HES Cabling Systems

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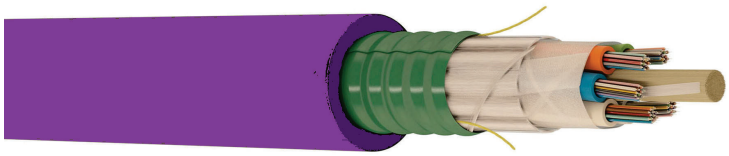
Technical Specification

4~24x9/125µ SM G.652.D SM MLT CSA SJ Indoor/Outdoor LS0H FE-180 Fire-Resistant FO Cable

HCS Part Number: U94-xxxR2-xx9-FC

Revision 03/22 Date: 07 June 2022



4~24 color coded 9/125µm ITU-T G.652.D Singlemode Optical Fibers buffered in gel-filled loose tube, 4 or 6 fibers per tube, cabled around a non metallic dielectric strength member with fillers, gel-filled and wrapped with a polyester tape and a fire-stopping mica tape. A corrugated bonded steel tape and an outer LS0H Jacket render the cable suitable for indoor and outdoor use. The cable maintains circuit integrity for 180 minutes (FE-180) according to IEC 60331-25.

Loose Tube Construction	
Basic optical fibers	9/125µm Singlemode conforming to ITU-T G.652.D, ISO/IEC-11801 OS2 & TIA-568.3-D
Optical transmission properties	See below
Core diameter	8.3 µm nom. (see MFD values below)
Clad diameter	125±0.3 µm
Primary coating diameter	245±10 µm
Proof test level	100 kpsi min.
Number of optical fibers per tube	See options below.
Fibers Color code	Blue, Orange, Green, Brown, Gray, White.
Buffer coating	PBT Loose tube filled with Thixotropic gel.
Loose tube ID/OD	1.6/2.3 mm nom.
Loose tube count	1, 2 or 4.

Cable Construction	
Total number of fibers	4, 6 12 or 24.
Central strength element	Dielectric, 2.5 mm nom. OD.
Core construction	Looses tubes cabled around the central strength member with fillers, gel filled and wrapped with PET tape.
Tube color	Blue, Orange, Green, Brown.
Core filling	Water blocking Jelly.
Tape wrap	Polyester tape.
Flame barrier	Fire resistant mica tape.
Strength elements	None.
Rip-cord	Aramid or polyester rope laid in parallel for easy jacket and armor removal.
Inner Jacket	None.
Steel armor	150 micron corrugated steel tape laid longitudinally, bonded to the outer jacket.
Outer jacket	Halogen Free Flame Retardant (LS0H) UV & Oil resistant compound for outdoor use.
Outer jacket thickness	1.5±0.2 mm.
Overall Diameter	13.4 mm nom.
Color	**Purple RAL 4005.**
Surface Marking	
U94-004R2-xx9-FC	HCS U94-004R2 DataLight MLT 4x9/125µ ITU-T G.652.D SM INDOOR/OUTDOOR SJ CSA FIRE-RESISTANT FE-180 FO CABLE IEC 60331-25 CE 2011/65/EU (RoHS-2) [Hwwyy] [Meter Mark] METER **Type 20H**
U94-006R2-xx9-FC	HCS U94-006R2 DataLight MLT 6x9/125µ ITU-T G.652.D SM INDOOR/OUTDOOR SJ CSA FIRE-RESISTANT FE-180 FO CABLE IEC 60331-25 CE 2011/65/EU (RoHS-2) [Hwwyy] [Meter Mark] METER **Type 20J**
U94-012R2-xx9-FC	HCS U94-012R2 DataLight MLT 12x9/125µ ITU-T G.652.D SM INDOOR/OUTDOOR SJ CSA FIRE-RESISTANT FE-180 FO CABLE IEC 60331-25 CE 2011/65/EU (RoHS-2) [Hwwyy] [Meter Mark] METER **Type 20F**
U94-024R2-xx9-FC	HCS U94-024R2 DataLight MLT 24x9/125µ ITU-T G.652.D SM INDOOR/OUTDOOR SJ CSA FIRE-RESISTANT FE-180 FO CABLE IEC 60331-25 CE 2011/65/EU (RoHS-2) [Hwwyy] [Meter Mark] METER **Type 20G**
Total weight	218 kg/km.

Optional Constructions

P/N	Fiber count	Tube count	Fiber per tube	Fillers
U94-004R2-xx9-FC	4	1	4	5
U94-006R2-xx9-FC	6	1	6	5
U94-012R2-xx9-FC	12	2	6	4
U94-024R2-xx9-FC	24	4	6	2

Physical Properties	Value	Test Method
Tensile strength (during installation)	2700 N max. - Maximum loss: 0.05 dB	IEC-60794-1-21 E1
Tensile strength (during operation)	1000 N max. - Maximum loss: 0.05 dB	IEC-60794-1-21 E1
Crush resistance	2500 N/10cm No fiber break	IEC-60794-1-21 E3
Impact	15 Nm min. - 3 Impacts. No fiber break	IEC-60794-1-21 E4
Temperature cycling	-40 to +70C - Maximum loss: 0.05 dB	IEC-60794-1-22 F1
Fire test - Circuit integrity	180 minutes, Maximum loss: 5.0 dB (FE-180)	IEC 60331-25
Fire test - Flame propagation	Pass	IEC 60332-1 & IEC 60332-3-24
Acid gas release during fire	0.5% max.	IEC 60754-1
Smoke generation during fire	Pass	IEC 61034-1 & IEC 61034-2
Storage Temperature range	-40 to +80C	-
Installation Temperature range	-5 to +60C	-
Operating Temperature range	-40 to +70C	-
Bend radius during installation	20xD min. - Maximum loss: 0.05 dB	IEC-60794-1-21 E11
Bend radius - long term	10xD min. - Maximum loss: 0.05 dB	IEC-60794-1-21 E11
Repeated bending	20xD. - Maximum loss: 0.05 dB	IEC-60794-1-21 E6

Optical Transmission Properties

Fiber P/N	Fiber Type	Standards & basic properties	Attenuation dB/km						MFD @1310nm
			@1310nm		@1383nm		@1550nm		
			Nom	Max	Nom	Max	Nom	Max	
94	9.3/125µm Single Mode Optical Fiber	ITU-T G.652.D no water peak ISO/IEC-11801 OS2 & TIA-568.3-D Max. Dispersion between 1285 & 1350nm: 3.5 ps/(nm·km) Max. Dispersion between 1530 & 1565nm: 18.0 ps/(nm·km) Zero dispersion wavelength: 1311±11 nm Cable cutoff wavelength: 1260 nm max.	0.33	0.36	0.31	0.36	0.20	0.22	9.2±0.4 µm