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 AUTODOME cameras 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.

**Media converter device (CNFE2MC/IN)**
The media converter device (CNFE2MC/IN) is 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.

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

<table>
<thead>
<tr>
<th>Module</th>
<th>Fiber Type</th>
<th>Optical Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP-2</td>
<td>MMF</td>
<td>Duplex LC</td>
</tr>
<tr>
<td>SFP-3</td>
<td>SMF</td>
<td>Duplex LC</td>
</tr>
<tr>
<td>SFP-25</td>
<td>MMF</td>
<td>Single SC</td>
</tr>
<tr>
<td>SFP-26</td>
<td>MMF</td>
<td>Single SC</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>If this SFP module is used with the VG4-SFPSCKT</th>
<th>Then this SFP module must be used in the CNFE2MC/IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP-2</td>
<td>SFP-2</td>
</tr>
<tr>
<td>SFP-3</td>
<td>SFP-3</td>
</tr>
<tr>
<td>SFP-25</td>
<td>SFP-26</td>
</tr>
<tr>
<td>SFP-26</td>
<td>SFP-25</td>
</tr>
</tbody>
</table>

Rack Mount Card Cage (C1-IN)
The rack mount card cage (C1-IN) 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.

Closure Panel (C1-BP)
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

Fiber Optic Ethernet Media Converter Kit (VG4-SFPSCKT)

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiber Optic Ethernet Media Converter kit. Requires a small form-factor pluggable (SFP) module (sold separately).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Interface</td>
<td>Ethernet</td>
</tr>
</tbody>
</table>
| 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

<table>
<thead>
<tr>
<th>Power/Link (on circuit board)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Green</td>
<td>Power is applied, fiber link is valid.</td>
</tr>
<tr>
<td>• Red</td>
<td>Power is applied, fiber link is missing.</td>
</tr>
</tbody>
</table>
| • 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

2 | Fiber Optic Media Converters
### Ethernet Fiber Optic Media Converter (CNFE2MC-IN)

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiber Optic Ethernet Media Converter kit. Requires a small form-factor pluggable (SFP) module (sold separately).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Interface</td>
<td>Ethernet</td>
</tr>
</tbody>
</table>
| 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.                                      |

### Electrical

<table>
<thead>
<tr>
<th>Power</th>
<th>24 VAC @ 220 mA (supplied by the camera)</th>
</tr>
</thead>
</table>
| 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

<table>
<thead>
<tr>
<th>MTBF</th>
<th>&gt; 100,000 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40 °C to +75 °C (-40 °F to +167 °F)</td>
</tr>
</tbody>
</table>

### SFP Modules

<table>
<thead>
<tr>
<th>Description</th>
<th>Interchangeable modules available for use with MMF or SMF optical fiber.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Interface</td>
<td>Ethernet</td>
</tr>
</tbody>
</table>
### Data Rate

- **10/100 Mbps**
- **IEEE 802.3 Compliant**

### Mechanical

#### Dimensions (LxWxH)

<table>
<thead>
<tr>
<th>Type</th>
<th>Connector</th>
<th>Wavelength (transmit/receive)</th>
<th>Max. Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP-2</td>
<td>MM M</td>
<td>Duplex LC</td>
<td>1310 nm / 1310 nm</td>
</tr>
<tr>
<td>SFP-3</td>
<td>SM S</td>
<td>Duplex LC</td>
<td>1310 nm / 1310 nm</td>
</tr>
<tr>
<td>SFP-2</td>
<td>MM M</td>
<td>Single SC</td>
<td>1310 nm / 1550 nm</td>
</tr>
<tr>
<td>SFP-2</td>
<td>MM M</td>
<td>Single SC</td>
<td>1550 nm / 1310 nm</td>
</tr>
</tbody>
</table>

### Weight (all SFP modules)

- 0.23 kg (0.05 lb)

### Fiber Compatibility

- **Optical Fiber Compatibility, MMF**
  - 62.5/125 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.

### Environmental

- **MTBF**
  - > 100,000 hours
- **Operating Temperature**
  - -40°C to +50°C (-40°F to +122°F)

### Ordering information

**VG4-SFPSCKT Fiber Optic Ethernet Media Converter Kit**

Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras and for MIC-IP-PSU for MIC analog cameras.

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, 2 km (1.2 miles), 2 LC connectors.
Multi-mode
1310 nm
Order number SFP-2

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

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

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