FO-Patch cord FC APC/FC APC tde 9/125µ OS2 Duplex LSOH Length: xxxxx



## tde - Fiber Optic Assemblies

The tde patch  and trunk cables are manufactured completely at the German facility in Ohrte. Production processes at tde meet the latest standards, and the company has one of the most up-to-date fiber optic assembly houses in Europe. Fiber optic patch cables and trunk cables are manufactured in many different configurations using highly automated processes on two independent mass production lines. The range of products on offer encompasses the entire spectrum of connector types available on the market. Production capacity is around 100,000 fiber optic connectors per month, and this can be ramped up easily whenever required. To guarantee consistently top quality, only the best components from renowned vendors are used. All tde production staff have the necessary qualifications and education, and have been well trained in using specialist technical equipment such as laser cleavers and glue-dispensing robots.
Each cable application is subjected to a full test procedure comprising interferometer measurements, insertion loss and return loss measurements and a final visual inspection to ensure that only 100% error-free products are shipped to the customer.

Products made by tde perform at least internationally accepted quality standards and norms. The quality management system is ISO 9001, ISO 14001 and TL9000 certified.

**tde® trans data elektronik GmbH**

**Headquarter address:**
Lingener Str. 2
D-49626 Bippen/Ohrte
Tel.: +49 5435 9511 0
Fax.: +49 5435 9511 32

**Sales office address:**
Prinz-Friedrich-Karl-Str. 46
D-44135 Dortmund
Tel.: +49 231 8805 61 13
Fax.: +49 231 8805 61 15

info@tde.de | www.tde.de

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# Technical Data

## FO Connectors

| | |
|---|---|
| Connector Type | FC APC |
| Housing | Metal |
| Ferrule | Zirconia Straight Split, Spring-loaded Axially |
| Ferrule Hole | 125.5 µ |
| Ferrule Concentricity | ≤ 0.6 µ |
| Mating Cycles | 500 |
| Operating Temperature | -40°C up to +75°C |
| Strain Relief to | 150 N |
| Manufacturer | tde |

### Optical performance

| Fiber | Type | Wavelength | Insertion loss typ. | Insertion loss max. | Return loss min. |
|---|---|---|---|---|---|
| 9/125µ | FC APC | 1550 nm | ≤ 0.10 dB | 0.25 dB | 75 dB |

## FO Cables

| | |
|---|---|
| Flame resistance | IEC 60332-3 |
| | IEC 60754 |
| | IEC 61034-1 |
| | IEC 61034-2 |

### Cable construction

| | |
|---|---|
| Type | IVH02E9 |
| Tight buffer | 2x 900µ coated fibers (free movable in the compound) |
| Fiber type | SM 9/125µ, Corning G.657.A1 Ultra Fiber |
| Strength members | Aramid yarn (free movable in the compound) |
| Outer jacket | LSZH (Halogen free, low smoke, flame retardant thermoplastic compound) |
| Jacket color | Yellow, RAL 1021 |
| Identification | "t d e – IVH02E09 - 2.4mm Ultra LSZH" and sequential meter marking + Lot number |

### Physical properties

| | |
|---|---|
| Outer diameter cable | 2x 2.4 ± 0.1 mm |
| Temperature range | -20°C to +70°C |

## FO Fiber

| | |
|---|---|
| Type | Corning Ultra SMF-28® 09/125µ OS2 singlemode fiber |


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| | |
|---|---|
| Maximum Attenuation | At 1310 nm max. 0.32 dB/km<br>At 1383 nm max. 0.32 dB/km<br>At 1490 nm max. 0.21 dB/km<br>At 1550 nm max. 0.18 dB/km<br>At 1625 nm max. 0.20 dB/km |
| Attenuation vs. Wavelength | Range: 1285 - 1330 mm; Ref. λ: 1310 nm; Max. Difference: 0.03 dB/km<br>Range: 1525 - 1575 mm; Ref. λ: 1550 nm; Max. Difference: 0.02 dB/km |
| Macrobend Loss | Mandrel Radius: 10mm; Number of Turns: 1; Wavelength: 1550nm; Induced Attenuation: ≤ 0.50 dB<br>Mandrel Radius: 10mm; Number of Turns: 1; Wavelength: 1625nm; Induced Attenuation: ≤ 1.5 dB<br>Mandrel Radius: 15mm; Number of Turns: 10; Wavelength: 1550nm; Induced Attenuation: ≤ 0.05 dB<br>Mandrel Radius: 15mm; Number of Turns: 10; Wavelength: 1625nm; Induced Attenuation: ≤ 0.30 dB<br>Mandrel Radius: 25mm; Number of Turns: 100; Wavelength: 1310nm, 1550nm, 1625nm; Induced Attenuation: ≤ 0.01 dB |
| Point Discontinuity | Wavelength: 1310 nm; Point Discontinuity: ≤ 0.05 dB<br>Wavelength: 1550 nm; Point Discontinuity: ≤ 0.05 dB |
| Cable Cutoff Wavelength (λccf) | λccf ≤ 1260 nm |
| Mode-Field Diameter | At 1310 nm = 9.2 ± 0.4 µm<br>At 1550 nm = 10.4 ± 0.5 µm |
| Dispersion | At 1550 nm = ≤ 18.0 [ps/(nm*km)]<br>At 1625 nm = ≤ 22.0 [ps/(nm*km)] |
| | Zero Dispersion Wavelength ($\lambda_0$): 1304 nm ≤$\lambda_0$≤ 1324 nm<br>Zero Dispersion Slope ($S_0$): ≤ 0.092 ps/(nm² *km) |
| Polarization Mode Dispersion (PMD) | PMD Link Design Value = ≤ 0.04 ps/√km<br>Maximum Individual Fiber = ≤ 0.1 ps/√km |

## Dimensional Specifications

| | |
|---|---|
| Fiber Curl | ≥ 4.0 m radius of curvature |
| Cladding Diameter | 125.0 ± 0.7 µm |
| Core-Clad Concentricity | ≤ 0.5 µm |
| Cladding Non-Circularity | ≤ 0.7% |
| Coating Diameter | 242 ± 5 µm |
| Coating-Cladding Concentricity | < 12 µm |

## Environmental Specifications

| Environmental Test | Test Condition | Induced Attenuation 1310 nm, 1550 nm & 1625 nm |
|---|---|---|
| Temperature Dependence | -60°C to +85°C | ≤ 0.05 |
| Temperature Humidity Cycling | -10°C to +85°C up to 98% RH | ≤ 0.05 |
| Water Immersion | 23°C ± 2°C | ≤ 0.05 |
| Heat Aging | 85°C ± 2°C | ≤ 0.05 |
| Operating Temperature Range | -60°C to +85°C | |

## Mechanical Specifications

| | |
|---|---|
| Proof Test | The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.69 GPa). |
| Length | Fiber lengths available up to 63.0 km/spool. |


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**Performance Characterizations**

| | |
|---|---|
| Core Diameter | 8.2 µm |
| Numerical Aperture | 0.14 |
| Effective Group Index of Refraction | 1310 nm: 1.4676<br>1550 nm: 1.4682 |
| Fatigue Resistance Parameter (nd) | 20 |
| Coating Strip Force | Dry: 0.6 lbs (3N)<br>Wet: 14 days room temperature: 0.6 lbs (3N) |
| Rayleigh Backscatter Coefficient (for 1 ns Pulse Width) | 1310 nm: -77 dB<br>1550 nm: -82 dB |

## Product variants & accessories

| Art.-No. | Description |
|---|---|
| P-FCA/FCA09Dxxxxx | FO-Patch cord FC APC/FC APC tde 9/125µ OS2 Duplex LSOH Length: xxxxx |
| P-FC/FC09Dxxxxx | FO-Patch cord FC PC/FC PC tde 9/125µ OS2 Duplex LSOH Length: xxxxx |


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