

## **CORNING OPTICAL COMMUNICATIONS GENERIC SPECIFICATION FOR SIMPLEX OPTICAL FIBER (SINGLE-MODE) NO-EPOXY, NO-POLISH CONNECTOR**

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**Revision: 13**

*Corning Optical Communications reserves the right to update this specification without prior notification.*

### **Master Format 27 13 23 13 Communications Optical Fiber Splicing and Terminations**

#### **1.0 General Considerations.**

This document covers the specifications and performance for field-installable single-mode ST<sup>®</sup> compatible, SC and LC connectors.

#### **2.0 References.**

##### **2.1 The following documents may be used as references.**

TIA/EIA-455-A	Standard Test Procedures for Optical Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices, and Other Fiber Optic Components (FOTPs)
TIA/EIA-604-2	Fiber Optic Connector Intermateability Standard, FOCIS-2 (ST Compatible)
TIA/EIA-604-3A	Fiber Optic Connector Intermateability Standard, FOCIS-3 (Type SC)
TIA/EIA-604-10A	Fiber Optic Connector Intermateability Standard, FOCIS-10 (Type LC)

#### **3.0 Connector Characteristics.**

##### **3.1 Design Features.**

- 3.1.1 Strain relief: For ST compatible, SC and LC connectors, the connector will provide a strain relief mechanism for installation onto a single fiber cable that contains strength elements. The fiber within the body of the connector will be isolated mechanically from cable tension, bending and twisting.
- 3.1.2 Intermateability: The connector will be designed in compliance with the appropriate TIA/EIA FOCIS document.

- 3.1.3 Mating Style: The ST compatible, SC, and LC connectors shall secure to the field fiber via a rotating cam which shall be situated on the connector body and the camming action shall be performed with the use of a connector terminating tool designed for that purpose. Upon rotation of the cam, the connector shall then be permanently secured to the fiber by the crimping of the connector lead in tube via the connector terminating tool.
- 3.1.4 Ferrule Type: The connector ferrule shall be made from a homogenous polymer or ceramic material.

### 3.2 Installation.

- 3.2.1 Installation on field fiber: The connector will contain a mechanical splice and require one handheld tool kit to assemble all three connector types.
- 3.2.2 The connector installation tool kit will contain an integrated continuity test systems (CTS), which will give immediate Go/No-Go feedback of successful connectivity.
- 3.2.3 The cleaver and connector installation tool shall not require a fiber handler
- 3.2.4 Installation rate: The ST compatible and SC connectors shall be installable upon 900  $\mu$ m buffered fiber in one minute or less and upon 1.6, 2.0, 2.6, or 3 mm jacketed cable, if applicable, in three minutes or less total time.
- 3.2.5 Installation rate: The LC connector shall be installable upon 900  $\mu$ m buffered fiber in one minute or less.
- 3.2.6 Installation polishing: The connector will not require polishing of the endface in the field. Connectors will have a factory-polished fiber stub in the connector ferrule.
- 3.2.7 Installation type: The connector installation will not require the use of epoxies.
- 3.2.8 Fiber protection: The connector's factory stub fiber will be secured with epoxy to protect the bare fiber from the ingress of air or waterborne contaminants and will secure the fiber in the ferrule micro-hole.

### 4.0 Performance Requirements.

- 4.1 Insertion Loss: When tested in accordance with FOTP-171, connectors will be consistently capable of insertion losses  $\leq 0.2$  dB (average) and  $\leq 0.5$  dB

(maximum) when installed in accordance with the manufacturer's recommended procedure.

- 4.2 Reflectance: When tested in accordance with FOTP-107, connectors will be consistently capable of reflectance values of  $\leq -40$  dB for SPC polished connectors and  $\leq -50$  dB for UPC polished connectors when installed in accordance with the manufacturer's recommended procedure.
- 4.3 Performance Testing Values: The SC, LC, and ST compatible connector will comply with the values presented in Table 1.

**Table 1. Connector Performance**

Test	Test Method (FOTP #)	Test Conditions	Requirement*
Insertion Loss (IL)	171	concatenation method	Average: 0.2 dB Max IL : 0.5 dB
Return Loss (RL)	107	coupler with power source and meter	Minimum RL: $\leq -40$ dB SPC -55 dB UPC
Low Temp Soak	188	4 days @ 0°C	Max IL : 0.75 dB Min RL: 26 dB
Temperature Life	4	4 days @ 60°C	Max IL : 0.75 dB Min RL: 26 dB
Humidity	5	4 days @ 40°C RH 90-95%	Max IL : 0.75 dB Min RL: 20 dB
Impact	2	8 impacts from 1.8 meters (height)	Max IL : 0.75 dB Min RL: 26 dB
Strength of Coupling Mechanism	185	33 N at 0° for 5 seconds	Max IL : 0.75 dB Min RL: 26 dB
Durability	21	500 rematings, clean every 25	Max IL : 0.75 dB Min RL: 26 dB
Cable Retention 0°	6	0.5 lb. on 900 $\mu$ m buffered fiber for 5 seconds	Delta IL: $\leq 0.5$ dB Max IL: 0.75 dB Min RL: 26 dB
Cable Retention 90°	6	0.5 lb. on 900 $\mu$ m buffered fiber for 5 seconds	Delta IL: $\leq 0.5$ dB Max IL: 0.75 dB Min RL: 26 dB
Flex	1	$\pm 90^\circ$ for 100 cycles @ 0.5 lb. load on 900 $\mu$ m buffered fiber	Max IL : 0.75 dB Min RL: 26 dB
Twist	36	10 cycles 5 turns, 0.5 lb. load on 900 $\mu$ m buffered fiber	Max IL : 0.75 dB Min RL: 26 dB

\* These requirements are attainable when the connector is installed by strictly following the manufacturer's recommended installation procedures.

## 5.0 Packaging Requirements.

- 5.1 The connector will be packaged individually or in an organizer pack to adequately protect the connector.
- 5.2 Each connector will be equipped with a protective dust cap that does not contaminate the connector endface.
- 5.3 The packaging will indicate the supplier part number, connector type, and date code.

### Gen Spec PGS034 Revision History

Revision #	Date	Reason for Change
5	08/21/01	<ul style="list-style-type: none"> <li>1. Section 1.0 added LC connector</li> <li>2. Section 2.0 added TIA/EIA-604-10 Fiber Optic Connector Intermateability Standard, FOCIS –10 (Type LC)</li> <li>3. Section 3.1.1 added statement to indicate that only ST compatible, SC, and FC may require strain relief.</li> <li>4. Section 3.2.2 added statement that ST compatible, FC, and SC are installable upon 3.0 mm jacketed cable.</li> <li>5. Section 5.3 Separately listed ST compatible, FC, and SC in Table 1. Separately listed the LC in Table 2.</li> <li>6. Added table 2 to summarize LC testing.</li> </ul>
6	10/21/02	Adjust performance req. to TIA/EIA 568B.3
7	01/20/04	<ul style="list-style-type: none"> <li>1. Section 3.1.4 added LC connector for CTS compatibility</li> <li>2. Section 3.1.5 added Mating Style</li> <li>3. Section 3.1.6 added Ferrule Type</li> </ul>
8	7/14/04	1. Section 3.2.1 Added LC 1.6, 2.0, 2.4, 3.0 mm
9	7/28/04	1. Section 3.2.2 Added LC compatible with 900 micron only
10	9/13/04	1. Corrected error in Table 1.
11	02/05/09	1. Updated 4.1 to include organizer packs
12	04/08/09	<ul style="list-style-type: none"> <li>1. Deleted references to FC</li> <li>2. Added CTS go/no go detail</li> <li>3. Updated Insertion Loss to reflect current numbers</li> </ul>
13	10/24/18	1. Added Master Format info and mover packaging to section 4.