Fiber Optic Media Converters

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Invented for life

- Utilizes Small Form-factor Pluggable (SFP) modules
- Multi-mode and single-mode modules available
- Supports distances up to 20 km (12.4 miles)
- Surface mount or rack mount capability

The Bosch fiber optic Media Converter series are designed to transmit 10/100 Mbps Ethernet signals over fiber optic cable using Small Form-factor Pluggable (SFP) modules. These fiber optic media converter devices can be used to transmit Ethernet data well beyond the 100 m limit of copper-based media and provides a secure, EMI/RFI free transmission path.
The media converter units are designed to accept 10/100 Mbps SFP modules. The SFP modules are ordered separately to meet user requirements for mode type, distance and type of optical connector. Available offerings include multi-mode fiber (MMF) or single-mode fiber (SMF) models with a single SC connector or dual-fiber with an LC connector.

System overview

VG4-SFPSCKT
The VG4-SFPSCKT is a unique media converter module for use with VG4 series AutoDomes incorporating the Ethernet (TCP/IP) Communications Module, as well as with MIC Series 550, 550IR, and 612 cameras. This media converter module is designed to accept any of the 10/100 Mbps SFP modules described below.

The media converter module along with the SFP module is user installed directly into the power supply box of the AutoDome camera or of the MIC camera to provide an integrated fiber optic solution. Refer to the Installation Guide that accompanies the VG4-SFPSCKT for detailed installation instructions.

CNFE2MC/IN
The CNFE2MC/IN is a media converter device designed to transmit and receive 10/100 Mbps Ethernet data over optical fiber using SFP modules. This head-end device is supplied in an enclosure that can be surface mounted or rack mounted using the optional C1-IN rack mount card cage. The unit does not require in-field adjustments, and provides automatic MDI/MDI-X crossover.

SFP Modules
The selection of Small Form-factor Pluggable (SFP) modules provides the fast Ethernet optical interface when using the VG4-SFPSCKT or the CNFE2MC/IN media converters. These interchangeable SFP modules are available for use with MMF or SMF optical fiber. The optical fiber SFP modules are available as one and two fiber versions. They also are available with LC or SC optical connectors.

The VG4-SFPSCKT and CNFE2MC/IN media converters accept the following SFP modules:

Module	Fiber Type	Optical Interface
SFP-2	MMF	Duplex LC
SFP-3	SMF	Duplex LC
SFP-25	MMF	Single SC
SFP26	MMF	Single SC

The SFP-25/SFP-26 modules are counterparts; if you use one in the VG4-SFPSCKT module, then you must use the other in the CNFE2MC/IN head-end unit. Refer to the chart below for the acceptable combinations.

Compatibility Chart

If this SFP module is used with the VG4-SFPSCKT	Then this SFP module must be used in the CNFE2MC/IN
SFP-2	SFP-2
SFP-3	SFP-3
SFP-25	SFP-26
SFP-26	SFP-25

C1-IN Rack Mount Card Cage

The C1-IN rack mount card cage is designed to hold a maximum of 14 CNFE2MC/IN modules. The C1-IN card cage utilizes an integral, yet field replaceable universal power supply suitable for 120 VAC to 240 VAC, 50/60 Hz operation.
The C1-IN unit includes automatic self-resetting current overload protection, so a fault in any one module will not cause the entire card cage to shut down.

C1-BP Closure Panel

The C1-BP is a closure panel for the C1-IN rack mount card cage, providing coverage for one rack slot.

Installation/configuration notes

The Bosch Fiber Optic Media Converter solution consists of three core components and several optional components to help fit every application.
To provide fiber optic communications between a Bosch VG4 AutoDome and a controller, you must use the following:

- One (1) **VG4-SFPSCKT Fiber Optic Ethernet Media Converter** Kit – a printed circuit board installed inside a VG4 power supply box. (See Technical Specification Section 1)
- One (1) **CNFE2MC/IN Ethernet Fiber Optic Media Converter** – a rack-mounted or surface mounted head-end controller. (See Technical Specification Section 2)
- Two (2) **Small Form-factor Pluggable (SFP) modules** – one module is installed in the VG4-SFPSCKT, the other is installed in the CNFE2MC/IN. (See Technical Specification Section 3)

Optionally, you can use the following modules to customize your installation:

- **C1-IN Rack Mount Card Cage** (See Technical Specification Section 4)
- **C1-BP Closure Panel**

To provide fiber optic communications between a MIC Series 550, 550IR, or 612 camera and a controller, you must use the following:

- One (1) **VG4-SFPSCKT Fiber Optic Ethernet Media Converter** Kit – a printed circuit board installed inside a MIC IP power supply box. (See Technical Specification Section 1)
- One (1) **Small Form-factor Pluggable (SFP) module** – one module is installed in the VG4-SFPSCKT. (See Technical Specification Section 3)

Technical specifications

Section 1: VG4-SFPSCKT Fiber Optic Ethernet Media Converter Kit

Description	Fiber Optic Ethernet Media Converter kit. Requires a small form-factor pluggable (SFP) module (sold separately).
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port
Compatible Receiver	CNFE2MC/IN
Installation	Installed inside a VG4-A-PA1, VG4-A-PA2, VG4-A-PSU1 or a VG4-A-PSU2 power supply box, or in a MIC IP PSU, with supplied mounting hardware. Note: Wiring for the VG4-SFPSCKT must be routed through the proper conduit opening on the power supply box. Refer to the installation guide that accompanies the module.
LED Indicators	
Power/Link (on circuit board)	
• Green	Power is applied, fiber link is valid
• Red	Power is applied, fiber link is missing
• Green/ Flashing Red, rapid	Power is applied Fiber link is valid Data is present and video is streaming from the camera to a network connection
• Green/ Flashing Red, slow	Power is applied Fiber link is valid Data is present Video is not streaming from the camera, or the RJ45 connection to the camera is not valid
RJ-45 Connector	

• Right side, Flashing Green	Data is present
• Right side, Off	No data is present
• Left side, Amber	Link is valid at 100 MB
• Left side, Off	If the right side is flashing green, link is valid at 10 MB
• No LED lit	Missing the network cable, defective network cable or the other end of the network cable is not connected
Electrical	
Power	24 VAC @ 220 mA (supplied by the camera)
Current Protection	Automatic resettable Solid-state current limiters
Circuit Board	Meets IPC Standard
Mechanical	
Dimensions (LxWxH)	7.4 x 7.1 x 3.8 cm (2.9 x 2.8 x 1.5 in.)
Shipping Weight	0.91 kg (2 lb)
Environmental	
MTBF	> 100,000 hours

Section 2: CNFE2MC/IN Ethernet Fiber Optic Media Converter

Description	Fiber Optic Ethernet Media Converter kit. Requires a small form-factor pluggable (SFP) module (sold separately).
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port
Installation	Surface mount or rack mount using C1-IN rack (sold separately)
Connectors	
Power	Terminal block
Electrical	RJ-45 (10/100 BASE-T/TX)
Socket	SFP (10/100 BASE-FX)
LED Indicators	
Link/Act	
• Green	Indicates a good fiber connection
• Flashing Green	Indicates data is present on at least one side of the IP connection
• No LED lit	Indicates a loss of fiber connection
Power	Green: power is supplied None: no power supplied
• Green	Power is supplied
• No LED lit	No power supplied
RJ-45 Connector	
• Right side, Flashing Green	Data is present
• Right side, Off	No data is present
• Left side, Amber	Link is valid at 100 MB
• Left side, Off	If the right side is flashing green, link is valid at 10 MB
Electrical	
Power	
• Supplied Power Pack	Input: 90–264 VAC, 50/60 Hz Output: 9 VDC @ 1 A
• Module:	8-15 VDC @ 220 mA
Current Protection	Automatic resettable Solid-state current limiters
Circuit Board	Meets IPC Standard
Mechanical	
Dimensions (LxWxH)	16.0 x 13.0 x 2.8 cm (6.3 x 5.1 x 1.1 in.)
Shipping Weight	0.91 kg (2 lb)
Environmental	
MTBF	> 100,000 hours
Operating Temperature	–40° C to +75° C (–40°F to +167°F)
Storage Temperature	–40° C to +85° C (–40°F to +185°F)
Relative Humidity	0% to 95% (non-condensing)
Regulatory Compliance	cUL, UL, RoHS

Section 3: SFP Modules

Description	Interchangeable modules available for use with MMF or SMF optical fiber.
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant
Mechanical	

Dimensions (LxWxH)	
• SFP-2, SFP-3	55.5 x 13.5 x 8.5 mm (2.2 x 0.5 x 0.3 in.)
• SFP-25, SFP-26	63.8 x 13.5 x 8.5 mm (2.5 x 0.5 x 0.3 in.)
Weight (all SFP modules)	0.23 kg (.05 lb)

	Type	Connector	Wavelength (transmit/receive)	Max. Distance
SFP-2	MMF	Duplex LC	1310 nm / 1310 nm	2 km (1.2 miles)
SFP-3	SMF	Duplex LC	1310 nm / 1310 nm	20 km (12.4 miles)
SFP-25	MMF	Single SC	1310 nm / 1550 nm	2 km (1.2 miles)
SFP-26	MMF	Single SC	1550 nm / 1310 nm	2 km (1.2 miles)

Fiber Compatibility	
Optical Fiber Compatibility, MMF	60/125 µm MMF. For 50/125 µm fiber, subtract 4 dB from the specified optical budget value. Must meet or exceed fiber standard ITU-T G.651.
Optical Fiber Compatibility, SMF	8–10/125 µm SMF. Must meet or exceed fiber standard ITU-T G.652.
Optical Distance Specifications	Specified transmission distances are limited to the optical loss of the fiber and any additional loss introduced by connectors, splices, and patch panels. The modules are designed to operate over the entire optical loss budget range, so they do not require a minimum loss in order to operate.

Section 4: C1-IN Rack Mount Card Cage

Description	Rack mount card cage designed to hold a maximum of 14 CNFE2MC/IN modules
LED Indicators	
Power	
• Red	Power is supplied
• No LED lit	No power
Electrical	
Input Voltage	90–264 VAC at 1 A maximum
Output Voltage	9 VDC ± 5% at 6.5 A at 75°C (167°F)
Fusing	1.25 A slow blow (rack power supply) (plug-in modules individually electronically fused)
Power Indicator	Red LED
AC Line Cord	Detachable, IEC-connected. US, European, and UK power cords supplied.
Mechanical	
Dimensions (LxWxH)	48 x 19 x 15 cm (19.0 x 7.5 x 6.0 in.)
Rack Slots	Fourteen (14) 1-in. slots available
Shipping Weight	3.4 kg (7.5 lb)
Environmental	
MTBF	>100,000 hours
Operating Temperature	–40° C to +75° C (–40°F to +167°F), ambient
Storage Temperature	–40° C to +85° C, (–40°F to +185°F), ambient
Heat Generation	240 BTU
Regulatory Compliance	FCC part 15, , cUL, UL, RoHS

Ordering information

VG4-SFPSCKT Fiber Optic Ethernet Media Converter Kit
Ethernet media converter video transmitter/data receiver fiber optic kit
Order number **VG4-SFPSCKT**

CNFE2MC/IN Rack-mounted Ethernet Fiber Optic Media Converter
Single-port 10/100 Mbps Ethernet Media Converter, 120/230 VAC
Order number **CNFE2MC/IN**

SFP-2 Small Form-factor Pluggable Optical Interface
SFP Fiber Optic Module, Multi-mode, 1310 nm, 2 km (1.2 miles), 2 LC connectors
Order number **SFP-2**

SFP-3 Small Form-factor Pluggable Optical Interface
SFP Fiber Optic Module, Single-mode, 1310 nm, 20 km (12.4 miles), 2 LC connectors
Order number **SFP-3**

SFP-25 Small Form-factor Pluggable Optical Interface
SFP Fiber Optic Module, Multi-mode, 1310/1550 nm, 2 km (1.2 miles), 1 SC connector
Order number **SFP-25**

SFP-26 Small Form-factor Pluggable Optical Interface
SFP Fiber Optic Module, Multi-mode, 1550/1310 nm, 2 km (1.2 miles), 1 SC connector
Order number **SFP-26**

Accessories

C1-IN Rack Mount Card Cage for CNFE2MC
EIA 19-in. rack for CNFE2MC, 120-230 VAC
Order number **C1-IN**

C1-BP Blank Panel for C1 Rack
Blank panel for C1 rack mount card cage, 1 slot width (1 in.)
Order number **C1-BP**

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2450914827 | en, V2, 04. Oct 2013