

EB16 OPTICAL SINGLE MODE AND MULTIMODE PIN AND SOCKET TERMINI

DURABILITY AND RUGGEDNESS OF EXPANDED BEAM OPTICS USING SPRINGLESS MATING AND CRIMPLESS CABLE RETENTION

EB16 Optical Single Mode and Multimode Pin and Socket Termini

Rugged Single Mode and Multimode Optical Performance for Harsh Environments

Leveraging our industry accepted PRO BEAM Expanded Beam technology, TE Connectivity (TE) has developed its newest rugged expanded beam optical termini – Single Mode (SM) and Multimode (MM) EB16. The EB16 termini are size 16 optical contacts, fit-form compliant with MIL-DTL-38999 Series I and Series III and MIL-STD-1760 lanyard release size 16 AWG cavity. These termini are drop-in replacements for the MIL-PRF-29504 /4 and /5 physical contact termini used in many ruggedized circular connector systems and can also be used in a hybrid combination with power contacts.

Non-Contacting Interface

Contrary to the physical contact 29504 termini, the springless EB16 does not require mating by a spring force. This feature is particularly useful in reducing the substantial mating force required when using high-count connector inserts. The expanded beam optical, non-contacting interface prevents wear and tear on the light carrying elements of the termini, especially in high-mating cycle, high-vibration and/or high shock applications.

The ball lenses of the pin and socket termini expand and collimate the optical signal into a beam size well beyond its original size to provide easier optical alignment, low sensitivity to contamination and consistent performance over thermal changes. The beam traverses the interface airgap from the transmission side and is then refocused back into the core of the receiving fiber.

The beam area is expanded approximately 150 times between lenses with limited signal deterioration by airborne contamination particles of the same size that affect the performance of the PC connection. The termini's end-face is easily cleaned.



DURABLE

- No wear on the optical interface
- Shock and vibration resistant
- Highly resistant to dirt and debris

REPEATABLE, LOW-LOSS PERFORMANCE

- Low sensitivity to thermal fluctuations and interface contamination
- Consistent, overall optical "link budget"
- Stable operation over life of the system

EASY TO USE

- Drop-in replacement for the 29504 /4 and /5 physical contact termini
- Durable, non-contacting interface assists with ease of use/cleaning
- Installed with standard 29504 insertion/removal tools

VERSATILE

- Fits standard D38999 size 16 cavity
- SM: AR coated at 1310nm & 1550nm
- MM: AR coated at 850nm & 1300nm

INDUSTRIES

- Military Ground and Aviation
- Commercial Aviation
- Space
- Harsh Environment Industrial

APPLICATIONS/MARKETS

- Radar and Sensor Systems
- Rugged Communications Networks
- Fixed Wing and Rotary Aircraft
- Unmanned Aerial Vehicles
- Commercial Avionics and Sensing
- Military Avionics, Sensing and Ordnance
- Military Ground Vehicles

MECHANICAL/ENVIRONMENTAL

- **Terminus Durability:** >1000 mating cycles
- **Sinusoidal Vibration:** TIA/EIA-455-11D, Test Condition IV, 60 g
- **Random Vibration:** TIA/EIA-455-11D, Test Condition VI-J, 37.8 g(rms)
- **Mechanical Shock:** TIA/EIA-455-14A, Test Condition D, 300 g
- **Thermal Cycling:** TIA/EIA-455-3B, Test Condition C-2, -65°C/+165°C
- **Thermal Shock:** TIA/EIA-455-1A, Schedule C-0, -55°C/+125°C
- **Humidity-Temperature Cycling:** TIA/EIA-455-5C, Method B
- **Altitude Immersion:** EIA/TIA-455-15A, 100,000 ft
- **Cable Pull:** TIA/EIA-455-6-B/SAE-AS13441, 66.7N (15.0 lbf)

PART NUMBERS

| Description | Part Number | Fiber Hole [um] (Nominal) |
|-----------------------|-------------|---------------------------|
| EB16-SM Pin | 2313255-1 | 126 |
| EB16-SM Pin | 2313255-2 | 126.5 |
| EB16-SM Socket | 2313256-1 | 126 |
| EB16-SM Socket | 2313256-2 | 126.5 |
| EB16-MM Pin | 2332897-1 | 126.5 |
| EB16-MM Socket | 2333899-1 | 126.5 |
| Socket Curing Fixture | 2828502-1* | N/A |
| Pin Curing Fixture | 2828502-2* | N/A |

MATERIALS

- **Metal Components:** Nickel-plated brass
- **Ferrule and Split Sleeve:** Zirconia
- **Ball Lens:** Glass, with anti-reflection coating
- **Protective Cap:** Vinyl

OPTICAL

- **Insertion Loss (Random Mate):**
Single Mode: 1.60 dB max. (mean 0.78 dB) @ 1310 and 1550 nm
Multimode: 1.10 dB max (mean 0.78 dB) @ 850 and 1300 nm
- **Return Loss:**
Single Mode (Mated): > 30 dB (Mean 37 dB)
Multimode (Mated): > 25 dB (Mean 36 dB)
- **Operating Temperature:** -65°C to +165°C

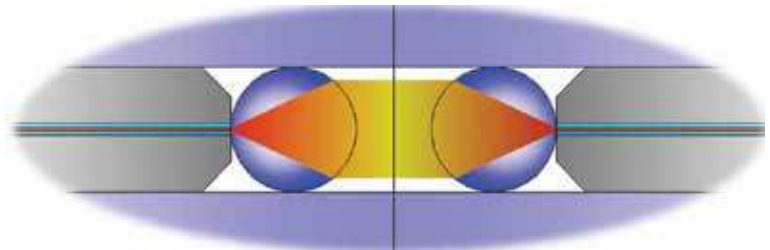
The performance data reflects the qualification test results using Tight Toleranced 38999 connectors (the results may vary with different manufacturers connector products and cable type used)

STANDARDS AND SPECIFICATIONS

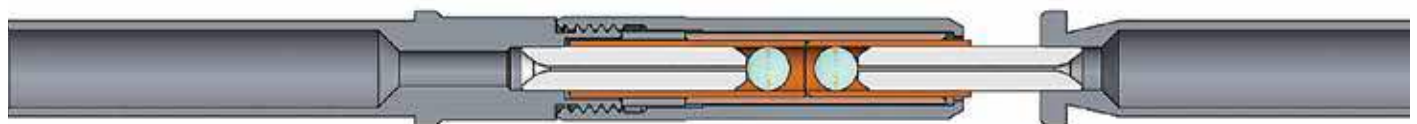
- **Industry Standards:** SAE AS3 AS8438 (AS6250), AS6251 and ARINC 845

TERMINATION PROCEDURE*

- 408-163020



Expanded Beam Technology



Mated EB16 Pin and Socket Termini

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