed Dual Base, Camera Side, Multi-Mode, ST

CAMERA LINK 5000 OPTICS OPTIONS for MULTI-MODE

VOP-M05	Camera Fiber Link 5000 Optics Option for Transmitter or Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, LC
VOP-M02	Camera Fiber Link 5000 Optics Option for Transmitter or Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, SC or ST

CAMERA LINK 6000: SINGLE MODE

CFL-000S06-SCRX	Camera Fiber Link 6000, High Speed Dual Base, Frame Grabber Side, Single Mode, SC/APC

CAMERA LINK 6000 OPTICS OPTION for SINGLE MODE

VOP-S0	Camera Fiber Link 6000 Optics Option for Receiver, Single Mode, 3 Fibers, 10KM

CAMERA LINK 6000: MULTI-MODE

CFL-000M06-LCRX	Camera Fiber Link 6000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, LC
CFL-000M06-SCRX	Camera Fiber Link 6000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, SC
CFL-000M06-STRX	Camera Fiber Link 6000, High Speed Dual Base, Frame Grabber Side, Multi-Mode, ST

CAMERA LINK 6000 OPTICS OPTIONS for MULTI-MODE

VOP-M0	Camera Fiber Link 6000 Optics Option for Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, LC
VOP-M0	Camera Fiber Link 6000 Optics Option for Receiver, Multi-Mode, 3 Fibers, 50M or 350M or 1000M, SC or ST

To compliment its line of Camera Fiber-Link extenders for the Camera-Link™ standard, Thinklogical has also developed high performance USB 2.0 and FireWire 800 camera extenders. Please contact a Thinklogical sales representative for details.

thinklogical™

Headquarters - 100 Washington St., Milford, CT 06460
800.291.3211
203.783.9949
Contact Sales: sales@thinklogical.com