

Description

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.



Technical Data

FO Connectors

Connector Type	FC UPC
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 UPC	1550 nm	< 0.10 dB	0.25 dB	55 dB

FO-Patch cord FC UPC/FC UPC tde 9/125 μ OS2 Simplex LSOH Length: xxxxx

FO Cables

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

Cable construction

Type	IVH01E9
Tight buffer	1x 900 μ coated fiber (free movable in the compound)
Fiber type	SM-G652D, 9/125 μ , Corning SMF-28e+, OS2
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 – IVH01E09-2.4 LSZH" and sequential meter marking + Lot number

Physical properties

Outer diameter cable	2.4 \pm 0.1 mm
Temperature range	-20°C to +70°C

FO Fiber

Type	Corning SMF-28e+ [®] 09/125 μ OS2 G.652.D singlemode fiber
Maximum Attenuation	At 1310 nm max. 0.33 - 0.35 dB/km At 1383 \pm 3 nm max. 0.31 - 0.35 dB/km At 1490 nm max. 0.21 - 0.24 dB/km At 1550 nm max. 0.19 - 0.20 dB/km At 1625 nm max. 0.20 - 0.23 dB/km
Attenuation vs. Wavelength	Range: 1285 - 1330 nm; Ref. λ : 1310 nm; Max. Difference: 0.03 dB/km Range: 1525 - 1575 nm; Ref. λ : 1550 nm; Max. Difference: 0.02 dB/km
Macrobend Loss	Mandrel Diameter:32mm; Number of Turns: 1; Wavelength: 1550nm; Induced Attenuation: \leq 0.03 dB Mandrel Diameter:50mm; Number of Turns: 100; Wavelength: 1310nm; Induced Attenuation: \leq 0.03 dB Mandrel Diameter:50mm; Number of Turns: 100; Wavelength: 1550nm; Induced Attenuation: \leq 0.03 dB Mandrel Diameter:60mm; Number of Turns: 100; Wavelength: 1625nm; Induced Attenuation: \leq 0.03 dB
Point Discontinuity	Wavelength: 1310 nm; Point Discontinuity: \leq 0.05 dB Wavelength: 1550 nm; Point Discontinuity: \leq 0.05 dB
Cable Cutoff Wavelength (λ_{ccf})	$\lambda_{ccf} \leq$ 1260 nm

FO-Patch cord FC UPC/FC UPC tde 9/125 μ OS2 Simplex LSOH Length: xxxxx

Mode-Field Diameter	At 1310 nm = $9.2 \pm 0.4 \mu\text{m}$ At 1550 nm = $10.4 \pm 0.5 \mu\text{m}$
Dispersion	At 1550 nm = $\leq 18.0 \text{ [ps/(nm*km)]}$ At 1625 nm = $\leq 22.0 \text{ [ps/(nm*km)]}$
	Zero Dispersion Wavelength (λ_0): $1310 \text{ nm} \leq \lambda_0 \leq 1324 \text{ nm}$ Zero Dispersion Slope (S_0): $\leq 0.092 \text{ ps/(nm}^2 \cdot \text{km)}$
Polarization Mode Dispersion (PMD)	PMD Link Design Value = $\leq 0.06 \text{ ps}/\sqrt{\text{km}}$ Maximum Individual Fiber = $\leq 0.1 \text{ ps}/\sqrt{\text{km}}$
Norm	ITU-T Recommendation G.652 (Tables A, B, C, and D) IEC Specifications 60793-2-50 Type B1.3 TIA/EIA 492-CAAB Telcordia Generic Requirements GR-20-CORE ISO 11801 OS2

Dimensional Specifications

Fiber Curl	$\geq 4.0 \text{ m}$ radius of curvature
Cladding Diameter	$125.0 \pm 0.7 \mu\text{m}$
Core-Clad Concentricity	$\leq 0.5 \mu\text{m}$
Cladding Non-Circularity	$\leq 0.7\%$
Coating Diameter	$242 \pm 5 \mu\text{m}$
Coating-Cladding Concentricity	$< 12 \mu\text{m}$

Environmental Specifications

Environmental Test	Test Condition	Induced Attenuation 1310 nm, 1550 nm & 1625 nm
Temperature Dependence	-60°C to $+85^\circ\text{C}$	≤ 0.05
Temperature Humidity Cycling	-10°C to $+85^\circ\text{C}$ up to 98% RH	≤ 0.05
Water Immersion	$23^\circ\text{C} \pm 2^\circ\text{C}$	≤ 0.05
Heat Aging	$85^\circ\text{C} \pm 2^\circ\text{C}$	≤ 0.05
Operating Temperature Range	-60°C to $+85^\circ\text{C}$	

Mechanical Specifications

Proof Test	The entire fiber length is subjected to a tensile stress $\geq 100 \text{ kpsi}$ (0.7 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
Zero Dispersion Wavelength (λ_0)	1317 nm
Zero Dispersion Slope (S_0)	0.088 ps/(nm ² *km)
Effective Group Index of Refraction	1310 nm: 1.4676 1550 nm: 1.4682
Fatigue Resistance Parameter (nd)	20
Coating Strip Force	Dry: 0.6 lbs (3N) Wet: 14 days room temperature: 0.6 lbs (3N)
Rayleigh Backscatter Coefficient (for 1 ns Pulse Width)	1310 nm: -77 dB 1550 nm: -82 dB

Art.-No.	Description
L-FCA/FCA09Sxxxxx	FO-Patch cord FC APC/FC APC tde 9/125µ OS2 Simplex LSOH Length: xxxxx
L-FC/FC09Sxxxxx	FO-Patch cord FC PC/FC PC tde 9/125µ OS2 Simplex LSOH Length: xxxxx
L-FC/FC50Sxxxxx	FO-Patch cord FC/FC tde 50/125µ OM2 Simplex LSOH Length: xxxxx
L-FC/FC62Sxxxxx	FO-Patch cord FC/FC tde 62,5/125µ OM1 Simplex LSOH Length: xxxxx
L-FCU/FCU09Sxxxxx	FO-Patch cord FC UPC/FC UPC tde 9/125µ OS2 Simplex LSOH Length: xxxxx