



Hybrid Fiber-optic Camera Cables (SMPTE ST 311)

Type	Model	Sales Units (m)	Nom. O.D. (mm)	Weight kg/100m	Outer Jacket	Overall Shield	Tension Tolerance (N)	Strength Member O.D. (mm)	Min. Bend Radius	Temp. Range (deg C)	Channel Unit		
											Fiber	Aux. (Power)	Signal (Control)
 LF-2SM9N L-2SM9N Jacket color : black	 LF-2SM9N	Call	9.2	12.0	Abrasion-resistance PVC	9/24/0.10TA 91%	700	2.6	6 x Nom. O.D.	-40 to +75	2 x SM 9/125 (low-water-peak) Unit O.D. 0.9 mm	4 x 20 AWG 21 / 0.18TA Unit O.D. 1.7 mm	2 x 25 AWG 7 / 0.18TA Unit O.D. 1.2 mm
	LF-2SM16		16	29.0	Double PVC								

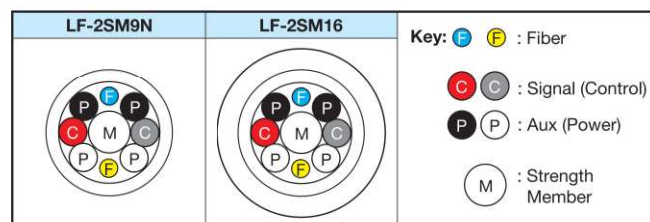
LF-2SM9N

- For general use.
- Abrasion-resistance Jacket enhance the adaptability to all studio and outside broadcast applications.
- Cost effective

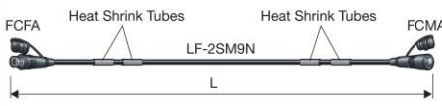



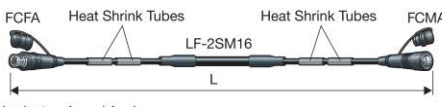
LF-2SM16

- For studio use.
- O.D. 16mm Double Jacket prevents the cable from being jammed under a camera pedestal dolly.

Cross Section

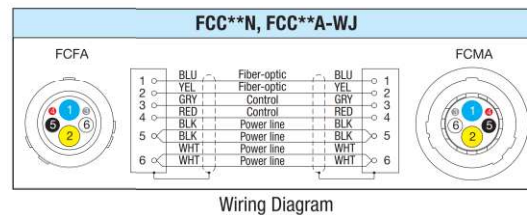


Camera to CCU

Type	Model	Length (m)
 Jacket color : black	 FCC10N	10
	FCC20N	20
	FCC25N	25
	FCC35N	35
	 FCC50N	50
	 FCC100N	100
 Jacket color : black	FCC150N	150
	FCC200N	200
	FCC30A-WJ	30
	FCC50A-WJ	50
	FCC100A-WJ	100

- Standard and widely-used models.
- Heat shrink tubes help in labeling.
- FCC**A-WJ prevents the cable from being jammed under a camera pedestal dolly by its O.D. 16mm double jacket.
- 7-color connector rings included.

* Canare OC series (Hybrid-OPS profile) is also available. (see page 22)



Wiring Diagram

Slim Hybrid Fiber-optic Camera Cable

Type	Model	Sales Units (m)	Nom. O.D. (mm)	Weight kg/100m	Outer Jacket	Overall Shield	Tension Tolerance (N)	Strength Member O.D. (mm)	Min. Bend Radius	Temp. Range (deg C)	Channel Unit		
											Fiber	Aux. (Power)	Signal (Control)
	LF-2SM7N	Call	7.1	7.3	Abrasion-resistance PVC	8/24/0.10TA 91%	300	1.4	6 x Nom. O.D.	-40 to +75	2 x SM 9/125 (low-water-peak) Unit O.D. 0.9 mm	2 x 20 AWG 21 / 0.18TA Unit O.D. 1.7 mm	2 x 25 AWG 7 / 0.18A Unit O.D. 1.2 mm

Jacket color : black

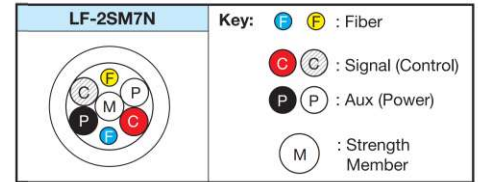
LF-2SM7N

- O.D. 7 mm of slim profile and approx. 40% lighter than LF-2SM9N.
- Best fit for mobile applications.
- The power transmission distance is approx. twice as long as the previous model LF-2SM7R.




Note: The power transmission distance is shorter than typical HFO camera cables (approx. 50% of LF-2SM9N). Please contact us for more information.

*Multichannel cables, LF-2SM7N-3P and LF-2SM7N-5P, are also available.

Cross Section



Camera to CCU

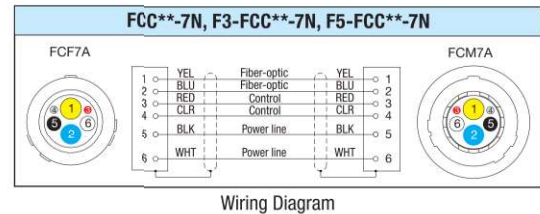
Type	Model	Length (m)
	FCC10-7N	10
	FCC20-7N	20
	FCC30-7N	30
	FCC50-7N	50
	FCC100-7N	100
	F3-FCC10-7N	10
	F3-FCC20-7N	20
	F3-FCC30-7N	30
	F3-FCC50-7N	50
	F3-FCC100-7N	100
	F5-FCC10-7N	10
	F5-FCC20-7N	20
	F5-FCC30-7N	30
	F5-FCC50-7N	50
	F5-FCC100-7N	100

Jacket color: black

- Equipped with slim and lightweight cable.
- FCC100-7N is approx. 5 kg lighter than typical 100m HFO camera cable as FCC100N.
- Heat shrink tubes help in labeling.
- 7-color connector rings included.


Note: The power transmission distance of FCC**-7N is approx. half of that of the FCC**N.

* Canare OC series (Hybrid-OPS profile) is also available. (see page 22)



Tough & Flexible HFO Camera Cables

Thermoplastic polyurethane type jacket offers amazing flexibility and superior mechanical properties; Crush Resistance, Impact Resistance and Cyclic Flexing exceed that of MIL.

Type	Model	Sales Units (m)	Nom. O.D. (mm)	Weight kg/100m	Outer Jacket	Overall Shield	Tension Tolerance (N)	Strength Member O.D.	Min. Bend Radius	Temp. Range (deg C)	Channel Unit		
											Fiber	Aux. (Power)	Signal (Control)
 Jacket color : black, deep red, deep green	LF-2SM9T	Call	9.2	9.8	TPU + PVC	N/A	1500	1.8 mm + Tensile strength fiber	Equal to Nom. O.D.	-40 to +75	2 x SM 9/125 (low-water-peak) Unit O.D. 0.9 mm	4 x 20 AWG 102 / 0.08A Unit O.D. 1.75 mm	2 x 25 AWG 24 / 0.08A Unit O.D. 1.2 mm
 Jacket color : black	LF-2SM7T	Call	7.1	5.5	TPU + PVC	N/A	1000	0.63 mm + Tensile strength fiber	Equal to Nom. O.D.	-40 to +75	2 x SM 9/125 (low-water-peak) Unit O.D. 1.7 mm	2 x 23 AWG 60 / 0.08A Unit O.D. 1.4 mm	2 x 26 AWG 30 / 0.08A Unit O.D. 1.1 mm

LF-2SM9T

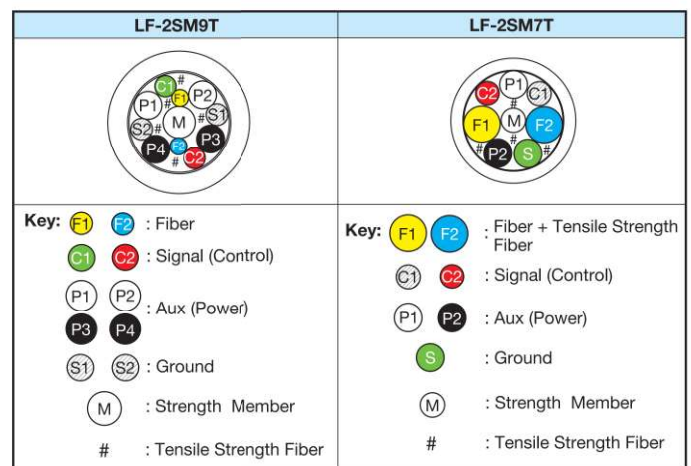
- Heavy-duty yet Flexible.
- Ideal for remote broadcast applications.
- Minimum bend radius: 9.2 mm.

LF-2SM7T

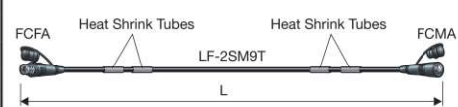
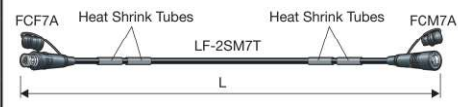
- Flexible, Slim, Lightweight, and moreover, Heavy-duty.
- Ideal for short-distance remote broadcast applications of up to 200 meters.
- O.D. 7.1 mm and weighing only 5.5 kg/100 m, it's so easy to carry around.
- Minimum bend radius: 7.1 mm.
- Fiber units include tensile strength fiber.

Note: The power supply distance of LF-2SM7T is shorter than other HFO camera cables. (approx. 30% of LF-2SM9N)
 LF-2SM7T requires a special technique during a connector assembly, so you can buy the cable assemblies shown below.

Cross Section



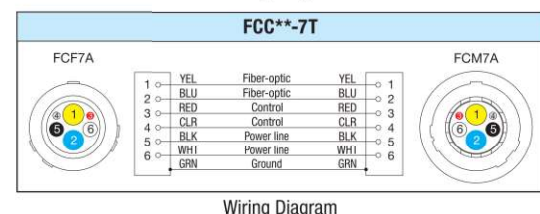
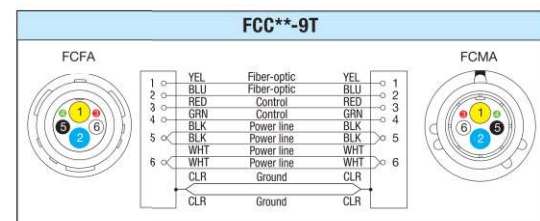
Camera to CCU

Type	Model	Length (m)
 Jacket color : black, deep red, deep green	FCC10-9T	10
	FCC20-9T	20
	FCC25-9T	25
	FCC35-9T	35
	FCC50-9T	50
	FCC100-9T	100
 Jacket color: black	FCC150-9T	150
	FCC200-9T	200
	FCC10-7T	10
	FCC20-7T	20
	FCC30-7T	30
	FCC50-7T	50
FCC100-7T	100	

- Tough & Flexible cable
- Fit for mobile applications in harsh environments.
- Heat shrink tubes help in labeling.
- 7-color connector rings included.

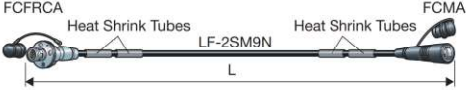
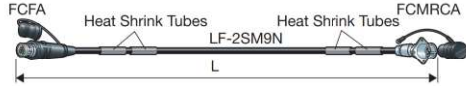
Note: The power transmission distance of FCC**-7T is quite shorter than typical HFO camera cables.

* Canare OC series (Hybrid-OPS profile) is also available. Please contact us for more details.



HFO Camera Cable Assemblies (Flanged Type)

Panel to CCU

Type	Model	Length (m)
 <p>Jacket color : black IU-FCF-SET included</p>	FCC05N-FRCM	5
	FCC10N-FRCM	10
 <p>Jacket color : black IU-FCM-SET included</p>	FCC05N-FMRC	5
	FCC10N-FMRC	10

* Canare OC series (Hybrid-OPS profile) is also available. (see page 22)

- HFO camera cable with the flange for panel mounting.
- SMPTE ST 304, ST 311, and ARIB BTA S-1005B compliant.
- Return loss: 45dB or greater ($\lambda=1.3\mu\text{m}$).
- Insertion loss: 0.5dB or less ($\lambda=1.3\mu\text{m}$).
- Connector body material is stainless steel.
- Color rings and insulation plates included.
- See below for the panel hole dimensions.



Color Rings



IU-FC*-SET



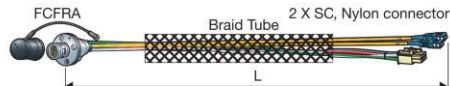
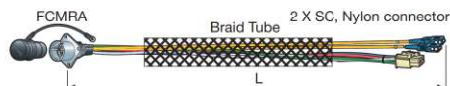
FCFRCA



FCMRCA

HFO Camera Receptacle Cables

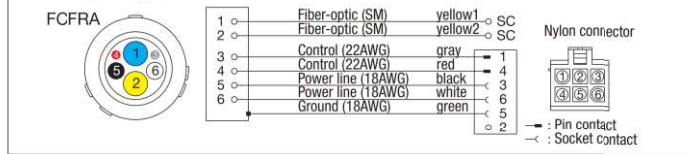
Pigtails

Type	Model	Length (m)
 <p>Jacket color : black IU-FCF-SET included</p>	FCS015A-FR	1.5
 <p>Jacket color : black IU-FCM-SET included</p>	FCS015A-MR	1.5

* Canare OC series (Hybrid-OPS profile) is also available. (see page 22)

- Ideal for connecting wall terminal panels to splice enclosures, etc.
- Return loss: 45dB or greater ($\lambda=1.3\mu\text{m}$).
- Insertion loss: 0.5dB or less ($\lambda=1.3\mu\text{m}$).
- Connector body material is stainless steel.
- Insulation plates included.
- See below for the panel hole dimensions.

Wiring Diagram



FCFRA



FCMRA

Insulation Plate

Ideal for perfect insulation between individual connector and panel.

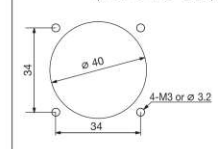
Model	Suitable Connector
IU-FCM-SET	FCMRA, FCMRCA
IU-FCF-SET	FCFRA, FCFRCA

- Material: Bakelite (phenolic resin)
- Mounting screws included.



IU-FC*-SET

Hole Dimensions (with IU-FC*-SET)



Extraction Tool

Extraction tool helps easy to clean Canare HFO connectors.

Model	Suitable Connector
ASPT-1	FCFA, FCF7A, FCFRA, FCFRCA

- Tool to be used to release the alignment sleeve unit when cleaning HFO connectors.

* Use the CLETOP 2.5/2.0 (100) cleaning stick to clean fiber-optic camera connectors.



ASPT-1



Quick-release

US Patent No.7241055B2
JP Patent No.4340186

HFO Camera Cable Assemblies (Japanese Style)

Canare OC hybrid camera connectors are commonly used in Japan and Asian countries. It includes the same combination of SMPTE 304 but different pinouts. Improved reliabilities and advanced maintenance features.



OC connectors
 Symmetric pinout
 Finger detachable insulator
 Better grip, proper connections
 SMPTE 311 cable ready
 Camera MFGs accepted
 Hybrid-OPS profile



FC connectors
 SMPTE and ARIB standard
 Detachable insulator with tool
 Widely used in the market
 Hybrid-3K profile

Camera to CCU

O C C 1 0 0 - N

Series name	Lengths	Cable type
Cable mount plugs Male and female	01 = 1 meters 100 = 100 meters Call for stocked lengths.	N: LF-2SM9N OD 9 mm PVC Jacket (most common) WJ: LF-2SM16 OD 16 mm PVC Jacket 7N: LF-2SM7N OD 7 mm PVC Jacket 9T: LF-2SM9T OD 9 mm TPU Jacket w/o Shield 7T: LF-2SM7T OD 7 mm TPU Jacket w/o Shield TPU = Thermoplastic Polyurethane

* Multi channel versions (3 or 5 ch) are available.
 Contact for more details.



OCFA



OCMA

Panel to CCU

O C C 0 5 N - F R C M

Series name	Lengths	Connector type
PNL mount M to cable mount F and vice versa	05 = 5 meters 10 = 10 meters Call for custom lengths.	FRCM: OCFRCB-OCMA FMRC: OCMRCA-OCFA

Cable type: LF-2SM9N

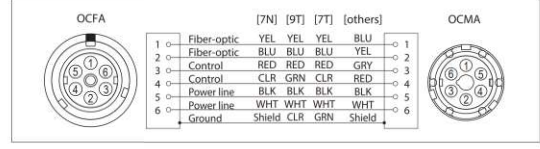


OCFRCB



OCMRCA

Wiring Diagram for OCC



Pigtails

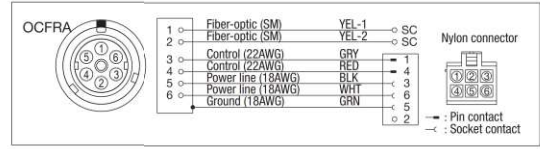
O C S 0 1 5 - F R

Series name	Lengths	Connector type
OC breakout	015 = 1.5 meters Call for custom lengths.	FR: OCFRA to 2x SC, 1x Nylon MR: OCMRA to 2x SC, 1x Nylon



OCS015FR

Wiring Diagram for OCS



SMPTE Conversion

F C M 0 2 N - O C F

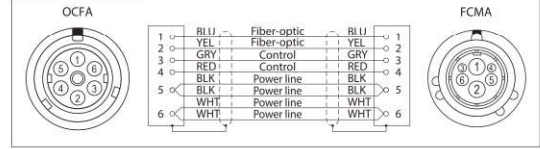
Connector A	Lengths	Connector B
FCM: FCMA FCF: FCFA	02 = 2meters Call for custom lengths	OCF: OCFA OCM: OCMA

Cable type: LF-2SM9N
 Call for custom models.



FCF02N-OCM

Wiring Diagram for Conversion



Hybrid Fiber-Optic Camera Cable Checker

Canare Cable Checker allows fast, easy confirmation of HFO cables in the field. No heavy equipment to drag around. The compact design features a backlight digital display to measure optic loss/power and electrical continuity. Small and light, Canare Cable Checker helps make mobile installations smooth, secure and constant.

Kit Model	Individual Model	
	Measuring Unit	Loop-back Unit
FCT-FCKIT RED	FCT-FC RED	FCT-FCLB RED
FCT-OCKIT RED	FCT-OC RED	FCT-OCLB RED

Key Features and Benefits

- Check hybrid camera cables instantly
- Indicating optic power and loss, electrical open-circuit and short-circuit at the same time
- Available in two most common hybrid camera connector interfaces
- All-in-one kit includes storage box, leather case, AA batteries, and CLETOP

Specifications

Kit Model	FCT-FCKIT RED	FCT-OCKIT RED
Connector	Canare FC series (SMPTE/ARIB)	Canare OC series (Hybrid-OPS)
LD		FP-LD
Wavelength		1310 nm
Output Power		-2.5 dBm
Sensitivity		-24 to -2 dBm
Maximum Length		3.5 km (Canare LF-2SM9N)
Optic Signals		Optical Power and Loss
Electric Signals		Open-circuit and Short-circuit
Battery/Life		2 pcs of AA/ Approx. 20hours
Operating Temperature		-10 to 60 deg C
Dimensions	Measuring Unit: 46 x 46 x 150 mm Loop-back Unit: 46 x 46 x 65 mm	
Weight	Measuring Unit: 380 g Loop-back Unit: 170 g	
Accessories	Storage case, carrying cases, AA Batteries, and cleaning sticks	

Note: Red cap model will not work with black cap model.

CE, FCC, FDA registered

US Patent No.7113678

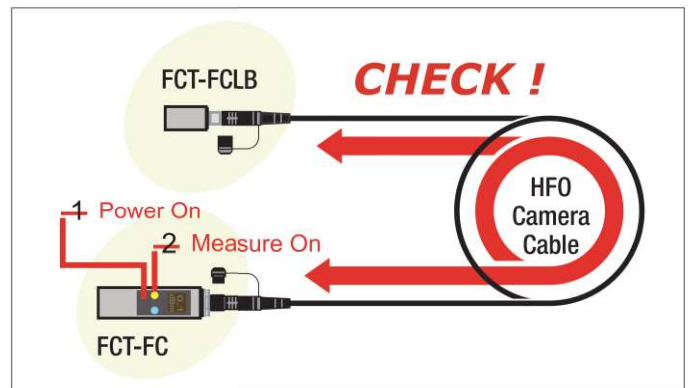
JP Patent No.4155979



Carrying Cases



Storage Case

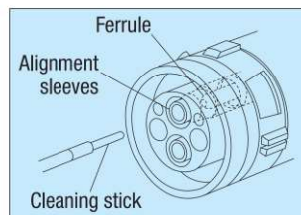


Technical Note

Maintaining Hybrid Fiber-Optic Camera Connectors

The connector sections to be cleaned are the key parts, including the tips and sides of ferrules, the interior walls of alignment sleeves and the interior and exterior of connector shells. Note that scratches and particles of foreign matter on the tip of the ferrule can have a disabling effect on fiber-optic transmission. The following procedures should be used when cleaning hybrid fiber-optic camera connectors.

- For Plugs, the interior surfaces of alignment sleeves and the tips of ferrules are to be cleaned with the non-alcohol treated cleaning stick using a gentle stroking action. Canare FCFA and FCFRA enhance easy cleaning procedure for its innovative alignment sleeve and insulator detachable design.



US Patent: No.7241055B2, JP Patent: No.4340186

- For Jacks, it is important to clean both the tips and sides of the completely protruding ferrules with the cleaning stick.
- Both the male and female connector shells tend to attract dust and metal particles, so it is important to clean both the insides and outsides using cotton gauze or similar material.



Before cleaning



After cleaning

Cleaning Stick

Model: CLETOP 2.5/2.0

- Compact and disposable
- Allows cleaning both the tips and sides of ferrules
- Manufactured by NTT-AT

Cleaning stick
CLETOP 2.5/2.0



IBC Brand Cleaner M-20

Model: 14347 CLEANER

- Easy "one-push" cleaner
- Allows cleaning the tips of ferrules without removing alignment sleeve
- Manufactured by US Conec

IBC Brand Cleaner M-20
14347 CLEANER

