



# SFP+ Product Family: Cages Connectors Cable assemblies

## DESCRIPTION

SFP+ extends the use of the Small Form-Factor Pluggable (SFP) interconnect up to 10 Gb/s. This system meets the performance requirements of SFF (Small Form-Factor) specification SFF-8431 and supports 8G Fibre Channel and 10G Ethernet applications. The SFP+ product family includes cages, connectors, and copper cable assemblies. Tyco Electronics also offers LC optical connectors and cable assemblies to link with SFP+ transceivers.

## APPLICATIONS

- Storage
- Servers
- Networking
- Switches
- Routers
- Hubs
- Network Interface Cards (NICs)

## KEY FEATURES & BENEFITS

- SFP+ interconnect system supports data rates of 10 Gb/s
- Connector and cable assembly designed to support 10 Gb/s+ signal speeds, backward compatible with SFP
- Both EMI spring and gasket options for cages provide excellent shielding
- All cage configurations are offered with light pipes for LED applications
- Heat sink optional for single port cages
- Cages are available for PCI card applications (one degree mounting angle)
- Cages and cable assemblies accommodate belly-to-belly mounting
- Stacked cages include integrated high speed connector using patented "clicklet" construction.
- Active and passive copper cable assemblies provide a cost-effective solution for short reach applications.
- Cable assembly braid crimp and EMI skirt suppress EMI radiation.
- Broad line of cable assembly lengths and wire gauges offers diverse cable management options.
- Optimum cable assembly performance is obtained when assembly is engineered to system architecture.

## FOR MORE INFORMATION

### Technical Documents:

Application Specification  
Single & Ganged Cages 114-13120  
Stacked Cages 114-13219  
Product Specification 108-2331

### Industry Standards:

Cage and module definition: SFF-8432  
Mating Interface and performance requirements: SFF-8083  
Electrical Interface Specifications: SFF-8431

### Cages and Connectors

#### Product Manager — Mike Walmsley

Phone: 717-985-2835  
Fax: 1-717-985-2833  
Email: [mjwalmsl@tycoelectronics.com](mailto:mjwalmsl@tycoelectronics.com)

### Cable Assembly

#### Product Manager — David Stonfer

Phone: 717-986-5950  
Fax: 717-986-7179  
E-mail: [david.stonfer@tycoelectronics.com](mailto:david.stonfer@tycoelectronics.com)

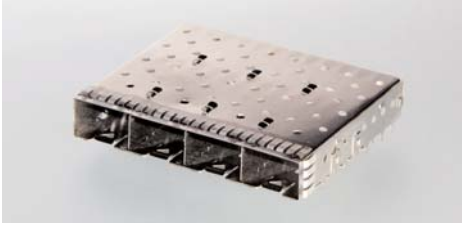
### Technical Support

Internet: [www.tycoelectronics.com](http://www.tycoelectronics.com)

USA: 1-800-522-6752  
Canada: 1-905-475-6222  
UK: 31-73-6246-431  
Japan: 81-44-844-8111

## PART NUMBERS

### Cages with EMI Springs



| Description                       | Single Port | 1x2       | 1x4       | 1x6       |
|-----------------------------------|-------------|-----------|-----------|-----------|
| Cage Assy w/ Light Pipes          | 2007254-1   | 2007262-1 | 2007178-1 | 2007250-1 |
| Cage Assy                         | 2007198-1   | 2007263-1 | 2007132-1 | 2007251-1 |
| Cage Assy w/ PCI Heat Sink        | 2007464-1   | —         | —         | —         |
| Cage Assy w/ SAN Heat Sink        | 2007464-2   | —         | —         | —         |
| Cage Assy w/ Networking Heat Sink | 2007464-3   | —         | —         | —         |

### Cages with Elastomeric Gaskets



| Description              | 1x2       | 1x4       | 1x6       |
|--------------------------|-----------|-----------|-----------|
| Cage Assy w/ Light Pipes | 2007180-1 | 2007093-1 | 2007169-1 |
| Cage Assy                | 2007181-1 | 2007135-1 | 2007170-1 |

### Cages for PCI Applications

- One degree mounting angle to meet requirements of SFF-8075



| Description                       | Solder    | Press-Fit |
|-----------------------------------|-----------|-----------|
| Cage Assy                         | 2007194-1 | 2007215-1 |
| Cage Assy w/ PCI Heat Sink & Clip | 2007193-1 | 2007277-1 |

### Connectors



| Contact Plating      | Part Number |
|----------------------|-------------|
| 0.76μm (30 μin) gold | 1888247-1   |
| 0.38μm (15 μin) gold | 1888247-2   |

## PART NUMBERS

### Stacked SFP+ Cage/Connector Assemblies



#### Description

| EMI Containment Style | Light Pipe Option      | 2x1       | 2x2       | 2x4       | 2x6       |
|-----------------------|------------------------|-----------|-----------|-----------|-----------|
| Elastomeric Gasket    | Four Per Column        | 2007538-5 | 2007417-5 | 2007399-5 | 2007567-5 |
| Elastomeric Gasket    | Inner Light Pipes Only | 2007538-6 | 2007417-6 | 2007399-6 | 2007567-6 |
| Elastomeric Gasket    | Outer Light Pipes Only | 2007538-7 | 2007417-7 | 2007399-7 | 2007567-7 |
| Elastomeric Gasket    | None                   | 2007538-8 | 2007417-8 | 2007399-8 | 2007567-8 |
| EMI Springs           | Four Per Column        | 2007492-5 | 2007637-5 | 2007394-5 | 2007562-5 |
| EMI Springs           | Inner Light Pipes Only | 2007492-6 | 2007637-6 | 2007394-6 | 2007562-6 |
| EMI Springs           | Outer Light Pipes Only | 2007492-7 | 2007637-7 | 2007394-7 | 2007562-7 |
| EMI Springs           | None                   | 2007492-8 | 2007637-8 | 2007394-8 | 2007562-8 |

Tin plated compliant pins listed, tin-lead compliant pins available for signal connector.  
See Tyco Electronics drawing.

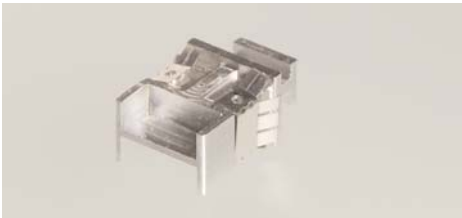
### Dust Plug (Non-conductive)

| For Uses In                           | Part Number            |
|---------------------------------------|------------------------|
| Single Port Cages                     | 1367147-1 or 1761394-1 |
| Ganged and Stacked (Multi-port) Cages | 1761394-1              |

Dust plug 1761394-1 has narrow width, required for port density in ganged and stacked cages.

### EMI Plug

- **Part Number: 1888901-1**
- Springs comply with SFF-8432 requirements for Improved Pluggable Form-factor (IPF)



## PART NUMBERS

### Direct Attach Copper Cables

The Tyco Electronics SFP+ direct attach copper cable assembly is a low cost alternative for short reach applications. The design allows for a serial data transmission up to 10Gbps in each direction. These SFP+ assemblies are hot swappable and the programmed EEPROM signature enables the host to differentiate between a copper cable assembly and a fiber optic module. The mechanical design of the braid crimp and EMI skirt ensure that EMI radiation is sufficiently suppressed. Additionally, the copper cable acts as a natural heat sink. The low power consumption assists in making the passive copper cable assembly an economic solution for within rack, or rack to rack applications. Standard SFP+ assemblies are offered in 24 AWG, however, several smaller wire gauges are available.



### Product Facts

- Truly broadband — operates from 1 Gbps to 10 Gbps
- Compatible with industry standard SFP cages
- 100 Ohm differential impedance
- 3.3 V input source voltage
- EEPROM signature which can be customized
- Pull-to-release retractable pin latch design
- Pull tab allows compact belly-to-belly application
- 360 degree cable braid crimp and enhanced EMI skirt
- Various wire gauges provide diverse cable management options
- Breakout and cross-over cables can be engineered
- Able to custom engineer SFP+ cable solutions to system architecture
- Uses Madison Cable high speed TurboTwin parallel pair copper cable

| Type                 | Part Number | AWG | Assembly Length |
|----------------------|-------------|-----|-----------------|
| Standard Passive     | 2032237-1   | 24  | 0.5 meter       |
|                      | 2032237-2   | 24  | 1 meter         |
|                      | 2032237-4   | 24  | 3 meter         |
|                      | 2032237-6   | 24  | 5 meter         |
|                      | 1-2032237-1 | 24  | 10 meter        |
| Other AWG Passive    | 2032247-1   | 26  | 0.5 meter       |
|                      | 2032247-2   | 26  | 1 meter         |
|                      | 2032247-4   | 26  | 3 meter         |
|                      | 2032247-6   | 26  | 5 meter         |
|                      | 1-2032247-1 | 26  | 10 meter        |
|                      | 2053649-1   | 28  | 0.5 meter       |
|                      | 2053649-2   | 28  | 1 meter         |
|                      | 2053649-4   | 28  | 3 meter         |
|                      | 2053649-6   | 28  | 5 meter         |
|                      | 2052246-1   | 30  | 0.5 meter       |
| Active (Coming Soon) | 2052246-2   | 30  | 1 meter         |
|                      | 2052246-4   | 30  | 3 meter         |
|                      | 2052246-6   | 30  | 5 meter         |
|                      | 2032757-1   | 24  | 1 meter         |
|                      | 2032757-5   | 24  | 5 meter         |
|                      | 1-2032757-0 | 24  | 10 meter        |
|                      | 1-2032757-5 | 24  | 15 meter        |

© Copyright 2008 by Tyco Electronics Corporation.

MADISON CABLE, TurboTwin, TE LOGO and TYCO ELECTRONICS are trademarks.

PCI-SIG, PCI Express, PCIe, PCI-X and Conventional PCI are trademarks or registered trademarks of PCI-SIG.

All other trademarks mentioned are the property of their respective owners.

Dimensions are in millimeters with inches (if shown) in brackets.

For more information, see Pluggable Input / Output Solutions Catalog No.1773408-1, contact your Tyco Electronics

sales engineer, call 1-800-522-6752, or visit our Website at: <http://www.tycoelectronics.com>.

Specifications subject to change.

4-1773449-5-PDF-11/08