



# HCS<sup>®</sup> Industrial Optical Cables

now including a full line of greener Low Smoke Zero Halogen options

**SUBWAY | TRAIN TUNNEL | FACTORY CONTROL SYSTEMS**



Indoor Industrial Cable

Outdoor Industrial Cable

Low Smoke Zero  
Halogen Cable

OFS is a world-leading designer, manufacturer and provider of optical fiber, optical fiber cable, and optical connectivity for telecommunications. The Specialty Photonics Division customizes that extensive technology for a variety of other industries and unique applications.

The HCS cables described in this brochure combine reliable, proven, HCS fiber optic technology with cable materials and constructions optimized for use indoors, outdoors, in confined spaces, and in mechanically or chemically harsh environments. Standard constructions are available for quick delivery, and use traditional cable materials such as low smoke zero halogen, polyethylene, polyurethane and PVC. These cables come in standard core sizes of 50, 62.5, 200, 400, (and by request even larger core sizes up to 1500  $\mu\text{m}$ ) and are available in multiple fiber breakout constructions with various degrees of armoring and mechanical protection, as well as waterproofing. OFS HCS cables are rugged and crush resistant and utilize a unique termination process that can be completed quickly and easily in the field using OFS Crimp & Cleave Termination Kits. Common connector styles such as the ST, SMA and V-Pin are crimped directly to the hard clad fiber layer and replace the traditional epoxy/polish termination.



## HCS Optical Fiber – Quality from the inside out

OFS has a 25+ year history of making HCS optical fiber. This glass fiber construction employs a hard fluoropolymer cladding followed by an ETFE buffer that results in a robust fiber twice the diameter of standard optical fiber with enhanced mechanical properties. Additionally the hard fluoropolymer material enables quick, on-site termination with our Crimp & Cleave connectors, using a termination kit, with a variety of connector styles.

## Applications

OFS HCS cables have become the industry standard for a wide range of applications. Some examples follow, but there are many more:

- In-cabin connections for high-speed rail, aircraft, and ocean-going vessels
- Enclosed installations in airports, subway stations, and oil rigs
- Indoor/outdoor transitional links at electrical substations and wind farms
- Rough-handling environments, such as automation on factory floors, robotic controls, industrial laser delivery and welding
- Riser and plenum installations for voice, data, and communications links

## Other Cables from OFS

The range of OFS cable jacket material options is extensive and includes compounds, that can extend the operating temperature range from  $-200^{\circ}\text{C}$  to as high as  $260^{\circ}\text{C}$ , while providing good flexibility, as well as excellent resistance to flammability, chemicals, and abrasion. Custom cables designed to fit your unique requirements can be readily manufactured with HCS or All Silica fibers in fiber counts up to 12. Contact us for a discussion of your special requirements.

OFS, a specialist in industry-optimized cabling, also offers a full line of cabled optical fibers to meet the special needs of the aerospace industry. Our FlightGuide®, FlightLink™, and Avioptics® Cables are profiled in a separate Aerospace Optical Cables brochure available for download from our website or upon request.



## Extended Compliance with Hazardous Substance Directives

In addition to meeting UL-1666 requirements for Riser rating, these cables also meet IEC and the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC, dated 27 January, 2003) for omitting certain named hazardous substances from electrical and electronic products. They also omit 3 compounds currently being considered for restriction or ban: PVC, bisphenol A, and antimony trioxide. Aside from RoHS, the European Chemicals Agency (ECHA) in Helsinki, Finland, has issued REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) as a regulation governing chemicals in manufacturing in the EU. It encompasses a currently changing list of Substances of Very High Concern (SVHC) which are regularly reviewed and considered for restriction or ban. As of this writing, none of the named SVHCs are contained in OFS Low Smoke Zero Halogen Cables.

## Low Smoke Zero Halogen Cables — a greener solution

Our green portfolio of Low Smoke Zero Halogen (LSZH) HCS cables has grown to include 50, 62.5, and 200  $\mu\text{m}$  core sizes. These cables operate both indoors and in the critical transition areas from the outdoors in, such as in substation deployments. Their expanded operating temperature range, up to 105°C, coupled with other key features, makes LSZH cables from OFS the preferred choice for Riser installation.



*enclosed installations at subway stations*

## Comprehensive Testing for Flame, Smoke Emission, and Acid Gas Emission

These cables have undergone extensive, independent testing to ensure they meet the stringent requirements for cable use in fully or partially enclosed structures, such as tunnels, factories, rail systems, substations, nuclear power plants, and oil refineries. They've been tested to and passed the IEC requirements for acid gas and the tougher UL and Canadian UL Riser requirements for smoke emission, flame, and toxicity. See individual specification



*indoor/outdoor transitional links at electrical substations*

sheets for results of each testing component. A complete Testing Summary Report with Results is also available to qualified customers.

## Connectorization and Ordering Options

All cables profiled in this brochure are Crimp & Cleave compatible. They can be connectorized quickly and easily with the popular, industry-standard connector choices, such as ST® or SMA. For 200 µm industrial cables that do not include aramid yarn in the sub-units, V-System® configurations using V-pin connectors are the quickest, easiest connector option.

You may purchase cables pre-connectorized in our factory, saving you time and money if lengths are known in advance. You may also order the tool kits and connectors separately and assemble in the field as needed.

Cables specified on the following pages are manufactured in our Avon, Connecticut, USA facility (noted as **A** on the specification sheets). Please call our factory at 860-678-0371. Additional contact information can be found on the back cover.

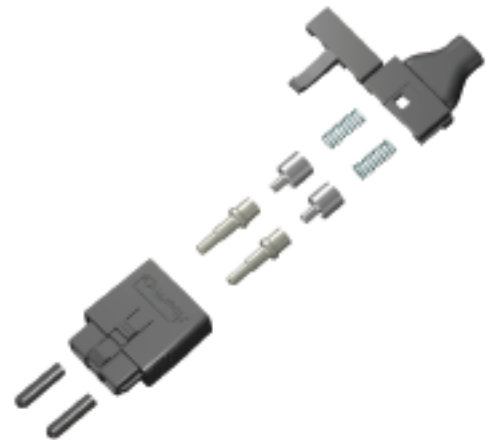
- **ST and SMA Connectors** are available in 50, 62.5, 200, or 400 µm sizes and are compatible with aramid-reinforced cable subunits for indoor or outdoor use.



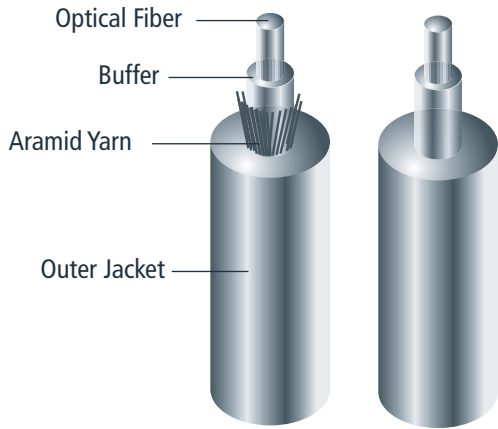
- **V-Pin Connectors** are available in either 200 or 400 µm sizes. They are recommended for indoor use and cannot be used with aramid yarn sub-units.



- **F07 Connectors** for zipcord and **F05 Connectors** (*not pictured*) for simplex sub-units are available in the 200 µm size. They are compatible with cables using aramid yarn and are intended for indoor use.

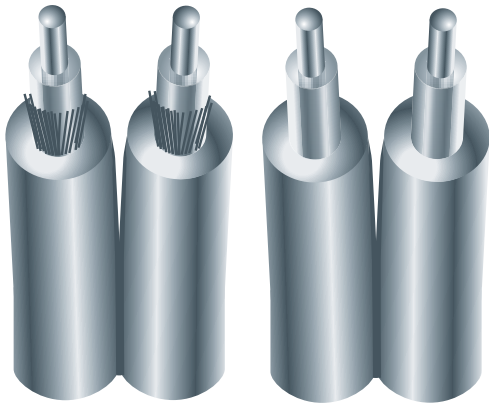


# Indoor Constructions



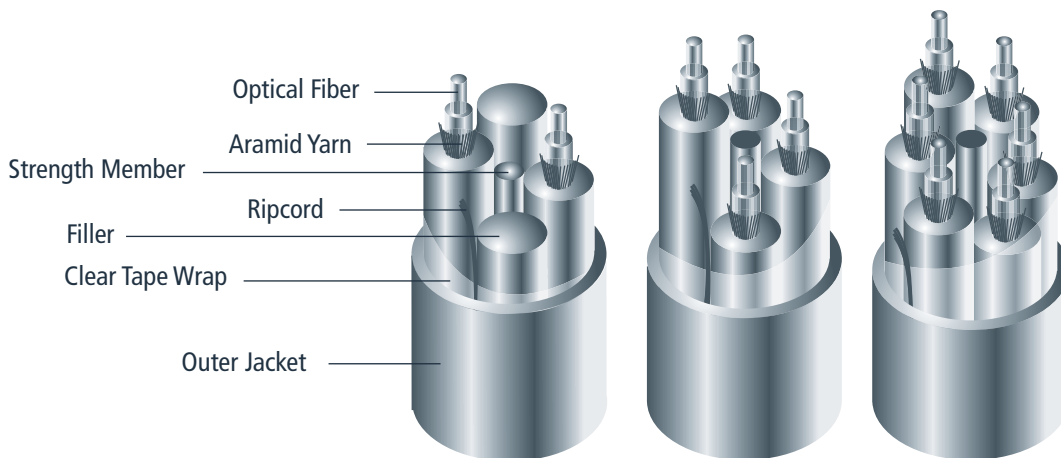
## Simplex Cable

*with or without Aramid Yarn. See pages 8-14*



## Zipcord Cable

*with or without Aramid Yarn. See pages 8-14*



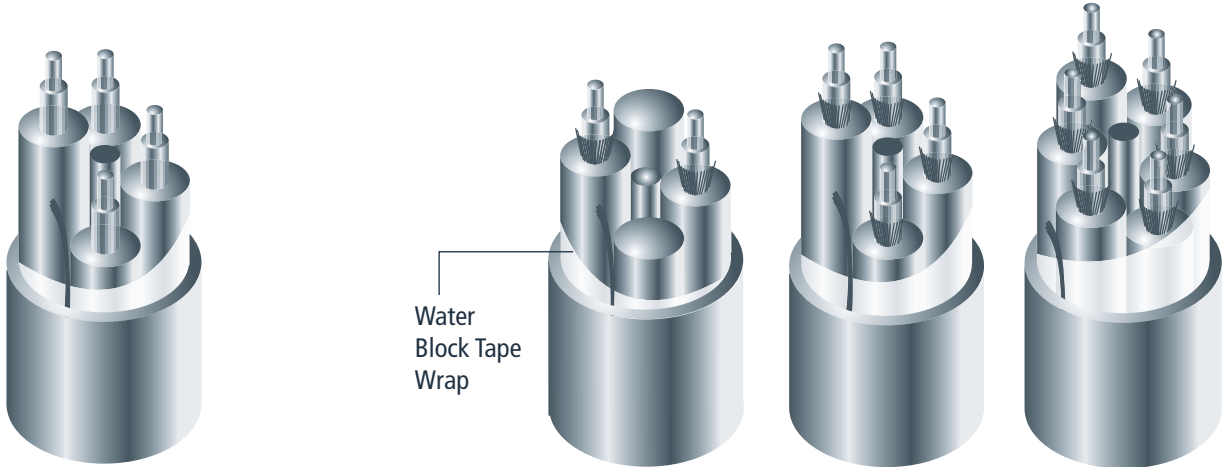
## Breakout Cable

*Available in 2, 4 and 6-Fiber Breakout with or without Aramid Yarn in subunits.  
See pages 9-10, 12-13*

## Cable Diagrams

OFS builds upon several of its basic cable constructions to create a variety of choices for customers' special applications. Some of the main designs are illustrated here to help you visualize how aramid yarn, multiple fibers, and strengthening components are combined and arranged to create individual cables to meet the requirements of an application. Colors, core sizes, outer diameters and most other options are omitted from the diagrams for clarity. Each of the cables illustrated can be customized with those options listed, as well as connectorization and print legends. The bare fiber can also be ordered separately.

# Indoor/Outdoor (when configured as LSZH) and Outdoor Breakout Constructions

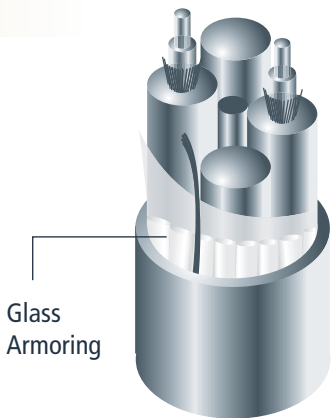


## Basic Outdoor Cable

Available in 2 and 4-Fiber,  
with or without Aramid Yarn. See pages 8-19

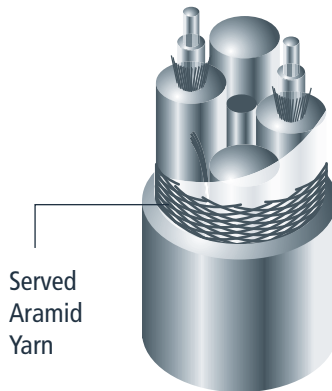
## Waterblocked Cable

Available in 2, 4, and 6-Fiber.  
See pages 15-17



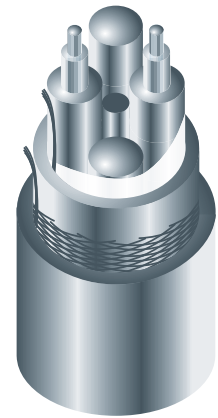
## Waterblocked Cable with Glass Armor

Available in 2, 4, and 6-Fiber.  
See pages 15-17



## Heavy Duty Breakout Cable

Available in 2, 4, and 6-Fiber,  
with or without Aramid Yarn in subunits.  
See pages 18-19



## Ruggedized Cable

Available in 2-Fiber.  
See page 18

# Low Smoke Zero Halogen

## Indoor Industrial Cable | Technical Specifications



### 2.5 mm Graded Index 50 and 62.5 μm HCS LSZH Riser ST® and SMA

For installation in enclosed or sealed locations, low smoke zero halogen (LSZH) cable, based on HCS fiber, is the recommended solution. These cables are crimp and cleave compatible when using ST or SMA connectors. They are moisture and fatigue resistant and extremely durable.

Graded-index design offers higher bandwidth than step-index counterparts. LSZH materials also offer a higher operating temperature range than comparable HCS cables.

		Simplex	Zipcord
<b>Optical Properties</b>			
Attenuation @ 850 nm	50 μm	≤3.5 dB/km	≤3.5 dB/km
	62.5 μm	≤4 dB/km	≤4 dB/km
Attenuation @ 1300 nm	50 μm	≤1.5 dB/km	≤1.5 dB/km
	62.5 μm	≤2 dB/km	≤2 dB/km
Subcomponent bare fiber specifications	50 μm	F16496	F16496
	62.5 μm	F14404	F14404
<b>Cable Design</b>			
Fiber core diameter	50 μm	50.0 ± 3 μm	50.0 ± 3 μm
	62.5 μm	62.5 ± 3 μm	62.5 ± 3 μm
Outer cable diameter		2.5 mm	2.5 x 5.2 mm
Cable weight		≤7.0 kg/km	≤14.0 kg/km
Outer jacket material	material / color	LSZH / Orange	LSZH / Orange
Other materials used		Aramid Yarn	Aramid Yarn
<b>Fire Rating</b>			
OFNR/FT4 Riser		Pass	Pass
Flammability	IEC 60332-1 & -3 (for simplex)	Pass	n/a
	IEC 60332-3 (for zipcord)	n/a	Pass
Smoke density	IEC 61034-2	Pass	Pass
Halogen gas emissions	IEC 60754-1	Pass	Pass
Acid gas emissions	IEC 60754-2	Note*	Note*
<b>Installation and Usage Specifications</b>			
Maximum installation tensile load		110 lbs. (489 N)	165 lbs. (734 N)
Maximum operating tensile load		55 lbs. (245 N)	85 lbs. (378 N)
Minimum bend radius under load		38 mm	38 mm
Minimum bend radius unloaded		25 mm	25 mm
Operating temperature		-20 to +105°C	-20 to +105°C
Storage temperature		-40 to +80°C	-40 to +80°C
Product Description Code:	50 μm	HCU-MF050T-A01ZS	HCU-MF050T-A02ZZ
	62.5 μm	HCU-MF062T-A01ZS	HCU-MF062T-A02ZZ
Order by Part Number: Location <b>A</b>	50 μm	<b>C19654</b>	<b>C19655</b>
	62.5 μm	<b>C17770</b>	<b>C17771</b>
Typical Applications	In-cabin transportation applications (e.g. high-speed rail, aircraft, and ocean-going vessels) • Airports • Subway stations • Switching system interconnects • Oil rigs		
<b>Crimp &amp; Cleave Compatibility:</b>	ST, SMA Connectors		

**Note\*:** IEC 60754-2 recommends the weighted cable pH value should not be less than 4.3 when related to 1 liter of water. The pH of HCS optical fiber and aramid yarn measures less than 4.3. The LSZH cable jacket material has a pH value greater than 4.3.



**2.5 mm Graded Index 50 and 62.5 µm HCS Cables** Riser or Plenum ST or SMA

For indoor use these plenum or riser rated cables are designed primarily for industrial data-communication, and automation applications. Taking advantage of the durability and toughness of new smaller-core HCS optical fibers, these tight-buffer cables surround the fiber with high-strength aramid yarn and are protected with a tough 2.5 mm diameter PVC jacket.

		Riser Simplex	Plenum Simplex	Riser Zipcord	Plenum Zipcord	Riser 2-Fiber Breakout	Riser 4-Fiber Breakout	Riser 6-Fiber Breakout
<b>Optical Properties</b>								
Attenuation @ 850 nm	50 µm	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km
	62.5 µm	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km
Attenuation @ 1300 nm	50 µm	≤1.5 dB/km	1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km
	62.5 µm	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km
Subcomponent bare fiber specifications								
	50 µm	F16496	F16496	F16496	F16496	F16496	F16496	F16496
	62.5 µm	F14404	F14404	F14404	F14404	F14404	F14404	F14404
<b>Cable Design</b>								
Fiber core diameter	50 µm	50 ± 3 µm	50 ± 3 µm	50 ± 3 µm	50 ± 3 µm	50 ± 3 µm	50 ± 3 µm	50 ± 3 µm
	62.5 µm	62.5 ± 3 µm	62.5 ± 3 µm	62.5 ± 3 µm	62.5 ± 3 µm	62.5 ± 3 µm	62.5 ± 3 µm	62.5 ± 3 µm
Sub-unit diameter		not applicable	not applicable	not applicable	not applicable	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm
Outer cable diameter		2.5 mm	2.5 mm	2.5 x 5.2 mm	2.5 x 5.2 mm	8 mm	8 mm	10 mm
Cable weight		6.5 kg/km	8 kg/km	11 kg/km	13.5 kg/km	55 kg/km	55 kg/km	74 kg/km
Outer jacket material / color		PVC / Orange	PVC / Orange	PVC / Orange	PVC / Orange	PVC / Black	PVC / Black	PVC / Black
Flammability rating		UL-1666	NFPA-262	UL-1666	NFPA-262	UL-1666	UL-1666	UL-1666
<b>Installation and Usage Specifications</b>								
Maximum installation tensile load		110lbs. (489 N)	110 lbs. (489 N)	165 lbs. (734 N)	165 lbs. (734 N)	310 lbs. (1375 N)	530 lbs. (2358 N)	750 lbs. (3336 N)
Maximum operating tensile load		55 lbs. (245 N)	55 lbs. (245 N)	85 lbs. (378 N)	85 lbs. (378 N)	155 lbs. (689 N)	265 lbs. (1179 N)	375 lbs. (1668 N)
Minimum bend radius under load		38 mm	38 mm	38 mm	38 mm	120 mm	120 mm	150 mm
Minimum bend radius unloaded		25 mm	25 mm	25 mm	25 mm	80 mm	80 mm	125 mm
Operating temperature		-20 to +80°C	0 to +75°C	-20 to +80°C	0 to +75°C	-20 to +80°C	-20 to +80°C	-20 to +80°C
Storage temperature		-40 to +80°C	-20 to +75°C	-40 to +80°C	-20 to +75°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Product Description Code:	50 µm	HCU-MF050T-A01RS	HCU-MF050T-A01PS	HCU-MF050T-A02RZ	HCU-MF050T-A02PZ	HCU-MF050T-A02RB	HCU-MF050T-A04RB	HCU-MF050T-A06RB
	62.5 µm	HCU-MF062T-A01RS	HCU-MF062T-A01PS	HCU-MF062T-A02RZ	HCU-MF062T-A02PZ	HCU-MF062T-A02RB	HCU-MF062T-A04RB	HCU-MF062T-A06RB
Order by Part Number: Location <b>A</b>	50 µm	<b>C19641</b>	<b>C19642</b>	<b>C19643</b>	<b>C19644</b>	<b>C19645</b>	<b>C19646</b>	<b>C19647</b>
	62.5 µm	<b>C17757</b>	<b>C17758</b>	<b>C17759</b>	<b>C17760</b>	<b>C17761</b>	<b>C17762</b>	<b>C17763</b>
Typical Applications	Factory automation • Short- to medium-distance communications							
<b>Crimp &amp; Cleave Compatibility:</b>	ST, SMA Connectors							



**2.2 mm Step-Index 200 μm HCS** Plenum V-System®

OFS 2.2 mm HCS fiber V-System cable is a low-cost, silica-based cabling system, compatible with Avago versatile link 650 nm receivers and transmitters. Cables built with 200 μm HCS fiber are an alternative to the plastic fiber otherwise used with those components, offering high performance, greater link length, and better mechanical and environmental properties at comparable cost.

	Simplex	Zipcord
<b>Optical Properties</b>		
Attenuation @ 850 nm	≤6 dB/km	≤6 dB/km
Subcomponent bare fiber specifications	CF01493-10	CF01493-10
<b>Cable Design</b>		
Fiber core diameter	200 ± 4 μm	200 ± 4 μm
Outer cable diameter	2.2 mm	2.2 x 4.6 mm
Cable weight	5.5 kg/km	11 kg/km
Fiber count/construction	Simplex	Zipcord
Outer jacket material	PVC	PVC
Outer jacket color	Blue	Blue
Flammability rating	NFPA-262	NFPA-262
<b>Installation and Usage Specifications</b>		
Maximum installation tensile load	25 lbs. (111 N)	25 lbs. (111 N)
Maximum operating tensile load	5 lbs. (22 N)	5 lbs. (22 N)
Minimum bend radius under load	15 mm	15 mm
Minimum bend radius unloaded	10 mm	10 mm
Operating temperature	0 to +75°C	0 to +75°C
Storage temperature	-20 to +75°C	-20 to +75°C
Product Description Code:	HCP-M0200T-V01PK	HCP-M0200T-V02PL
Order by Part Number: Location <b>A</b>	<b>BC03597-10-BL</b>	<b>BC04340</b>
Typical Applications	Laser power delivery • Industrial communications • 650 or 850 nm devices • Factory automation • Near-IR spectroscopy • Plenum installations	
<b>Crimp &amp; Cleave Compatibility:</b>	V-Pin Connector	



### 2.2 or 2.5 mm Step-Index 200 µm LSZH Riser ST, SMA or V-System®

Designed specifically for indoor use, these simplex and zipcord designs with 2.2 or 2.5 mm outer jackets are constructed with low smoke zero halogen (LSZH) cable materials from HCS fibers. They are appropriate for indoor riser installations in enclosed or sealed

locations. The 2.2 mm cables are crimp and cleave compatible with V-System connectors and the 2.5 mm are compatible with the ST or SMA connectors. LSZH materials also offer a higher operating temperature range than comparable HCS cables.

	2.2 Simplex	2.2 Zipcord	2.5 Simplex	2.5 Zipcord
<b>Optical Properties</b>				
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤6 dB/km	≤6 dB/km
<b>Cable Design</b>				
Fiber core diameter	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm
Sub-unit diameter	not applicable	2.2 ± 0.1 mm	not applicable	2.5 ± 0.2 mm
Outer cable diameter	2.2 ± 0.1 mm	2.2 x 4.6 mm	2.5 ± 0.2 mm	2.5 x 5.2 mm
Cable weight	<6.0 kg/km	<12.0 kg/km	<7.0 kg/km	<14.0 kg/km
Fiber count/construction	Simplex	Zipcord	Simplex	Zipcord
Intended environment	Indoor	Indoor	Indoor	Indoor
Outer jacket material	LSZH	LSZH	LSZH	LSZH
Outer jacket color	Orange	Orange	Orange	Orange
<b>Fire Rating</b>				
OFNR/FT4 Riser	Pass	Pass	Pass	Pass
Flammability IEC 60332-1 & -3 (for simplex)	Pass	n/a	Pass	n/a
	n/a	Pass	n/a	Pass
Smoke density IEC 61034-2	Pass	Pass	Pass	Pass
Halogen gas emissions IEC 60754-1	Pass	Pass	Pass	Pass
Acid gas emissions IEC 60754-2	Note*	Note*	Note*	Note*
<b>Installation and Usage Specifications</b>				
Maximum installation tensile load FOTP 33	25 lbs. (111 N)	25 lbs. (111 N)	110 lbs. (489 N)	165 lbs. (734 N)
Maximum operating tensile load FOTP 33	5 lbs. (22 N)	5 lbs. (22 N)	55 lbs. (245 N)	85 lbs. (378 N)
Minimum bend radius under load FOTP 33,88	33 mm	33 mm	38 mm	38 mm
Minimum bend radius unloaded FOTP 33,88	22 mm	22 mm	25 mm	25 mm
Operating temperature FOTP 3	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
<b>Mechanical Specification</b>				
Impact resistance > 25 impacts, FOTP 25	1.1 lbf (0.5 kg)	2.2 lbf (1.0 kg)	1.1 lbf (0.5 kg)	2.2 lbf (1.0 kg)
Compressive resistance FOTP 41	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)
Cable twist FOTP 85	>10 cycles	>10 cycles	>10 cycles	>10 cycles
Cyclic flexing FOTP 104 25 mm diameter sheave, 1.5 kg load	>50,000 cyclic flexes	>50,000 cyclic flexes	>50,000 cyclic flexes	>50,000 cyclic flexes
Product Description Code:	HCP-M0200T-V01ZS	HCP-M0200T-V02ZZ	HCP-M0200T-A01ZS	HCP-M0200T-A02ZZ
Order by Part Number: Location <b>A</b>	<b>C21058</b>	<b>C21059</b>	<b>C21050</b>	<b>C21051</b>
Typical Applications	Nuclear power plants • Shipboard systems • Offshore marine platforms			
<b>Crimp &amp; Cleave Compatibility:</b>	ST, SMA, V-Pin Connectors			

**Note\*:** IEC 60754-2 recommends the weighted cable pH value should not be less than 4.3 when related to 1 liter of water. The pH of HCS optical fiber and aramid yarn measures less than 4.3. The LSZH cable jacket material has a pH value greater than 4.3.



2.2 mm Step-Index 200 μm HCS Riser V-System

OFS 2.2 mm HCS fiber V-System cable is a low-cost, silica-based cabling system, compatible with Avago versatile link 650 nm receivers and transmitters.

Cables built with 200 μm HCS fiber are an alternative to the plastic fiber otherwise used with those components, offering high performance, greater link length, and better mechanical and environmental properties at comparable cost.

	Simplex	Zipcord	2-Fiber	4-Fiber
<b>Optical Properties</b>				
Attenuation @ 850 nm	≤6 dB/km	≤6 dB/km	≤8 dB/km	≤8 dB/km
Subcomponent bare fiber specifications	CF01493-10	CF01493-10	CF01493-10	CF01493-10
<b>Cable Design</b>				
Fiber core diameter	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm
Sub-unit diameter	not applicable	not applicable	2.2 ± 0.1 mm	2.2 ± 0.1 mm
Outer cable diameter	2.2 mm	2.2 x 4.6 mm	7.5 mm	7.5 mm
Cable weight	5.5 kg/km	11.0 kg/km	50 kg/km	50 kg/km
Outer jacket material	PVC	PVC	PVC	PVC
Outer jacket color	Blue	Blue	Black	Black
Flammability rating	UL-1666	UL-1666	UL-1666	UL-1666
<b>Installation and Usage Specifications</b>				
Maximum installation tensile load	25 lbs. (111 N)	25 lbs. (111 N)	90 lbs. (400 N)	90 lbs. (400 N)
Maximum operating tensile load	5 lbs. (22 N)	5 lbs. (22 N)	45 lbs. (200 N)	45 lbs. (200 N)
Minimum bend radius under load	15 mm	15 mm	113 mm	113 mm
Minimum bend radius unloaded	10 mm	10 mm	75 mm	75 mm
Operating temperature	-20 to +80°C	-20 to +80°C	-20 to +80°C	-20 to +80°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Product Description Code:	HCP-M0200T-V01RK	HCP-M0200T-V02RL	HCP-M0200T-V02RB	HCP-M0200T-V04RB
Order by Part Number: Location <b>A</b>	<b>BC04265-10</b>	<b>BC04307</b>	<b>BC04791-10</b>	<b>BC04791-12</b>
Typical Applications	Laser power delivery • Industrial communications • Factory automation Near-IR spectroscopy • Riser installations • 650 or 850 nm devices			
<b>Crimp &amp; Cleave Compatibility:</b>	V-Pin Connector			



## 2.2 mm Step-Index 200 μm HCS General Purpose, Multi-Connector

With their 2.2 mm form factor and aramid yarn strength elements, these 200 μm step-index HCS cables are a low-cost, silica-based system compatible with F05 and F07 connectors.

Cables built with 200 μm HCS fibers are an alternative to the plastic fiber, offering high performance, greater link length, and better mechanical and environmental properties at comparable cost.

	Zipcord	2-Fiber
<b>Optical Properties</b>		
Attenuation @ 850 nm	≤6 dB/km	≤6 dB/km
Subcomponent bare fiber specifications	CF01493-10	CF01493-10
<b>Cable Design</b>		
Fiber core diameter	200 ± 4 μm	200 ± 4 μm
Sub-unit diameter	not applicable	2.2 ± 0.15 mm
Outer cable diameter	2.2 x 4.6 mm	8.4 mm
Cable weight	8 kg/km	50 kg/km
Outer jacket material	PVC	PVC
Outer jacket color	Orange	Black
<b>Installation and Usage Specifications</b>		
Maximum installation tensile load	75 lbs. (334 N)	135 lbs. (601 N)
Maximum operating tensile load	55 lbs. (245 N)	100 lbs. (445 N)
Minimum bend radius under load	25 mm	75 mm
Minimum bend radius unloaded	10 mm	50 mm
Operating temperature	-20 to +105°C	-20 to +105°C
Storage temperature	-40 to +80°C	-40 to +80°C
Product Description Code:	HCP-M0200T-J02VZ	HCP-M0200T-J02VB
Order by Part Number: Location <b>A</b>	<b>AC02581-10</b>	<b>AC02739-10</b>
Typical Applications	Laser power delivery • Industrial communications • Factory automation Near-IR spectroscopy	
<b>Crimp &amp; Cleave Compatibility:</b>	F05, F07, ST, SMA Connectors	



## 2.2 mm Step-Index 400 μm HCS Plenum, Multi-Connector

OFS 2.2 mm HCS fiber V-System cable is a low-cost, silica-based cabling system, compatible with Avago versatile link 650 nm receivers and transmitters.

Cables built with 400 μm HCS fiber are an alternative to the plastic fiber otherwise used with those components, offering high performance at comparable cost.

	Simplex V-System	Zipcord V-System	Simplex with Aramid Yarn	Zipcord with Aramid Yarn
<b>Optical Properties</b>				
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km
Subcomponent bare fiber specifications	CF01493-12	CF01493-12	CF01493-12	CF01493-12
<b>Cable Design</b>				
Fiber core diameter	400 ± 8 μm	400 ± 8 μm	400 ± 8 μm	400 ± 8 μm
Sub-unit diameter	not applicable	not applicable	not applicable	not applicable
Outer cable diameter	2.2 mm	2.2 x 4.6 mm	2.2 mm	2.2 x 4.6 mm
Cable weight	6.5 kg/km	13.0 kg/km	6.5 kg/km	13.0 kg/km
Outer jacket material	PVC	PVC	PVC	PVC
Outer jacket color	Brown or Yellow	Brown or Yellow	Brown	Brown
Flammability rating	NFPA-262	NFPA-262	NFPA-262	NFPA-262
<b>Installation and Usage Specifications</b>				
Maximum installation tensile load	25 lbs. (111 N)	25 lbs. (111 N)	50 lbs. (222 N)	100 lbs. (445 N)
Maximum operating tensile load	10 lbs. (44 N)	10 lbs. (44 N)	20 lbs. (89 N)	40 lbs. (178 N)
Minimum bend radius under load	65 mm	65 mm	65 mm	65 mm
Minimum bend radius unloaded	45 mm	45 mm	45 mm	45 mm
Operating temperature	0 to +75°C	0 to +75°C	0 to +75°C	0 to +75°C
Storage temperature	-20 to +75°C	-20 to +75°C	-20 to +75°C	-20 to +75°C
Product Description Code:	HCP-M0400T-V01PS	HCP-M0400T-V02RL	HCP-M0400T-V01PS	HCP-M0400T-V02PZ
Order by Part Number: Location <sup>A</sup>	<b>BC03597-12-BR</b> <b>BC03597-12-YL</b>	<b>C11236</b> <b>C11236-YL</b>	<b>BC04370-12-BR</b>	<b>C12345</b>
Typical Applications	Laser power delivery • Industrial communications • Factory automation • Near-IR spectroscopy • 650 or 850 nm devices • Plenum installations			
<b>Crimp &amp; Cleave Compatibility:</b>	V-Pin Connector (without aramid yarn); ST, SMA Connectors (with aramid yarn)			



### 2.5 mm Step-Index 200 μm LSZH Riser ST or SMA

These versatile low smoke zero halogen (LSZH) 2.5 mm cables, based on HCS fiber, have a broader range of installation environments than either indoor or outdoor cable. LSZH construction makes them suitable for indoor riser installations in enclosed or sealed locations. They are also sufficiently insulated to endure the transition areas from the indoors to the outdoors, such as at electrical substations, or poorly insulated

semi-outdoor locations, such as wind turbine towers. These cables are crimp and cleave compatible with ST or SMA connectors.

They are moisture and fatigue resistant and extremely durable. LSZH materials also offer a higher operating temperature range than comparable HCS cables.

	2-Fiber Waterblocked	4-Fiber Waterblocked	6-Fiber Waterblocked	2-Fiber Waterblocked Glass Armored	4-Fiber Waterblocked Glass Armored	6-Fiber Waterblocked Glass Armored
<b>Optical Properties</b>						
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km
<b>Cable Design</b>						
Fiber core diameter	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm
Sub-unit diameter	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm
Outer cable diameter	8.0 ± 0.4 mm	8.0 ± 0.4 mm	10.0 ± 0.4 mm	9.5 ± 0.4 mm	9.5 ± 0.4 mm	11.5 ± 0.4 mm
Cable weight	<65 kg/km	<65 kg/km	<85 kg/km	<95 kg/km	<95 kg/km	<125 kg/km
Fiber count/construction	2-Fiber	4-Fiber	6-Fiber	2-Fiber	4-Fiber	6-Fiber
Intended environment	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor
Outer jacket material	LSZH	LSZH	LSZH	LSZH	LSZH	LSZH
Outer jacket color	Black	Black	Black	Black	Black	Black
<b>Fire Rating</b>						
OFNR/FT4 Riser	Pass	Pass	not tested	Pass	Pass	not tested
Flammability IEC 60332-3	Pass	Pass	not tested	Pass	Pass	not tested
Smoke density IEC 61034-2	Pass	Pass	Pass	Pass	Pass	Pass
Halogen gas emissions IEC 60754-1	Pass	Pass	Pass	Pass	Pass	Pass
Acid gas emissions IEC 60754-2	Note*	Note*	Note*	Note*	Note*	Note*
<b>Installation and Usage Specifications</b>						
Maximum installation tensile load FOTP 33	310 lbs. (1375 N)	530 lbs. (2358 N)	750 lbs. (3336 N)	600 lbs. (2669 N)	750 lbs. (3336 N)	750 lbs. (3336 N)
Maximum operating tensile load FOTP 33	155 lbs. (689 N)	265 lbs. (1179 N)	375 lbs. (1668 N)	300 lbs. (1334 N)	375 lbs. (1668 N)	375 lbs. (1668 N)
Minimum bend radius under load FOTP 33,88	120 mm	120 mm	150 mm	143 mm	143 mm	173 mm
Minimum bend radius unloaded FOTP 33,88	80 mm	80 mm	100 mm	95 mm	95 mm	115 mm
Operating temperature FOTP 3	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
<b>Mechanical Specification</b>						
Impact resistance > 20 impacts, FOTP 25	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)
Compressive resistance FOTP 41	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)
Cable twist FOTP 85	>10 cycles	>10 cycles	>10 cycles	n/a	n/a	n/a
Cyclic flexing FOTP 104 100 mm diameter sheave, 5.0 kg load	>500 cyclic flexes	>500 cyclic flexes	>500 cyclic flexes	n/a	n/a	n/a
Product Description Code:	HCP-M0200T-A02ZB Waterblocked	HCP-M0200T-A04ZB Waterblocked	HCP-M0200T-A06ZB Waterblocked	HCP-M0200T-A02ZB Glass Armored	HCP-M0200T-A04ZB Glass Armored	HCP-M0200T-A06ZB Glass Armored
Order by Part Number: Location <b>A</b>	<b>C21052</b>	<b>C21053</b>	<b>C21054</b>	<b>C21055</b>	<b>C21056</b>	<b>C21057</b>
Typical Applications	Nuclear power plants • Shipboard systems • Offshore marine platforms • Wind turbine towers					
<b>Crimp &amp; Cleave Compatibility:</b>	ST, SMA Connectors					

**Note\*:** IEC 60754-2 recommends the weighted cable pH value should not be less than 4.3 when related to 1 liter of water. The pH of HCS optical fiber and aramid yarn measures less than 4.3. All other components used in 2.5 mm LSZH cable constructions have a pH value greater than 4.3.

# Low Smoke Zero Halogen

## Indoor/Outdoor Industrial Cable | Technical Specifications



### 2.2 mm Step-Index 200 µm LSZH Riser V-System®

These versatile low smoke zero halogen (LSZH) 2.2 mm cables, based on HCS fiber, have a broader range of installation environments than either indoor or outdoor cable. LSZH construction makes them suitable for indoor riser installations in enclosed or sealed locations. They are also sufficiently insulated to endure the transition areas from the indoors to the outdoors, such as at electrical substations, or poorly insulated

semi-outdoor locations, such as wind turbine towers. These cables are crimp and cleave compatible with V-System connectors.

They are moisture and fatigue resistant and extremely durable. LSZH materials also offer a higher operating temperature range than comparable HCS cables.

	2-Fiber Waterblocked	4-Fiber Waterblocked	6-Fiber Waterblocked	2-Fiber Waterblocked Glass Armored	4-Fiber Waterblocked Glass Armored	6-Fiber Waterblocked Glass Armored
<b>Optical Properties</b>						
Attenuation @ 850 nm	≤10 dB/km	≤10 dB/km	≤10 dB/km	≤10 dB/km	≤10 dB/km	≤10 dB/km
<b>Cable Design</b>						
Fiber core diameter	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm	200 ± 4 µm
Sub-unit diameter	2.2 ± 0.1 mm	2.2 ± 0.1 mm	2.2 ± 0.1 mm	2.2 ± 0.1 mm	2.2 ± 0.1 mm	2.2 ± 0.1 mm
Outer cable diameter	8.0 ± 0.4 mm	8.0 ± 0.4 mm	9.5 ± 0.4 mm	9.5 ± 0.4 mm	9.5 ± 0.4 mm	10.5 ± 0.4 mm
Cable weight	<70 kg/km	<70 kg/km	<90 kg/km	<100 kg/km	<100 kg/km	<130 kg/km
Fiber count/construction	2-Fiber	4-Fiber	6-Fiber	2-Fiber	4-Fiber	6-Fiber
Intended environment	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor	Indoor/Outdoor
Outer jacket material	LSZH	LSZH	LSZH	LSZH	LSZH	LSZH
Outer jacket color	Black	Black	Black	Black	Black	Black
<b>Fire Rating</b>						
OFNR/FT4 Riser	Pass	Pass	not tested	Pass	Pass	not tested
Flammability IEC 60332-3	Pass	Pass	not tested	Pass	Pass	not tested
Smoke density IEC 61034-2	Pass	Pass	Pass	Pass	Pass	Pass
Halogen gas emissions IEC 60754-1	Pass	Pass	Pass	Pass	Pass	Pass
Acid gas emissions IEC 60754-2	Note*	Note*	Note*	Note*	Pass	Note*
<b>Installation and Usage Specifications</b>						
Maximum installation tensile load FOTP 33	90 lbs. (400 N)	90 lbs. (400 N)	90 lbs. (400 N)	400 lbs. (1780 N)	400 lbs. (1780 N)	500 lbs. (2224 N)
Maximum operating tensile load FOTP 33	45 lbs. (200 N)	45 lbs. (200 N)	45 lbs. (200 N)	200 lbs. (890 N)	200 lbs. (890 N)	250 lbs. (1112 N)
Minimum bend radius under load FOTP 33,88	120 mm	120 mm	143 mm	143 mm	143 mm	158 mm
Minimum bend radius unloaded FOTP 33,88	80 mm	80 mm	95 mm	95 mm	95 mm	105 mm
Operating temperature FOTP 3	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C	-20 to +105°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
<b>Mechanical Specification</b>						
Impact resistance > 20 impacts, FOTP 25	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)	4.4 lbf (2.0 kg)
Compressive resistance FOTP 41	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)	>4500 lbs/4 inch (20 kN/100 mm)
Cable twist FOTP 85	>10 cycles	>10 cycles	>10 cycles	n/a	n/a	n/a
Cyclic flexing FOTP 104 100 mm diameter sheave, 5.0 kg load	>500 cyclic flexes	>500 cyclic flexes	>500 cyclic flexes	n/a	n/a	n/a
Product Description Code:	HCP-M0200T-V02ZB	HCP-M0200T-V04ZB	HCP-M0200T-V06ZB	HCP-M0200T-V02ZB	HCP-M0200T-V04ZB	HCP-M0200T-V06ZB
Order by Part Number: Location <b>A</b>	<b>C21060</b>	<b>C21061</b>	<b>C21062</b>	<b>C21063</b>	<b>C21064</b>	<b>C21065</b>
Typical Applications	Nuclear power plants • Shipboard systems • Offshore marine platforms • Wind turbine towers					
<b>Crimp &amp; Cleave Compatibility:</b>	V-Pin Connectors					

**Note\*:** IEC 60754-2 recommends the weighted cable pH value should not be less than 4.3 when related to 1 liter of water. The pH of HCS optical fiber measures less than 4.3. All other components used in 2.2 mm LSZH cable constructions have a pH value greater than 4.3. Only cable C21064 was tested and the weighted pH value was greater than 4.3.



## 2.5 mm Graded-Index 50 and 62.5 μm HCS Cables, ST or SMA

For outdoor use, these cables are designed for data communication in challenging environments. With the durability and toughness of HCS optical fibers, these tight buffer, breakout cables are all waterblocked with swellable tape wrap and protected with a final outer polyethylene jacket. Some have additional dielectric armoring.

		2-Fiber Waterblocked	4-Fiber Waterblocked	6-Fiber Waterblocked	2-Fiber Waterblocked Glass Armored	4-Fiber Waterblocked Glass Armored	6-Fiber Waterblocked Glass Armored
<b>Optical Properties</b>							
Attenuation @ 850 nm	50 μm	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km	≤3.5 dB/km
	62.5 μm	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km	≤4 dB/km
Attenuation @ 1300 nm	50 μm	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km	≤1.5 dB/km
	62.5 μm	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km	≤2 dB/km
Subcomponent bare fiber specifications							
	50 μm	F16496	F16496	F16496	F16496	F16496	F16496
	62.5 μm	F14404	F14404	F14404	F14404	F14404	F14404
<b>Cable Design</b>							
Fiber core diameter	50 μm	50 ± 3 μm	50 ± 3 μm	50 ± 3 μm	50.0 ± 3 μm	50.0 ± 3 μm	50.0 ± 3 μm
	62.5 μm	62.5 ± 3 μm	62.5 ± 3 μm	62.5 ± 3 μm	62.5 ± 3 μm	62.5 ± 3 μm	62.5 ± 3 μm
Sub-unit diameter		2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm
Outer cable diameter		8 mm	8 mm	10 mm	9.5 mm	9.5 mm	11.5 mm
Cable weight		45 kg/km	45 kg/km	61 kg/km	60 kg/km	60 kg/km	75 kg/km
Subunit jacket material		PVC	PVC	PVC	PVC	PVC	PVC
Subunit jacket color		Blue, Orange	Blue, Orange, Green, Brown	Blue, Orange, Green, Brown, Gray, White	Blue, Orange	Blue, Orange, Green, Brown	Blue, Orange, Green, Brown, Gray, White
Outer jacket material / color		PE / Black	PE / Black	PE / Black	PE / Black	PE / Black	PE / Black
<b>Installation and Usage Specifications</b>							
Maximum installation tensile load		310 lbs. (1375 N)	530 lbs. (2358 N)	750 lbs. (3336 N)	600 lbs. (2669 N)	750 lbs. (3336 N)	750 lbs. (3336 N)
Maximum operating tensile load		155 lbs. (689 N)	265 lbs. (1179 N)	375 lbs. (1668 N)	340 lbs. (1512 N)	375 lbs. (1668 N)	375 lbs. (1668 N)
Minimum bend radius under load/unloaded		120/80 mm	120/80 mm	150/125 mm	143/95 mm	143/95 mm	173/115 mm
Operating/Storage temperature		-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Product Description Code:	50 μm	HCU-MF050T-A02RB Waterblocked	HCU-MF050T-A04RB Waterblocked	HCU-MF050T-A06EB Waterblocked	HCU-MF050T-A02EB Glass Armored	HCU-MF050T-A04EB Glass Armored	HCU-MF050T-A06EB Glass Armored
	62.5 μm	HCU-MF062T-A02EB Waterblocked	HCU-MF062T-A04EB Waterblocked	HCU-MF062T-A06EB Waterblocked	HCU-MF062T-A02EB Glass Armored	HCU-MF062T-A04EB Glass Armored	HCU-MF062T-A06EB Glass Armored
Order by Part Number: Location <b>A</b>	50 μm	<b>C19648</b>	<b>C19649</b>	<b>C19650</b>	<b>C19651</b>	<b>C19652</b>	<b>C19653</b>
	62.5 μm	<b>C17764</b>	<b>C17765</b>	<b>C17766</b>	<b>C17767</b>	<b>C17768</b>	<b>C17769</b>
Typical Applications		Factory automation • Utilities • Harsh/wet environments • Short- to medium-distance communications					
<b>Crimp &amp; Cleave Compatibility:</b>		ST, SMA Connectors					



## 2.2 mm Step-Index 200 μm HCS, V-System

Outdoor Heavy-Duty (HD) Industrial Cables enable highly intelligent communication interfaces in harsh environments when high speed and signal integrity are critical.

All-dielectric construction makes these cables suitable for hazardous areas while providing immunity from EMI/RFI noise and grounding problems. HCS fiber V-System cable is a low-cost, silica-based cabling system, compatible with Avago® versatile link 650 nm receivers and transmitters.

	4-Fiber	2-Fiber HD	4-Fiber HD	6-Fiber HD	2-Fiber Ruggedized
<b>Optical Properties</b>					
Attenuation @ 850 nm	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km	≤8 dB/km
Subcomponent bare fiber specifications	CF01493-10	CF01493-10	CF01493-10	CF01493-10	CF01493-10
<b>Cable Design</b>					
Fiber core diameter	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm
Sub-unit diameter	2.2 ± 0.15 mm	2.2 ± 0.15 mm	2.2 ± 0.15 mm	2.2 ± 0.15 mm	2.2 ± 0.15 mm
Outer cable diameter	8 mm	8 mm	8 mm	9.5 mm	10 mm
Cable weight	50 kg/km	53 kg/km	53 kg/km	75 kg/km	81 kg/km
Outer jacket	PE	PE	PE	PE	HDPE
Outer jacket color	Black	Black	Black	Black	Violet
					Data Available for this product: Crush resistance FOTP-41A 2000N/cm max  Impact resistance FOTP-25B Pass
<b>Installation and Usage Specifications</b>					
Maximum installation tensile load	90 lbs. (400 N)	528 lbs. (2358 N)	528 lbs. (2350 N)	528 lbs. (2350 N)	528 lbs. (2350 N)
Maximum operating tensile load	45 lbs. (200 N)	263 lbs. (1170 N)	263 lbs. (1170 N)	263 lbs. (1170 N)	264 lbs. (1175 N)
Minimum bend radius under load	120 mm	120 mm	120 mm	143 mm	150 mm
Minimum bend radius unloaded	80 mm	80 mm	80 mm	95 mm	100 mm
Operating temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-20 to +80°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C	-20 to +80°C
Product Description Code:	HCP-M0200T-V04EB	HCP-M0200T-V02EB-HD	HCP-M0200T-V04EB-HD	HCP-M0200T-V06EB-HD	HCP-M0200T-V02EB-HD HDPE
Order by Part Number: Location <b>A</b>	<b>C11245</b>	<b>BC06145-02</b>	<b>BC06145-04</b>	<b>BC06145-06</b>	<b>C10686</b>
Typical Applications	Factory automation • Sensing • Short-haul data transmission in harsh/wet environments • Rugged environment • Utilities • Fuel cells • Wind turbines • 650 or 850 nm devices			Laser power delivery • Industrial communications • Factory automation • Near-IR spectroscopy • Wind turbines	
<b>Crimp &amp; Cleave Compatibility:</b>	V-Pin Connector				



## 2.5 mm Step-Index 200 μm HCS, ST or SMA

These cables are designed for industrial data communication applications in challenging environments.

They are extremely durable, with outstanding crush and impact resistance. With excellent weatherability, they are UV- and chemical-resistant, moisture-resistant, and suitable for damp environments. Taking advantage of the features of HCS optical fibers, these tight buffer cables are surrounded by high strength aramid yarn and a tough polyethylene jacket.

	2-Fiber	4-Fiber	6-Fiber	2-Fiber Heavy Duty
<b>Optical Properties</b>				
Attenuation @ 850 nm	≤6 dB/km	≤6 dB/km	≤6 dB/km	≤6 dB/km
Subcomponent bare fiber specifications	CF01493-10	CF01493-10	CF01493-10	CF01493-10
<b>Cable Design</b>				
Fiber core diameter	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm	200 ± 4 μm
Sub-unit diameter	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm	2.5 ± 0.2 mm
Outer cable diameter	8.0 mm	8.0 mm	10.0 mm	8.4 mm
Cable weight	45.0 kg/km	45.0 kg/km	61.0 kg/km	50.0 kg/km
Outer jacket material	PE	PE	PE	PE
Outer jacket color	Black	Black	Black	Black
<b>Installation and Usage Specifications</b>				
Maximum installation tensile load	310 lbs. (1375 N)	530 lbs. (2358 N)	750 lbs. (3336 N)	600 lbs. (2669 N)
Maximum operating tensile load	155 lbs. (689 N)	265 lbs. (1179 N)	375 lbs. (1668 N)	340 lbs. (1512 N)
Minimum bend radius under load	120 mm	120 mm	150 mm	125 mm
Minimum bend radius unloaded	80 mm	80 mm	125 mm	85 mm
Operating temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Storage temperature	-40 to +80°C	-40 to +80°C	-40 to +80°C	-40 to +80°C
Product Description Code:	HCP-M0200T-A02EB	HCP-M0200T-A04EB	HCP-M0200T-A06EB	HCP-M0200T-A02EB-HD
Order by Part Number: Location <b>A</b>	<b>AC02602-10</b>	<b>AC01284-10</b>	<b>AC01285-10</b>	<b>AC02843-10</b>
Typical Applications	Short-haul data transmission in harsh/wet environments • Sensing • Factory automation • Industrial communications • Utilities • Fuel cells • Wind turbines			

**Crimp & Cleave Compatibility:** ST, SMA Connectors

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0211 SPD



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