

KOREAN INDUSTRIAL STANDARD

F09 Type connectors for optical fiber cables

KS C 6979 : 1997

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the original standard in Korean is to be evidence.

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1. Scope

This Korean Industrial Standard specifies, based on **KS C 6962**, F09 type connectors for optical fiber cables (hereafter referred to as "optical connectors") which employ engagement system of bayonet mechanism, ferrule system (outside diameter $\phi 2.5\text{mm}$), plug-adapter-plug system and plug-receptacle system.

Remark The provisions which is expressed as "not specified" in this standard are subjected to agreement between the parties concerned with acceptance.

Informative reference Care shall be taken that there are the following registration of designs about optical connector to Japan.

Registration of design No. 697271 shape of optical connector data of registration 1986-09-29

Registration of design No. 697272 shape of optical connector date of registration 1986-09-29

Description in this standard does not mean expiration of the ownership of these industrial properties.

2. Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. The most recent editions of the standards indicated below shall be applied.

KS C 6920 General rules of optical fibers

KS C 6961 Test methods for connectors for optical fibers cords

KS C 6962 General rules of optical connectors for glass fiber cords

3. Definitions

For the main terms used in this Standard the definitions in **KS C 6962** apply, and the rest of the terms shall be as follows :

bayonet mechanism Such a mechanism that the plug and adapter or receptacle are engaged and locked when the plug is inserted into the adapter or receptacle then the connecting sleeve attached to the plug is turned through a predetermined angle, and they are separated when the connecting sleeve is turned reversely to release the lock and then pulled.

4. Structure of type designation

The structure of type designation shall be as specified in 3.1 of KS C 6962.

5. Classification and grading

5.1 Classification

Optical fibers are classified as given in Table 1 (expressed by type designation).

Table 1 Classification of optical connector

Type of designation	Shape of optical connector	Shape of ferrule array	Grade	Type designation of applicable optical fiber cord (see KS C 6920)	Shape and dimension
CNF09SPM123D1	Plug	M	D	OFC2.8-Y-SGI-50/125	Attached Fig. 1
CNF09SPM124D1					
CNF09SPM125D1					
CNF09SPM126D1					
CNF09SPM127D1					
CNF09SPM128D1					
CNF09SPM129D1					
CNF09SPM123D2				OFC2.0-Y-SGI-50/125	Attached Fig. 2
CNF09SPM124D2					
CNF09SPM125D2					
CNF09SPM126D2					
CNF09SPM127D2					
CNF09SPM128D2					
CNF09SPM129D2					
CNF09SPM124E1			E	OFC2.8-Y-SGI-50/125	Attached Fig. 3
CNF09SPM126E1					
CNF09SPM128E1					
CNF09SPM130E1					
CNF09SPM124E2				OFC2.0-Y-SGI-50/125	Attached Fig. 4
CNF09SPM126E2					
CNF09SPM128E2					
CNF09SPM130E2					
CNF09MX			X	Not specified	(¹)
CNF09PAFD	Adaptor	F-F	D	—	Attached Fig. 5
CNF09PAFE			E		
CNF09FX			X		(²)
CNF09DRF-1	Receptacle	F	—	—	Attached Fig. 6
CNF09DRF-2					Attached Fig. 7

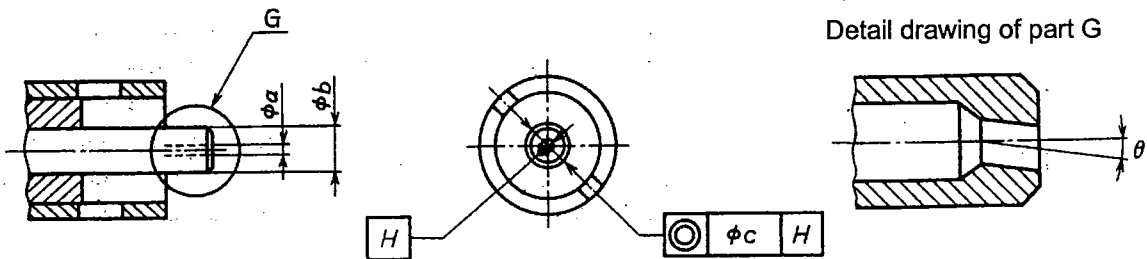
Notes (¹) Shape and dimensions shall be as specified in Fig. 1.

(²) Shape and dimensions shall be as specified in Fig. 2.

Table 2 Grading of plug

Grade	Insertion loss dB ⁽³⁾	Dimension of ferrule (mm)			Angle θ°
		Tolerance on dimension a	Dimension b	Dimension c	
D	0.8 max.	+0.001 0	2.499 ± 0.001	0.004 max.	0.5 max.
E	1.0 max.	± 0.001	$2.499^{+0.001}_{-0.002}$		
X		Not specified			

Note ⁽³⁾ The value when the component is connected with the master optical connector.



b) Adapter

Adapters are graded as given in Table 3.

Table 3 Grading of adapter

Grade	Insertion loss dB ⁽³⁾
	OFC2.8-Y-SGI-50/125 OFC2.0-Y-SGI-50/125
D	0.8 max.
E	1.0 max.
X	Not specified

c) Receptacle grading shall not be specified.

6. Performances

The performances shall be as given in Table 4. However, grade X is subjected to the agreement between the parties concerned with acceptance.

Table 4 Performances

Number	Item	Test method (KS C 6961)	Conditions to be employed	Performance
1	Fitting	4.3 (Fitting)	—	Shall be engaged without mechanical trouble.
2	Insertion loss	5.1 (Insertion loss)	Kind of optical source : A or B Measuring method : method 1 or method 3 (for plug) method 4 (for adapter)	As given in Tables 2 and 3.
3	Resistance to vibration	6.1 (Resistance to vibration)	Initial measurement item : insertion loss Test method : endurance test by sweeping Severity : frequency range 10 to 55 Hz amplitude (zero to peak) 0.75mm number of sweeping cycles 24 Test conditions : 24 cycles on each of three axes including axis of fitting (72 cycles in total) Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3. Insertion loss (finally measured value) : as specified in Table 5. Mechanical damage : no detrimental damage such as deformation, crack or loosening.
4	Resistance to shock	6.2 (Resistance to shock)	Initial measurement item : insertion loss Severity : peak acceleration 98m/s^2 (100 G) duration 6ms velocity change half-sine wave 3.7 m/s or saw-tooth wave 2.9 m/s Test condition : three shocks in each direction along three axes including axis of fitting (18 shocks in total) Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3. Insertion loss (finally measured value) : as specified in Table 5. Mechanical damage : no detrimental damage such as deformation, crack or loosening.
5	Repetitive operation	6.3 (Repetitive operation)	Initial measurement item : insertion loss Number of repetitive operations : 500 Final measurement item : insertion loss	Insertion loss (initially measured value) : as specified in Tables 2 and 3. Insertion loss (finally measured value) : as specified in Table 5. shall be engaged without mechanical trouble.
6	Ferrule thrust	6.5 (Ferrule thrust)	Position of measurement : optical reference plane 2 (see Fig. 1)	Ferrule thrust : 7.8 to 11.8N

Number	Item	Test method (KS C 6961)	Conditions to be employed	Performance
7	Robustness of connection at joint (axial direction)	6.6 [Robustness of connection of joint] (axial direction)	Optical fiber cord to be used Kind : as specified in Table 1 . Length : 1 to 2m Initial measurement item : insertion loss Tensile force : 147N Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.
8	Robustness of optical fiber cord clamp (pull in axial direction)	6.11 [Robustness of optical fiber cord clamp (pull in axial direction)]	Optical fiber cord to be used Length : 1 to 2m Initial measurement item : insertion loss Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.
9	Robustness of optical fiber cord clamp (bending)	6.12 [Robustness of optical fiber cord clamp (bending)]	Optical fiber cord to be used Length : 1 to 2m Initial measurement item : insertion loss Tensile force : 4.9N Number of bends : 100 Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.
10	Resistance to corrosion (salt mist)	7.1 (Salt mist)	Test duration : 48h Final measurement item : appearance	Appearance : no remarkable corrosion.
11	Change of temperature	7.2 (Change of temperature)	Initial measurement item : insertion loss Kind of test : A Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.

Number	Item	Test method (KS C 6961)	Conditions to be employed	Performance
12	Resistance to damp heat (cyclic)	7.4 [Resistance to damp heat (cyclic)]	Initial measurement item : insertion loss Final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.
13	Resistance to dry heat	7.5 (Resistance to dry heat)	Initial measurement item : insertion loss Test temperature : 70°C Test duration : 240h final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.
14	Resistance to cold	7.6 (Resistance to cold)	Initial measurement item : insertion loss Test temperature : -25°C Test duration : 240h final measurement items : insertion loss and mechanical damage	Insertion loss (initially measured value) : as specified in Tables 2 and 3 . Insertion loss (finally measured value) : as specified in Table 5 . Mechanical damage : no detrimental damage such as deformation, crack or loosening.

Table 5 Insertion loss after test

Grade	Insertion loss (finally measured value) dB ⁽³⁾
	OFC2.8-Y-SIG-50/125 OFC2.0-Y-SGI-50/125
D	1.0 max.
E	1.2 max.
X	Not specified

Note ⁽³⁾ The value when the component is connected with the master optical connector is shown.