

**COMMODORE® Copper and  
Fiber Optic Communication  
Cables for the Onshore, Offshore  
and Marine Shipboard Markets**



**GAAS**

JANUARY 2013

 **General Cable**



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Onshore, Offshore  
and Marine Shipboard  
Cables

# Introduction

**General Cable** is a **world leader** in cable manufacture and one of the world's largest suppliers to the Onshore, Offshore and Marine Shipboard sectors. General Cable's **extensive experience** in the onshore and offshore markets translates into a clear understanding of international standards and specifications that the global markets demand.

When **global demand** for oil and petroleum-based byproducts reached record levels in 2006, investment in new and deeper oilfields boomed. To assist our customers, who include some of the worlds' top oil companies, General Cable offers **a full range of international cables**, with emphasis on land and sea drilling, exploration and production. Diminishing global shallow water oil reserves are forcing exploration and production to move deeper and into **extreme environments**. With a legacy that spans over 100 years, our experience and record of innovation heighten our ability to develop solutions to the complex challenges deep-water applications pose.

Our company has **best-in-class research and development**, testing and production facilities in North America, Europe and Asia Pacific, employing 14,000 associates worldwide. The development of unique compounds, designed and tested to meet specific needs and stringent specifications, **differentiates General Cable** from all others.

General Cable's **breadth of product** is very extensive, including IEEE Type, IEC Type, and NEK 606 Type low- and medium-voltage and instrumentation cables, as well as onshore and offshore copper and fiber optic communications products.

## IEEE Specification

General Cable's extensive range of products leads with one-of-a-kind solutions like IEEE 1580 Type P **MOR® Polyrad®** mud oil resistant, flexible signal, control and low-voltage cables for oil and gas drilling platforms, ships and FPSOs, as well as land-based drilling rig installations. CCW® (Continuously Corrugated Welded) products are used in hazardous locations requiring cables that are impervious to gas, liquids and vapors and terminated with explosion-proof glands to electrical equipment. CCW® cable is a staple in onshore and offshore production platforms. General Cable has developed a complete line of IEEE 1580 Type E **MV-RIG®** cables, engineered to meet the industry demands for greater medium-voltage power generation and distribution in the onshore and offshore environments.

## IEC Specification

To support the ongoing expansion of global demand, General Cable offers a full line of **IEC** specified **Exzhellent®** products, while continuing to develop innovative solutions for our evolving world. General Cable's global presence includes products like the **IEC 60092-350** series of instrumentation, low-voltage and medium-voltage cables with NEK 606 low smoke and mud oil resistant capabilities, as well as **IEC 60331** circuit integrity constructions.

## Communications

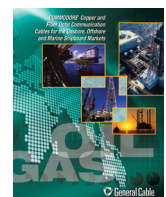
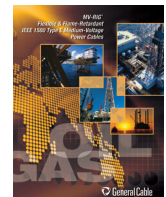
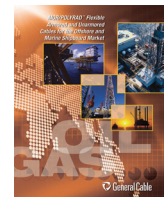
General Cable offers a full line of onshore, offshore and marine shipboard low-smoke, zero-halogen copper and fiber optic **COMMODORE®** communications cables. From standard RS serial data and popular fieldbus solutions to advanced copper and fiber data communications cables, General Cable has the communications cables you need for your regional and global onshore, offshore and marine shipboard applications.

## Application-Specific Cable Assemblies

General Cable specializes in engineering distinctive high-end, precision breakout-type cable assemblies utilizing vertically integrated in-house capabilities. From application-specific cable design, engineering and manufacturing, to custom-engineered cable assemblies with fully documented and traceable test procedures in accordance with customer specifications, General Cable offers quantifiable quality cabling solutions.

## Quality Assurance Guaranteed

Through an ongoing quality assurance initiative, General Cable ensures the quality of product design, manufacture, installation and expected service life, as well as environmentally sound products, processes and policies. Continuous research and development, combined with process control, quality audits and prolonged stringent testing, provide an ever-growing range of specialty materials and designs that meet offshore and marine shipboard industry approvals and standards.



Phone (800) 424-5666 • Int'l Phone +1 859 572 8000  
www.generalcable.com





Onshore, Offshore  
and Marine Shipboard  
Cables

# Copper and Fiber Optic Communication Cables for the Onshore, Offshore and Marine Shipboard Markets

Today's competitive offshore environment demands advanced information systems that meet requirements well into the future. General Cable's communication cables meet specific industry demands and specifications, ensuring the utmost performance, and are ABS Type Approved and ETL Confirmed. Nowhere is the need for robust, reliable cable designs greater than in the offshore environment. As a world-class manufacturer, General Cable understands the need to deliver cabling infrastructures that reduce network downtime for improved productivity, as well as meeting increased needs for data collection and system monitoring.

## COMMODORE® Category Communication Cables

General Cable's **COMMODORE® data communications category cables** provide a hardy platform for information transfer designed for all of your I/P-based applications in onshore and offshore production facilities. For applications ranging from security cameras to distribution controls and programmable logic control (PLC), choose the best-performing cable in its class – **COMMODORE® Category 5e, Category 6 and Category 7** cables. Our **low-smoke, zero-halogen** cables meet the mandatory flame-retardant requirements of the **IEC 60332-3-22** test and are **ABS Type Approved**.

## COMMODORE® Coaxial Communication Cables and video monitoring

low-smoke, zero-halogen constructions are used in legacy process control and PDP coaxial communication applications where performance is critical. **RG-6/U, RG-11/U, RG-58/U, RG-59/U, RG-213/U, RS422 and RS485 cables** are available in armored and sheathed designs.

## COMMODORE® Control Communication Cables

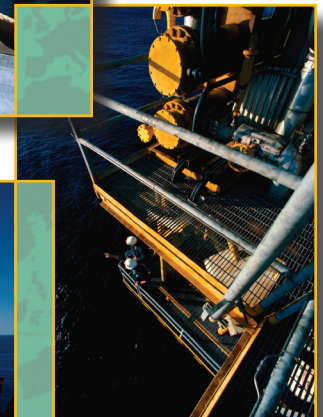
Closed and open architecture cables meeting **Profibus, Fieldbus and DeviceNet protocols** are suitable for control systems in onshore and offshore applications. When it is critical for systems to operate without error, these **mechanically enhanced products** provide the link between the system and control room. General Cable's COMMODORE® line meets these requirements.

## COMMODORE® Fiber Optic Communication Cables

General Cable's fiber optic cables service the onshore and offshore industry when security and information integrity are essential. **From industrial-grade process control and outside plant to commercial-grade marine**, General Cable can meet the most stringent demands with our **COMMODORE® Fiber Optic Cables**.

General Cable has responded to feedback for a more cost-competitive standard option for your rugged fiber-optic applications with a new line of our COMMODORE® cables – **COMMODORE® Lite™**. Now, you can choose between the **premium performance of COMMODORE®** and the **cost-effectiveness of COMMODORE® Lite™**. Onshore or offshore, our ultra-tough **low-smoke, zero-halogen** COMMODORE® and COMMODORE® Lite™ lines are rugged and water-blocked for the toughest applications.

*General Cable ... highly engineered performance cables to meet any specification.*



Phone (800) 424-5666 • Int'l Phone +1 859 572 8000  
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## COMMODORE®

### Copper Communication Cables—ABS Type Approved, ETL Confirmed

- Category 5e UTP Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: LO24P0045170X ..... 4
- Category 6 UTP Cable, Unarmored, Low-Smoke, Zero-Halogen — Catalog number: LO23P0047075..... 6
- Category 6 UTP Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: LO23P0047070..... 8
- Category 7 S/FTP Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: LO22P0048070..... 10
- RS485 120  $\Omega$  Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen —  
Catalog number: EO24P0022188 ..... 12
- RS422 100  $\Omega$  Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen —  
Catalog number: EO24P0022186 ..... 14
- RS422 100  $\Omega$  Four Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen —  
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- RG-11/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO14C0012170..... 24
- RG-58/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO21C0012170..... 26
- RG-59/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO20C0012170..... 28
- RG-213/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO13C0012170..... 30
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- Fieldbus Five Pair Cable, Individually/Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen —  
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- Profibus 150  $\Omega$  One Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen —  
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## COMMODORE® Copper Communication Cables— ABS Type Approved, ETL Confirmed

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- Category 6 UTP Cable, Unarmored, Low-Smoke, Zero-Halogen — Catalog number: LO23P0047075..... 6
- Category 6 UTP Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: LO23P0047070..... 8
- Category 7 S/FTP Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: LO22P0048070.... 10
- RS485 120 Ω Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO24P0022188 ..... 12
- RS422 100 Ω Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO24P0022186 ..... 14
- RS422 100 Ω Four Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO24P0042186 ..... 16
- RS422 100 Ω Eight Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO24P0082186 ..... 18
- DeviceNet-Compatible 120 Ω Two Pair Composite Cable, Shielded & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ZO16P0022189 ..... 20
- RG-6/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO18C0012170 ..... 22
- RG-11/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO14C0012170 ..... 24
- RG-58/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO21C0012170 ..... 26
- RG-59/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO20C0012170 ..... 28
- RG-213/U Type Coax, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: CO13C0012170 ..... 30
- Fieldbus One Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO18P0015337 ..... 32
- Fieldbus Two Pair Cable, Individually/Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO18P0025337 ..... 34
- Fieldbus Five Pair Cable, Individually/Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO18P0055337 ..... 36
- Profibus 150 V One Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO22P0011203 ..... 38



FLAME-RETARDANT



LOW SMOKE EMISSION



LOW TOXICITY



LOW CORROSIVE FUME EMISSION



MECHANICAL RESISTANCE



OIL RESISTANT





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
Category 5e UTP Cable,  
Armored & Sheathed**  
ABS Type Approved, ETL Confirmed

## Product Construction:

### 1. Conductor:

- 24 AWG solid bare copper: .021" nom. O.D.

### 2. Insulation:

- HDPE: .036" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted together – varying pair lays
- Color Code: P1: White/Blue, Blue P3: White/Green, Green  
P2: White/Orange, Orange P4: White/Brown, Brown

### 4. Crossweb

### 5. Inner Sheath:

- Flame-retardant Low-Smoke, Zero-Halogen Polyolefin — Black: .260" nom. O.D.

### 6. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 7. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall,  
Black: .405" nom. O.D. — optional jacket colors available

### 8. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 4 PR  
24 AWG UTP CAT5e PAT 5767441 IEC 60332-3-22 CAT A AAAAA\*  
MO/YR\*\* XXXXXX\*\*\*

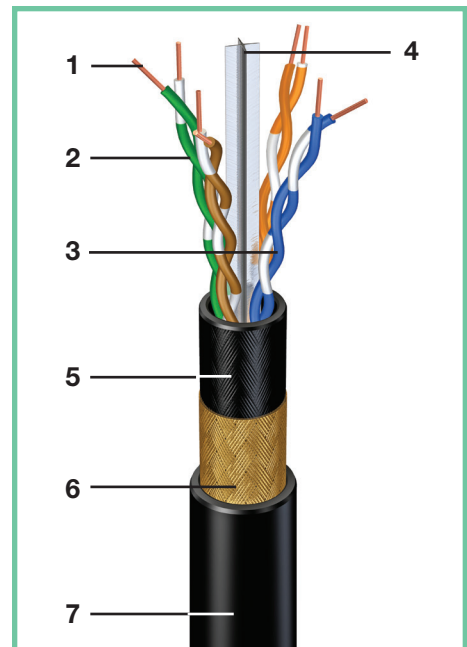
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 9. Cable Weight:

- 120 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350
- Application: TIA-568-B

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications  
(report number 3116259CRT-005)





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
Category 5e UTP Cable,  
Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

DC Resistance: 9.38  $\Omega$ /100m (28.6  $\Omega$ /Mft) Max.  
DCR Unbalanced: 5% Max.  
Mutual Capacitance: 55.8 pF/m (17 pF/ft) Max.  
Capacitance Unbalance: 330 pF/100m (1 pF/ft) Max.  
Characteristic Impedance: 100  $\Omega \pm 15 \Omega$  (1-100 MHz)  
Prop. Delay (Skew): 45 ns/100m Max.  
Velocity of Propagation: 69% nom.  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

FREQ (MHz)	ATTENUATION (dB/100m)	NEXT (dB)	PSNEXT (dB)	ELFEXT (dB/100m)	PSELFEXT (dB/100m)	RL (dB)
	MAX.	MIN.	MIN.	MIN.	MIN.	MIN.
0.772	1.8	67.0	64.0	66.0	63.0	—
1	2.0	65.3	62.3	63.8	60.8	20.0
4	4.1	56.3	53.3	51.7	48.7	23.0
8	5.8	51.8	48.8	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	25.0
16	8.2	47.3	44.3	39.7	36.7	25.0
20	9.3	45.8	42.8	37.7	34.7	25.0
25	10.4	44.3	41.3	35.8	32.8	24.3
31.25	11.7	42.9	39.9	33.9	30.9	23.6
62.5	17.0	38.4	35.4	27.8	24.8	21.5
100	22.0	35.3	32.3	23.8	20.8	20.1

Catalog number: LO24P0045170X



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



## Low-Smoke, Zero-Halogen Category 6 UTP Cable Unarmored

ABS Type Approved, ETL Confirmed



### Product Construction:

#### 1. Conductor:

- 23 AWG solid bare copper: .023" nom. O.D.

#### 2. Insulation:

- HDPE: .042" nom. O.D.

#### 3. Pairs:

- Two insulated conductors twisted together – varying pair lays
- Color Code: P1: White/Blue, Blue      P3: White/Green, Green  
P2: White/Orange, Orange      P4: White/Brown, Brown

#### 4. Flat Tape

#### 5. Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .025" nom. wall,  
Black: .230" nom. O.D. — optional jacket colors available

#### 6. Print:

- GENERAL CABLE (L) COMMODORE® LSZH MARINE CABLE 4 PR 23  
AWG UTP CAT6 PAT 5767441 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

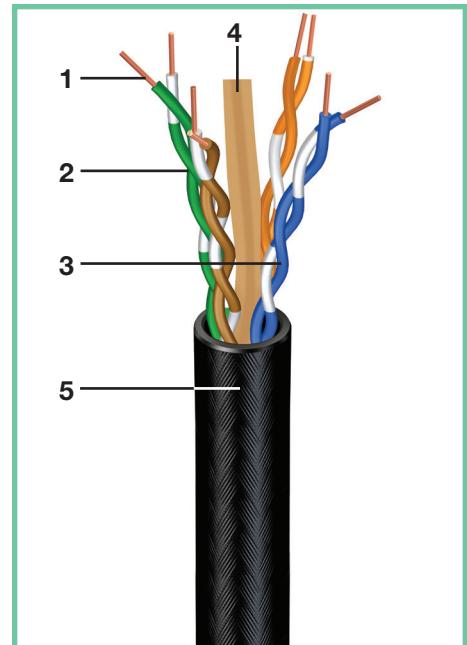
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

#### 7. Cable Weight:

- 29 lbs/kft nom.

### Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



### Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Application: TIA-568-C

### Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 100722150SAT-001)





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



## Low-Smoke, Zero-Halogen Category 6 UTP Cable Unarmored

ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

DC Resistance: 9.38  $\Omega$ /100 m (28.6  $\Omega$ /kft) Max.

DCR Unbalanced: 3% Max.

Mutual Capacitance: 5.8 pF/m (17 pF/ft) Max.

Capacitance Unbalance: 30 pF/100 m (1 pF/ft) Max.

Characteristic Impedance: 100  $\Omega \pm 15 \Omega$  (1-250 MHz)

Input Impedance: 100  $\Omega \pm 15 \Omega$  (1-100 MHz)

100  $\Omega \pm 22 \Omega$  (>100-200 MHz)

100  $\Omega \pm 32 \Omega$  (>200-250 MHz)

Prop. Delay (Skew): 45 ns/100 m Max.

Velocity of Propagation: 68%

Temperature & Voltage Rating: -20°C to +75°C/300 V Max.

FREQ (MHz)	ATTENUATION (dB/100m)	NEXT (dB)	PSNEXT (dB)	ELFEXT (dB/100m)	PSELFEXT (dB/100m)	RL (dB)
	MAX.	MIN.	MIN.	MIN.	MIN.	MIN.
0.772	1.8	76.0	74.0	70.0	67.0	—
1	2.0	74.3	72.3	67.8	64.8	20.0
4	3.8	65.3	63.3	55.7	52.7	23.0
8	5.3	60.8	58.8	49.7	46.7	24.5
10	6.0	59.3	57.3	47.8	44.8	25.0
16	7.6	56.3	54.3	43.7	40.7	25.0
20	8.5	54.8	52.8	41.7	38.7	25.0
25	9.5	53.3	51.3	39.8	36.8	24.3
31.25	10.7	51.9	49.9	37.9	34.9	23.6
62.5	15.4	47.4	45.4	31.8	28.8	21.5
100	19.8	44.3	42.3	27.8	24.8	20.1
155	25.2	41.5	39.5	23.9	20.9	18.8
200	29.0	39.8	37.8	21.7	18.7	18.0
250	32.8	38.3	36.3	19.8	16.8	17.3

Catalog number: L023P0047075



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
Category 6 UTP Cable,  
Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Product Construction:

### 1. Conductor:

- 23 AWG solid bare copper: .023" nom. O.D.

### 2. Insulation:

- HDPE: .041" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted together – varying pair lays
- Color Code: P1: White/Blue, Blue      P3: White/Green, Green  
P2: White/Orange, Orange      P4: White/Brown, Brown

### 4. Crossweb

### 5. Inner Sheath:

- Flame-retardant Low-Smoke, Zero-Halogen Polyolefin — Black: .295" nom. O.D.

### 6. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 7. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall,  
Black: .455" nom. O.D. — optional jacket colors available

### 8. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 4 PR  
23 AWG UTP CAT6 PAT 5767441 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

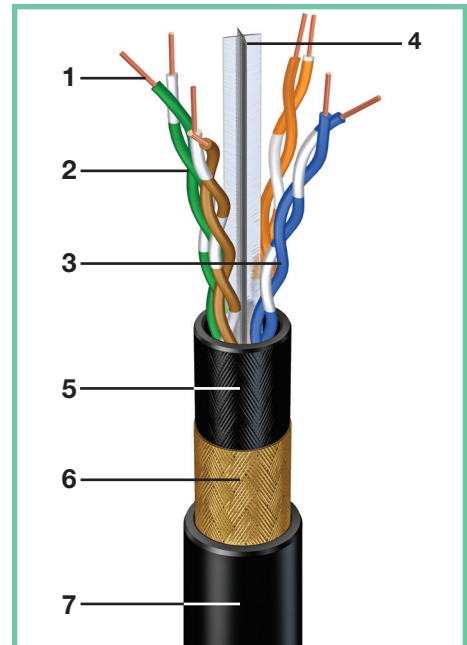
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 9. Cable Weight:

- 144 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350
- Application: TIA-568-B

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications  
(report number 3116259CRT-010)





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
Category 6 UTP Cable,  
Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

DC Resistance: 9.38  $\Omega$ /100m (28.6  $\Omega$ /kft) Max.  
DCR Unbalanced: 3% Max.  
Mutual Capacitance: 5.8 pF/m (17 pF/ft) Max.  
Capacitance Unbalance: 30 pF/100m (1 pF/ft) Max.  
Characteristic Impedance: 100  $\Omega \pm 15 \Omega$  (1-250 MHz)  
Input Impedance: 100  $\Omega \pm 15 \Omega$  (1-100 MHz)  
100  $\Omega \pm 22 \Omega$  (>100-200 MHz)  
100  $\Omega \pm 32 \Omega$  (>200-250 MHz)  
Prop. Delay (Skew): 18 ns/100m Max.  
Velocity of Propagation: 69%  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

FREQ (MHz)	ATTENUATION (dB/100m)	NEXT (dB)	PSNEXT (dB)	ELFEXT (dB/100m)	PSELFEXT (dB/100m)	RL (dB)
	MAX.	MIN.	MIN.	MIN.	MIN.	MIN.
0.772	1.8	76.0	74.0	70.0	67.0	—
1	2.0	74.3	72.3	67.8	64.8	20.0
4	3.8	65.3	63.3	55.7	52.7	23.0
8	5.3	60.8	58.8	49.7	46.7	24.5
10	6.0	59.3	57.3	47.8	44.8	25.0
16	7.6	56.3	54.3	43.7	40.7	25.0
20	8.5	54.8	52.8	41.7	38.7	25.0
25	9.5	53.3	51.3	39.8	36.8	24.3
31.25	10.7	51.9	49.9	37.9	34.9	23.6
62.5	15.4	47.4	45.4	31.8	28.8	21.5
100	19.8	44.3	42.3	27.8	24.8	20.1
155	25.2	41.5	39.5	23.9	20.9	18.8
200	29.0	39.8	37.8	21.7	18.7	18.0
250	32.8	38.3	36.3	19.8	16.8	17.3

Catalog number: L023P0047070







Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
Category 7 S/FTP Cable,  
Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

DC Resistance: 6.56  $\Omega$ /100m (20  $\Omega$ /kft) Max.  
DCR Unbalanced: 3% Max.  
Mutual Capacitance: 55.8 pF/m (17 pF/ft) Max.  
Capacitance Unbalance: 330 pF/100m (1 pF/ft) Max.  
Input Impedance: 100  $\Omega \pm 15 \Omega$  (1-300 MHz)  
100  $\Omega \pm 22 \Omega$  (>100-200 MHz)  
100  $\Omega \pm 25 \Omega$  (>200-600 MHz)  
Prop. Delay (Skew): 25 ns/100m Max.  
Velocity of Propagation: 73%  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

FREQ (MHz)	ATTENUATION (dB/100m)	NEXT (dB)	PSNEXT (dB)	ELFEXT (dB/100m)	PSELFEXT (dB/100m)	RL (dB)
	MAX.	MIN.	MIN.	MIN.	MIN.	MIN.
0.772	1.8	78.0	75.0	—	—	19.4
1	2.0	78.0	75.0	83.0	80.0	20.0
4	3.7	78.0	75.0	71.0	68.0	23.0
10	5.9	78.0	75.0	63.0	60.0	25.0
16	7.4	78.0	75.0	58.9	55.9	25.0
25	9.3	78.0	75.0	55.0	52.0	24.3
31.25	10.4	78.0	75.0	53.1	50.1	23.6
62.5	14.9	75.5	72.5	47.1	44.1	21.5
100	19.0	72.4	69.4	40.0	40.0	20.1
155	24.0	69.5	66.5	36.2	36.2	18.8
200	27.5	67.9	64.9	34.0	34.0	18.0
250	31.0	66.4	63.4	32.0	32.0	17.3
300	34.2	65.2	62.3	30.5	30.5	16.8
350	37.2	64.2	61.2	29.1	29.1	16.3
400	40.0	63.4	60.4	28.0	28.0	15.9
600	50.1	60.7	57.7	24.4	24.4	14.7

Catalog number: LO22P0048070



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
120 Ω RS485 Network Cable, Two Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**

## Product Construction:

### 1. Conductor:

- 24 AWG 7/32 tinned copper: .024" nom. O.D.

### 2. Insulation:

- Solid Polyethylene: .070" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted left-hand lay
- Color Code: P1: White, Blue P2: White, Orange

### 4. Inner Shield:

- Aluminum/Polyester tape (aluminum side out)

### 5. Drain Wire:

- 24 AWG 7/32 tinned copper

### 6. Outer Shield:

- 36 AWG tinned copper, 85% min. coverage

### 7. Inner Sheath:

- Low-Smoke, Zero-Halogen Polyolefin — .030" nom. wall, Black: .310" nom. O.D.

### 8. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 9. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall,  
Black: .460" nom. O.D.

### 10. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 2  
PR 24 AWG 120 OHM RS485 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 11. Cable Weight:

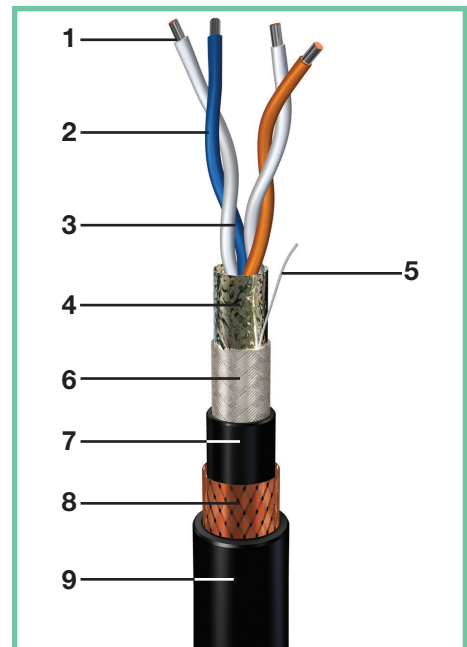
- 140 lbs/kft nom.

### 12. Option:

- Four Pair Construction

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-003)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**120 Ω RS485 Network Cable, Two Pair**  
**Overall Shielded, Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

Conductor DCR: 25.7 Ω/kft nom.  
Mutual Capacitance: 12.8 pF/ft nom.  
Impedance: 120 ± 10 Ω  
Velocity of Propagation: 66% nom.  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: E024P0022188





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100 Ω RS422  
Network Cable, Two Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



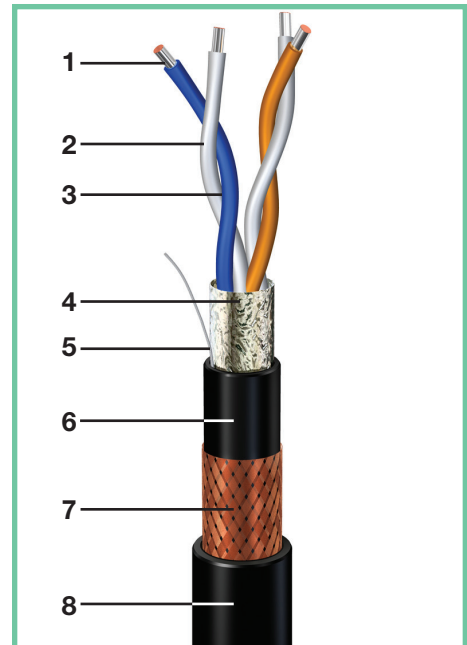
## Product Construction:

- 1. Conductor:**
  - 24 AWG 7/32 tinned copper: .024" nom. O.D.
- 2. Insulation:**
  - Foam Polyethylene: .050" nom. O.D.
- 3. Pairs:**
  - Two insulated conductors twisted left-hand lay
  - Color Code: P1: White, Blue P2: White, Orange
- 4. Overall Shield:**
  - Aluminum/Polyester tape (aluminum side out)
- 5. Drain Wire:**
  - 24 AWG 7/32 tinned copper
- 6. Inner Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin — .030" nom. wall, Black: .227" nom. O.D.
- 7. Armor:**
  - 28 AWG bronze braid, 88% min. coverage
- 8. Outer Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall, Black: .375" nom. O.D.
- 9. Print:**
  - GENERAL CABLE (F) COMMODORE<sup>®</sup> LSZH ARMORED MARINE CABLE 2 PR 24 AWG 100 OHM RS422 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\* XXXXXX\*\*\*
- 10. Cable Weight:**
  - 95 lbs/kft nom.

\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-002)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100  $\Omega$  RS422  
Network Cable, Two Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Electrical Characteristics

Conductor DCR: 25.7  $\Omega$ /kft nom.  
Mutual Capacitance: 13.5 pF/ft nom.  
Impedance: 100  $\pm$  10  $\Omega$   
Velocity of Propagation: 76% nom.  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: E024P0022186



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100 Ω RS422  
Network Cable, Four Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

### 1. Conductor:

- 24 AWG 7/32 tinned copper: .024" nom. O.D.

### 2. Insulation:

- Foam Polyethylene: .048" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted left-hand lay
- Color Code:
 

P1: White, Blue	P3: White, Green
P2: White, Orange	P4: White, Brown

### 4. Shield:

- Overall Aluminum/Polyester Tape (aluminum side out)

### 5. Drain Wire:

- 24 AWG 7/32 tinned copper

### 6. Inner Sheath:

- Low-Smoke, Zero-Halogen Polyolefin — .030" nom. wall, Black: .250" nom. O.D.

### 7. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 8. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall, Black: .400" nom. O.D.

### 9. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 4 PR 24 AWG 100 OHM RS422 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\* XXXXXX\*\*\*

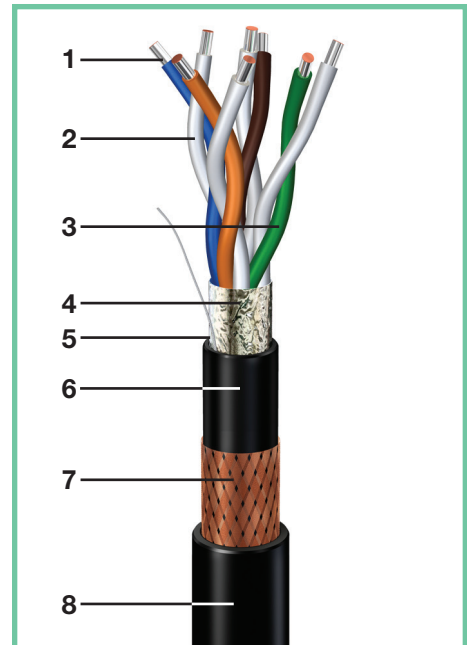
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 10. Cable Weight:

- 125 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-002)





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100  $\Omega$  RS422  
Network Cable, Four Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Electrical Characteristics

Conductor DCR: 25.7  $\Omega$ /kft nom.  
Mutual Capacitance: 13.5 pF/ft nom.  
Impedance: 100  $\pm$  10  $\Omega$   
Velocity of Propagation: 76% nom.  
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: E024P0042186



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100 Ω RS422  
Network Cable, Eight Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

### 1. Conductor:

- 24 AWG 7/32 tinned copper: .024" nom. O.D.

### 2. Insulation:

- Foam Polyethylene: .048" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted left-hand lay
- Color Code:
 

P1: White, Blue	P5: White, Gray
P2: White, Orange	P6: Red, Blue
P3: White, Green	P7: Red, Orange
P4: White, Brown	P8: Red, Green

### 4. Shield:

- Overall Aluminum/Polyester Tape (aluminum side out)

### 5. Drain Wire:

- 24 AWG 7/32 tinned copper

### 6. Inner Sheath:

- Low-Smoke, Zero-Halogen Polyolefin — .030" nom. wall, Black: .325" nom. O.D.

### 7. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 8. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall,  
Black: .475" nom. O.D.

### 9. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 8  
PR 24 AWG 100 OHM RS422 IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

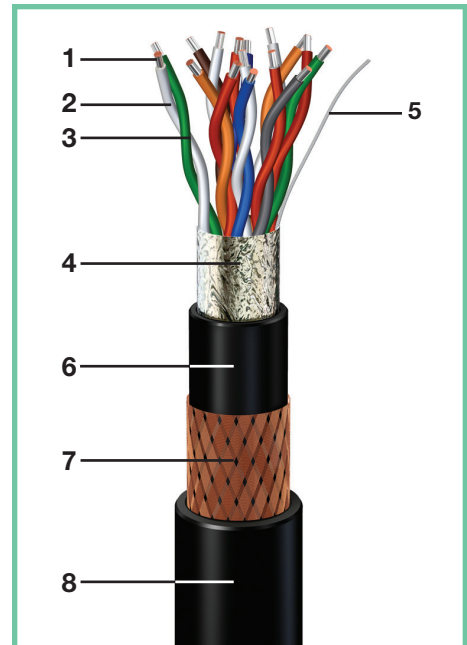
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 10. Cable Weight:

- 145 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-006)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen, 100  $\Omega$  RS422  
Network Cable, Eight Pair  
Overall Shielded, Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## **Electrical Characteristics**

Conductor DCR: 25.7  $\Omega$ /kft nom.

Mutual Capacitance: 13.5 pF/ft nom.

Impedance: 100  $\pm$  10  $\Omega$

Velocity of Propagation: 76% nom.

Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: E024P0082186





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
120 Ω DeviceNet-Compatible Cable  
Two Pair, Composite, Shielded & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

### 1. 1 Pair 16 AWG Shielded

- Conductor:
  - 16 AWG 19/.0117 tinned copper: .056" nom. O.D.
- Insulation:
  - Low-Smoke, Zero-Halogen Polyolefin, .022" nom. wall: .100" nom. O.D.
- Color Code:
  - C1: Red C2: Black
- Shield:
  - Aluminum/Polyester tape 25% overlap 100% coverage (aluminum side out)

### 2. 1 Pair 18 AWG Shielded

- Conductor:
  - 18 AWG 19/30 tinned copper: .049" nom. O.D.
- Insulation:
  - Foam Polyolefin, .053" nom. wall: .155" nom. O.D.
- Color Code:
  - C1: Blue C2: White
- Shield:
  - Aluminum/Polyester tape 25% overlap 100% coverage (aluminum side out)

### 3. Final Assembly 2 Pairs Cabled Left-Hand Lay

- Drain Wire:
  - 16 AWG 19/29 tinned copper
- Overall Shield:
  - 36 AWG tinned copper, 65% min. coverage
- Sheath:
  - Low-Smoke, Zero-Halogen, .060" nom. wall, Black: .475" nom. O.D.

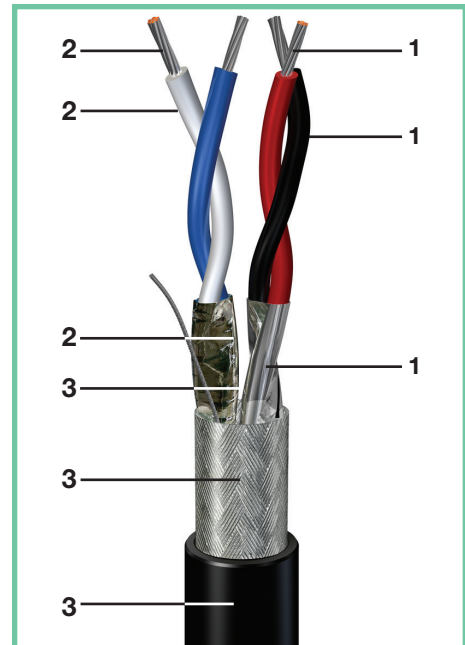
### 4. Print:

- GENERAL CABLE (F) COMMODORE® LSZH MARINE CABLE 1 PR 16 AWG & 1 PR 18 AWG 120 OHM DEVICENET IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\* XXXXXX\*\*\*

\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 5. Cable Weight:

- 125 lbs/kft nom.



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3316259CRT-004)

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area

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Onshore, Offshore  
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Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**120 Ω DeviceNet-Compatible Cable**  
**Two Pair, Composite, Shielded & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

1/Pair 16 AWG Shielded  
Conductor DCR: 4.39 Ω/kft nom.

1/Pair 18 AWG Shielded  
Conductor DCR: 6.1 Ω/kft nom.  
Capacitance: 12.0 pF/ft nom.  
Impedance: 120 ± 10 Ω @ 1 MHz  
Velocity of Propagation: 76% nom.  
Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
0.125	0.13
0.50	0.25
1.0	0.40

Catalog number: Z016P0022189



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables

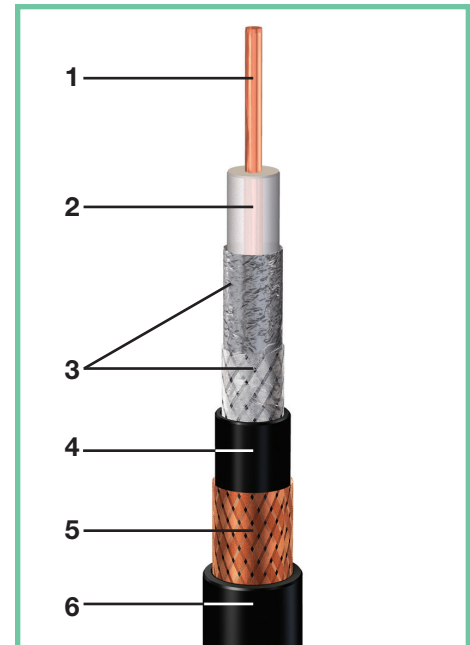


**Low-Smoke, Zero-Halogen  
RG-6/U Type Coax  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

- 1. Conductor:**
  - 18 AWG solid bare copper: .040" nom. O.D.
- 2. Insulation:**
  - Foam Polyethylene, .070" nom. wall: .180" nom. O.D.
- 3. Shields:**
  - Aluminum/Polyester/Aluminum tape, 100% coverage
  - 34 AWG tinned copper braid, 95% nom. coverage
- 4. Inner Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .032" nom. wall, Black: .275" nom. O.D.
- 5. Armor:**
  - 28 AWG bronze braid, 88% min. coverage
- 6. Outer Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall, Black: .440" nom. O.D.
- 7. Print:**
  - GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE  
18 AWG RG-6/U TYPE COAX IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*
  - \*Order Number \*\*Date \*\*\*Footage Markings every 2 ft
- 8. Cable Weight:**
  - 140 lbs/kft nom.



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**RG-6/U Type Coax**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

Impedance:  $75 \Omega \pm 5 \Omega$   
 Capacitance: 16.3 pF/ft nom.  
 Velocity of Propagation: 83% nom.  
 Conductor DCR: 6.51  $\Omega$ /kft nom.  
 Shield DCR: 2.29  $\Omega$ /kft nom.  
 Inductance: 0.097  $\mu$ H/ft  
 Time Delay: 1.22 ns/ft  
 Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
 Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
100.0	2.10
200.0	2.75
300.0	3.60
400.0	4.00
500.0	4.70
700.0	5.30
800.0	5.87
900.0	6.55
1700.0	8.95
1750.0	9.15
2000.0	9.95
2050.0	10.20

Catalog number: C018C0012170





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables

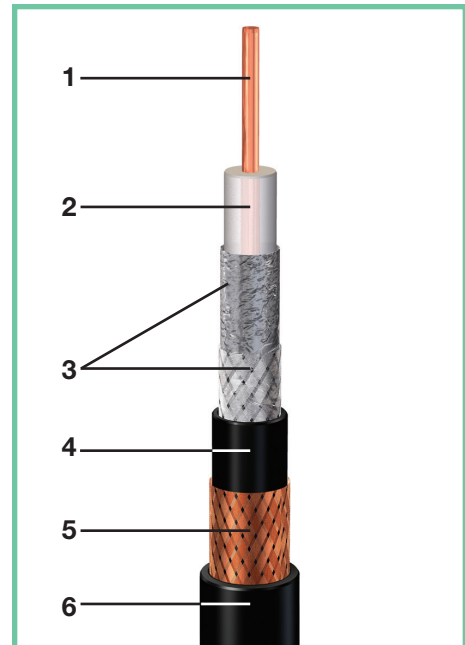


**Low-Smoke, Zero-Halogen  
RG-11/U Type Coax  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

- 1. Conductor:**
  - 14 AWG solid bare copper: .064" nom. O.D.
- 2. Insulation:**
  - Foam Polyethylene, .108" nom. wall: .281" nom. O.D.
- 3. Shields:**
  - Aluminum/Polyester/Aluminum tape, 100% coverage
  - 34 AWG tinned copper braid, 95% nom. coverage
- 4. Inner Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall, Black: .405" nom. O.D.
- 5. Armor:**
  - 28 AWG bronze braid, 88% min. coverage
- 6. Outer Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall, Black: .550" nom. O.D.
- 7. Print:**
  - GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE  
14 AWG RG-11/U TYPE COAX IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*
  - \*Order Number \*\*Date \*\*\*Footage Markings every 2 ft
- 8. Cable Weight:**
  - 200 lbs/kft nom.



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3120310CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**RG-11/U Type Coax**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

Impedance:  $75 \Omega \pm 5 \Omega$   
Capacitance: 16.3 pF/ft nom.  
Velocity of Propagation: 83% nom.  
Conductor DCR:  $2.58 \Omega/\text{kft}$  nom.  
Shield DCR:  $3.70 \Omega/\text{kft}$  nom.  
Inductance: 0.097  $\mu\text{H}/\text{ft}$   
Time Delay: 1.22 ns/ft  
Temperature & Voltage Ratings:  $-30^\circ\text{C}$  to  $+75^\circ\text{C}/300 \text{ V}$  Max.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
1.0	0.15
100.0	1.38
270.0	2.31
540.0	3.29
750.0	3.89
1000.0	4.52
2000.0	6.65
3000.0	8.10

Catalog number: C014C0012170



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables

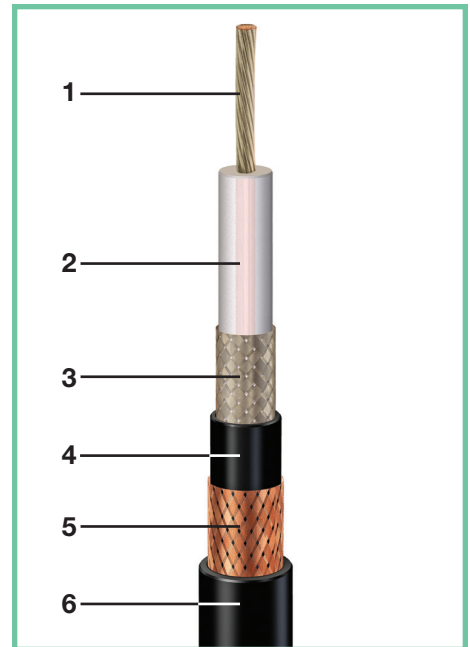


**Low-Smoke, Zero-Halogen  
RG-58/U Type Coax  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



## Product Construction:

- 1. Conductor:**
  - 21 AWG 19/33 tinned copper: .035" nom. O.D.
- 2. Insulation:**
  - Polyethylene, .040" nom. wall: .116" nom. O.D.
- 3. Shield:**
  - 36 AWG tinned copper braid, 95% nom. coverage
- 4. Inner Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .028" nom. wall, Black: .195" nom. O.D.
- 5. Armor:**
  - 28 AWG bronze braid, 88% min. coverage
- 6. Outer Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall, Black: .340" nom. O.D.
- 7. Print:**
  - GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE  
21 AWG RG-58/U TYPE COAX IEC 60332-3-22 CAT A AAAA\* MO/YR\*\*  
XXXXXX\*\*\*
  - \*Order Number \*\*Date \*\*\*Footage Markings every 2 ft
- 8. Cable Weight:**
  - 100 lbs/kft nom.



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3120310CRT-002)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**RG-58/U Type Coax**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

Impedance:  $50 \Omega \pm 3 \Omega$   
Capacitance: 30.8 pF/ft nom.  
Velocity of Propagation: 66% nom.  
Conductor DCR: 10.8  $\Omega$ /kft nom.  
Inductance: 0.075  $\mu$ H/ft  
Time Delay: 1.51 ns/ft  
Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
1	0.5
5	1.1
10	1.6
20	2.3
50	3.5
100	4.8
200	6.8
400	10.0
700	14.2
900	16.5
1000	17.7

Catalog number: CO21C0012170





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen  
RG-59/U Type Coax  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**



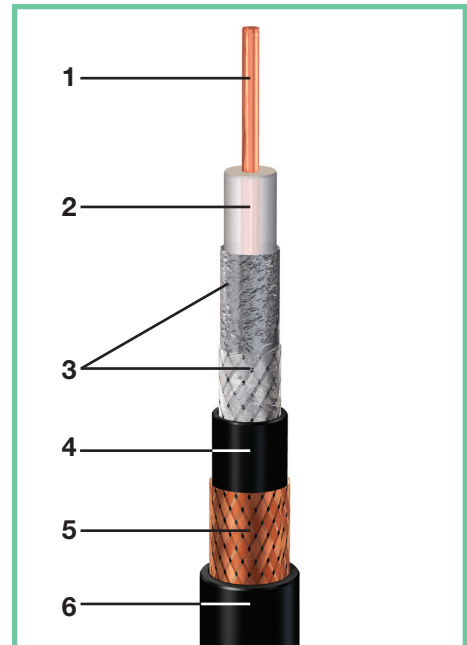
## Product Construction:

- 1. Conductor:**
  - 20 AWG solid bare copper: .032" nom. O.D.
- 2. Insulation:**
  - Foam Polyethylene, .057" nom. wall: .145" nom. O.D.
- 3. Shields:**
  - Aluminum/Polyester/Aluminum tape, 100% coverage
  - 34 AWG tinned copper braid, 95% nom. coverage
- 4. Inner Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .032" nom. wall, Black: .246" nom. O.D.
- 5. Armor:**
  - 28 AWG bronze braid, 88% min. coverage
- 6. Outer Sheath:**
  - Low-Smoke, Zero-Halogen Polyolefin, .048" nom. wall, Black: .395" nom. O.D.
- 7. Print:**
  - GENERAL CABLE (F) COMMODORE<sup>®</sup> LSZH ARMORED MARINE CABLE  
20 AWG RG-59/U TYPE COAX IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*
- 8. Cable Weight**
  - 119 lbs/kft nom.

\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**RG-59/U Type Coax**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

Impedance:  $75 \Omega \pm 5 \Omega$   
Capacitance: 16.3 pF/ft nom.  
Velocity of Propagation: 83% nom.  
Conductor DCR: 10.0  $\Omega$ /kft nom.  
Shield DCR: 3.8  $\Omega$ /kft nom.  
Inductance: 0.097  $\mu$ H/ft  
Time Delay: 1.22 ns/ft  
Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
100.0	2.33
135.0	2.70
143.0	2.77
180.0	3.10
270.0	3.80
360.0	4.42
540.0	5.47
720.0	6.36
750.0	6.50
1000.0	7.60
1500.0	9.30
2000.0	10.90
2500.0	12.30
3000.0	13.40

Catalog number: C020C0012170



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen  
RG-213/U Type Coax  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**

## Product Construction:

### 1. Conductor:

- 13 AWG 7/.0296 bare copper: .088" nom. O.D.

### 2. Insulation:

- Polyethylene, .098" nom. wall: .285" nom. O.D.

### 3. Shield:

- 33 AWG bare copper braid, 95% nom. coverage

### 4. Inner Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .043" nom. wall,  
Black: .405" nom. O.D.

### 5. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 6. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, 0.045" nom. wall,  
Black: 0.549" nom. O.D.

### 7. Print:

- GENERAL CABLE (F) COMMODORE<sup>®</sup> LSZH ARMORED MARINE CABLE 13  
AWG RG-213/U TYPE COAX IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

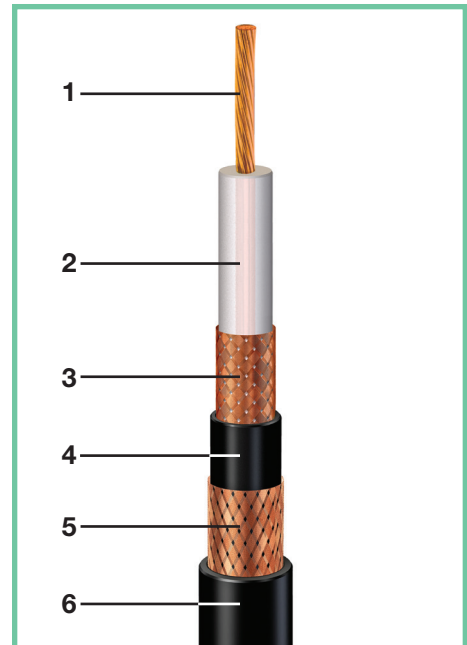
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 8. Cable Weight:

- 230 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3120310CRT-002)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**RG-213/U Type Coax**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



### Electrical Characteristics:

Impedance:  $50 \Omega \pm 3 \Omega$   
Capacitance: 30.8 pF/ft nom.  
Velocity of Propagation: 66% nom.  
Conductor DCR: 1.74  $\Omega$ /kft nom.  
Shield DCR: 1.20  $\Omega$ /kft nom.  
Inductance: 0.075  $\mu$ H/ft  
Time Delay: 1.51 ns/ft  
Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
10.0	0.66
50.0	1.20
100.0	2.30
200.0	3.20
400.0	4.60
1000.0	9.00

Catalog number: C013C0012170





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen Fieldbus Cable**  
**One Pair, Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Product Construction:

### 1. Conductor:

- 18 AWG 7/26 tinned copper: .046" nom. O.D.

### 2. Insulation:

- Foam Polyethylene: .114" nom. O.D.

### 3. Pair:

- Two insulated conductors twisted together
- Color Code: P1: Blue, Orange

### 4. Inner Shield:

- Aluminum/Polyester tape with 25% overlap 100% coverage (aluminum side out)

### 5. Drain:

- 18 AWG 16/30 spiral-wrapped tinned copper

### 6. Overall Shield:

- Aluminum/Polyester tape with 25% overlap 100% coverage (aluminum side in)

### 7. Inner Sheath:

- Flame-Retardant, Low-Smoke, Zero-Halogen Polyolefin —  
.040" nom. wall, Black: .310" nom. O.D.

### 8. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 9. Outer Sheath:

- Flame-Retardant, Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall,  
Black: .470" nom. O.D.

### 10. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 1 PR  
18 AWG 100 OHM FIELDBUS IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

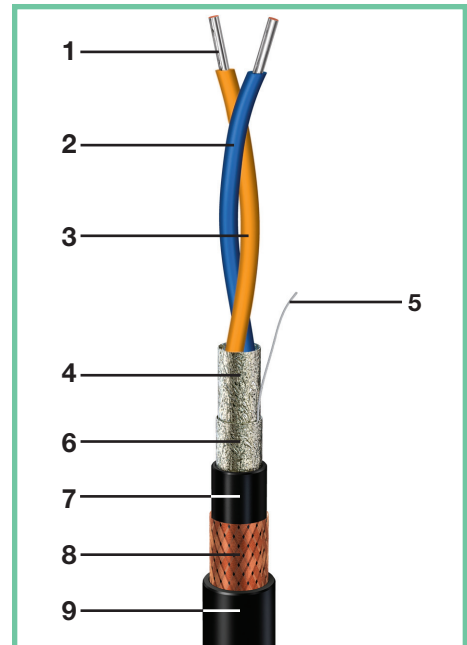
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 11. Cable Weight:

- 144 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350
- System Application: IEC 61158-2 Section 12.8.2

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-007)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen Fieldbus Cable**  
**One Pair, Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

Conductor DCR: 6.5  $\Omega$ /kft nom.

Mutual Capacitance: 13.0 pF/ft nom.

Impedance: 100  $\pm$  20  $\Omega$

Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Pull Tensions: 1250 N

Catalog number: E018P0015337



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen Fieldbus Cable**  
**Two Pair Individually/Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Product Construction:

### 1. Conductor:

- 18 AWG 7/26 tinned copper: .046" nom. O.D.

### 2. Insulation:

- Foam Polyethylene: .114" nom. O.D.

### 3. Pairs:

- Two insulated conductors twisted together
- Color Code: P1: White, Blue P2: White, Orange

### 4. Individually Shielded Pairs:

- Aluminum/Polyester tape with 25% overlap 100% coverage (aluminum side out)

### 5. Drain:

- 18 AWG 16/30 spiral-wrapped tinned copper

### 6. Overall Shield:

- Aluminum/Polyester tape with 25% overlap 100% coverage (aluminum side in)

### 7. Inner Sheath:

- Flame-Retardant, Low-Smoke, Zero-Halogen Polyolefin —  
.045" nom. wall, Black: .540" nom. O.D.

### 8. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 9. Outer Sheath:

- Flame-Retardant, Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall,  
Black: .690" nom. O.D.

### 10. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 2  
PR 18 AWG 100 OHM FIELDBUS IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\*  
XXXXXX\*\*\*

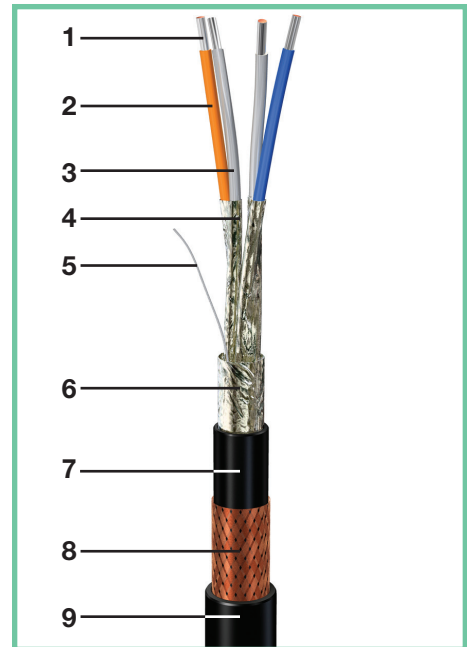
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 11. Cable Weight

- 248 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350
- System Application: IEC 61158-2 Section 12.8.2

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-007)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen Fieldbus Cable**  
**Two Pair Individually/Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

Conductor DCR: 6.5  $\Omega$ /kft nom.

Mutual Capacitance: 13.0 pF/ft nom.

Impedance: 100  $\pm$  20  $\Omega$

Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Pull Tension: 2570 N

Catalog number: E018P0025337







Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen Fieldbus Cable**  
**Five Pair, Individually/Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

Conductor DCR: 6.5  $\Omega$ /kft nom.

Mutual Capacitance: 13.0 pF/ft nom.

Impedance: 100  $\pm$  20  $\Omega$

Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Pull Tension: 4000 N

Catalog number: E018P0055337



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Copper Communication Cables



**Low-Smoke, Zero-Halogen  
150 Ω Profibus Cable  
One Pair, Overall Shielded  
Armored & Sheathed  
ABS Type Approved, ETL Confirmed**

## Product Construction:

### 1. Conductor:

- 22 AWG solid tinned copper: .025" nom. O.D.

### 2. Insulation:

- Foam Polyethylene, .040" nom. wall: .106" nom. O.D.

### 3. Pair:

- Two insulated conductors twisted together
- Color Code: C1: Red C2: Green

### 4. Inner Shield:

- Aluminum/Polyester tape with 25% overlap 100% coverage (aluminum side out)

### 5. Drain Wire:

- 22 AWG solid tinned copper spirally applied

### 6. Overall Shield:

- 34 AWG tinned copper braid, 90% min. coverage

### 7. Inner Sheath:

- Low-Smoke, Zero-Halogen Polyolefin — .035" nom. wall, Black: .315" nom. O.D.

### 8. Armor:

- 28 AWG bronze braid, 88% min. coverage

### 9. Outer Sheath:

- Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall, Black: .470" nom. O.D.

### 10. Print:

- GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 1 PR 22 AWG 150 OHM PROFIBUS IEC 60332-3-22 CAT A AAAAA\* MO/YR\*\* XXXXXX\*\*\*

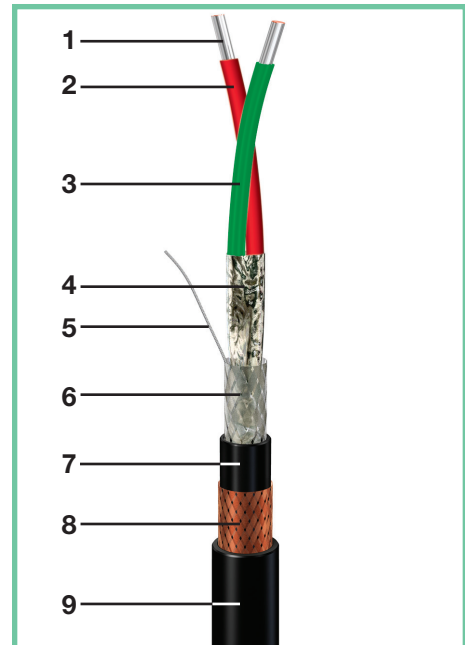
\*Order Number \*\*Date \*\*\*Footage Markings every 2 ft

### 11. Cable Weight:

- 150 lbs/kft nom.

## Features:

- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

- Flammability: IEC 60332-3-22 Category A
- Smoke: IEC 61034-1 & -2, MIL-DTL-24643B and NES 711
- Halogen Content: IEC 60754-1 & -2
- Toxicity: MIL-DTL-24643B and NES 713
- Acidity: IEC 60754-1 & -2 and MIL-DTL-24643B
- Armor: IEEE 1580 and IEC 60092-350

## Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3116259CRT-006)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Copper Communication Cables



**Low-Smoke, Zero-Halogen**  
**150 Ω Profibus Cable**  
**One Pair, Overall Shielded**  
**Armored & Sheathed**  
ABS Type Approved, ETL Confirmed



## Electrical Characteristics

Conductor DCR: 16.5 Ω/kft nom.  
Capacitance: 8.8 pF/ft nom.  
Impedance: 150 ± 15 Ω  
Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.  
Velocity of Propagation: 78% nom.  
Attenuation (Nom.):

FREQ. (MHz)	dB/100 FT
0.2	0.27
4.0	0.67
16.0	1.37
100.0	3.75
300.0	6.52

Catalog number: E022P0011203



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



## FIBER OPTIC COMMUNICATIONS CABLE

Fiber optic cables have gained rapid acceptance in recent years for the petroleum and chemical industries because of the escalating demand for security and information integrity. From industrial-grade process control and outside plant fiber optic cables to commercial-grade marine fiber optic shipboard cables, General Cable can meet the most stringent demands of oil and gas production. Onshore or offshore, our ultra-rugged COMMODORE® Low-Smoke, Zero-Halogen (LSZH) and enhanced Mud Oil Resistant (MOR®) thermoplastic and thermoset designs are suitable for data transmission and communication for both upstream and downstream production applications.

General Cable recommends the following fiber cable construction for use in harsh environments such as the oil, gas and petroleum (OGP) markets: a Heavy-Duty Breakout Cable engineered design that has a component jacket (2.0 mm) around each buffered fiber. This construction type is typically referred to as offshore, marine or commercial shipboard cable. Our design is engineered around a variety of shipboard specifications including MIL-PRF-85045 and IEC 60794, giving the final products proven history. Available in designs from 2 to 48 multimode and singlemode fibers, the cable comes with a variety of jacket options including thermoplastic and thermoset Low-Smoke, Zero-Halogen (LSZH) as well as enhanced Mud Oil Resistant (MOR®) cross-linked Chlorosulfonated Polyethylene. The thermoset designs are especially good in fire performance and offer superior mechanical protection for the fibers. A bronze braided armor and second jacket is designed for additional mechanical protection. This is often required of cables used to control critical operations.

General Cable offers a line of COMMODORE® Lite™ communications cables that are qualified to commercial North American cabling standards and exclusively designed for indoor applications on yachts and cruise ships. The COMMODORE® Lite™ line of loose tube cables is engineered for a wide range of environments with a temperature rating from -40°C to +70°C and available in 2 - 48 singlemode and multimode fiber constructions. For applications that require a smaller, compact and more lightweight design, our COMMODORE® Lite™ distribution style tight buffer construction is available in 2 - 24 singlemode and multimode fibers. An overall Low-Smoke, Zero-Halogen flame-retardant thermoplastic sheath insures overall maximum flexibility and oil and chemical resistance. Where additional mechanical protection is critical, specify a bronze braided armor and second jacket.

### Manufacturing Excellence

By virtue of the vast global market, today's offshore and marine shipboard fiber optic cabling must meet a multitude of standards and specifications. Keeping up with the latest standards and industry associations, General Cable prides itself on being a manufacturing leader with the engineering expertise to provide cabling solutions for long-term reliable performance, regardless of extreme conditions. Our ISO 9001:2008 and TL 9000 certified facility has earned the ABS Certificate of Manufacturing assessment.

General Cable has a breadth of experience in developing custom-engineered cables. We have manufactured hybrid copper/fiber cables that can provide low-voltage power and secure data communication under one jacket. Our pre-terminated factory-certified cable assemblies provide an economical alternative to an on-site termination. We have extensive capabilities in this area and partnerships with many of the leading specialty connector manufacturers when custom connectors are required.

*General Cable ... highly engineered performance cables to meet any specification.*





## COMMODORE®

### Fiber Optic Communication Cables

- Lite-Duty Thermoplastic Breakout Cable, Unarmored, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 42
- Lite-Duty Thermoplastic Breakout Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 44
- Lite-Duty Thermoplastic Loose Tube Cable, Unarmored, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 46
- Lite-Duty Thermoplastic Loose Tube Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 48
- Heavy-Duty Thermoplastic Breakout Cable, Unarmored, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 50
- Heavy-Duty Thermoplastic Breakout Cable, Armored & sheathed, Low-Smoke, Zero-Halogen — ABS Type Approval ..... 52
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FLAME-RETARDANT



FIRE-RESISTANT



LOW SMOKE EMISSION



LOW CORROSIVE FUME EMISSION



INCREASED FLEXIBILITY



MECHANICAL RESISTANCE



OIL RESISTANT



MUD OIL RESISTANT



HEAVY-DUTY



WEATHERING-RESISTANT



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Lite-Duty Breakout Cable  
Unarmored, Thermoplastic, 2-24 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-24 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

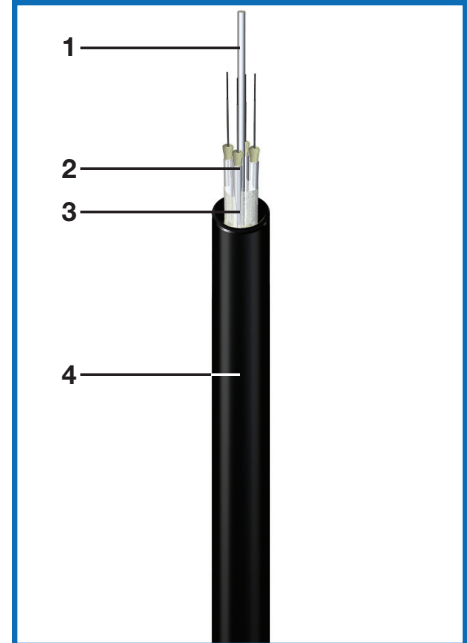
- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

### 3. Binder Tape:

- Mylar tape

### 4. Outer Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black



## Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Breakout-style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Standards-compliant, cost-effective solution

## Compliances:

### Fiber:

- ANSI/TIA/EIA 568 B.3
- GR-409
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

### Flame/Safety Test:

- Flame...OFNR, UL 1666, IEEE 383 Pending
- Halogen Content...IEC 60754-1 & -2
- Smoke Density...IEC 61034-1 & -2
- Acidity...IEC 60754-2

### Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the mechanical test in the above specification (report number F026746-GEN rev1)
- ETL has tested and confirmed that this product complies with the flame test in the above specification (report number 3174223CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Lite-Duty Breakout Cable  
Unarmored, Thermoplastic, 2-24 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-TPL	2	0.284	7.20	0.045	1.14	36	54	4.3/10.8	2.8/7.2	200/600	50/225
XX0041C1Z-TPL	4	0.284	7.20	0.045	1.14	36	54	4.3/10.8	2.8/7.2	200/600	50/225
XX0061C1Z-TPL	6	0.330	8.30	0.045	1.14	61	91	5.0/12.5	3.3/8.3	200/600	50/225
XX0081C1Z-TPL	8	0.379	9.60	0.045	1.14	69	102	5.7/14.4	3.8/9.6	200/600	50/225
XX0101C1Z-TPL	10	0.428	10.90	0.045	1.14	90	134	6.4/16.4	4.3/10.9	600/2700	150/675
XX0121C1Z-TPL	12	0.478	12.10	0.045	1.14	105	156	7.2/18.2	4.8/12.1	600/2700	150/675
XX0181C1Z-TPL	18	0.501	12.70	0.050	1.27	120	178	7.5/19.1	5.0/12.7	600/2700	150/675
XX0241C1Z-TPL	24	0.571	14.50	0.050	1.27	138	205	8.6/21.8	5.7/14.5	600/2700	150/675

\* XX denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



## Low-Smoke, Zero-Halogen Lite-Duty Breakout Cable

Armored & Sheathed, Thermoplastic, 2-24 Fibers  
ABS Type Approval (RQS)



### Product Construction:

#### 1. Central Strength Member:

- Epoxy glass rod

#### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-24 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

#### 3. Binder Tape:

- Mylar tape

#### 4. Inner Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin –Black

#### 5. Bronze Armor:

- Bronze braid, 88% minimum coverage

#### 6. Outer Sheath:

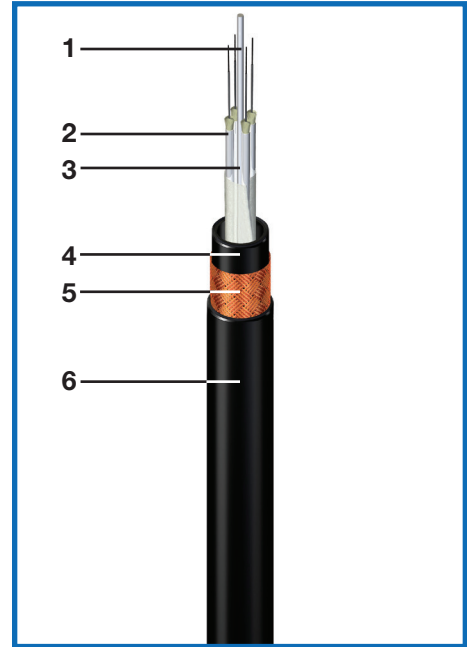
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin –Black

### Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

### Features:

- Breakout-style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Braided bronze armor for increased mechanical protection
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area
- Standards-compliant, cost-effective solution



### Compliances:

#### Fiber:

- ANSI/TIA/EIA 568 B.3
- GR-409
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

#### Flame/Safety Test:

- Flame...OFCC, UL 1666, IEEE 383 Pending
- Halogen Content...IEC 60754-1 & -2
- Smoke Density...IEC 61034-1 & -2
- Acidity...IEC 60754-2

#### Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the mechanical test in the above specification (report number F026746-GEN rev1)
- ETL has tested and confirmed that this product complies with the flame test in the above specification (report number 3174223CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Lite-Duty Breakout Cable

Armored & Sheathed, Thermoplastic, 2-24 Fibers

ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-ATPL	2	0.434	11.00	0.045	1.14	137	204	6.5/16.5	4.3/11.0	200/600	50/225
XX0041C1Z-ATPL	4	0.434	11.00	0.045	1.14	137	204	6.5/16.5	4.3/11.0	200/600	50/225
XX0061C1Z-ATPL	6	0.480	12.20	0.045	1.14	190	282	7.2/18.3	4.8/12.2	200/600	50/225
XX0081C1Z-ATPL	8	0.529	13.40	0.045	1.14	214	318	7.9/20.1	5.3/13.4	200/600	50/225
XX0101C1Z-ATPL	10	0.578	14.70	0.045	1.14	250	372	8.7/22.1	5.8/14.7	600/2700	150/675
XX0121C1Z-ATPL	12	0.628	15.90	0.045	1.14	279	416	9.4/23.9	6.3/15.9	600/2700	150/675
XX0181C1Z-ATPL	18	0.661	16.80	0.050	1.27	309	460	9.9/25.2	6.6/16.8	600/2700	150/675
XX0241C1Z-ATPL	24	0.731	18.60	0.050	1.27	341	507	11.0/27.9	7.3/18.6	600/2700	150/675

\* XX denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

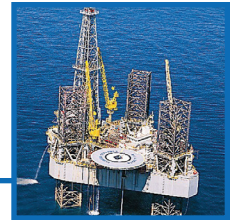
FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Lite-Duty Loose Tube Cable  
Unarmored, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Loose Tube Dry Filled:

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: TIA/EIA 598

Jacket:

- Low-Smoke thermoplastic Polymer

### 3. Binder Tape:

- Water-swellable tape

### 4. Outer Sheath:

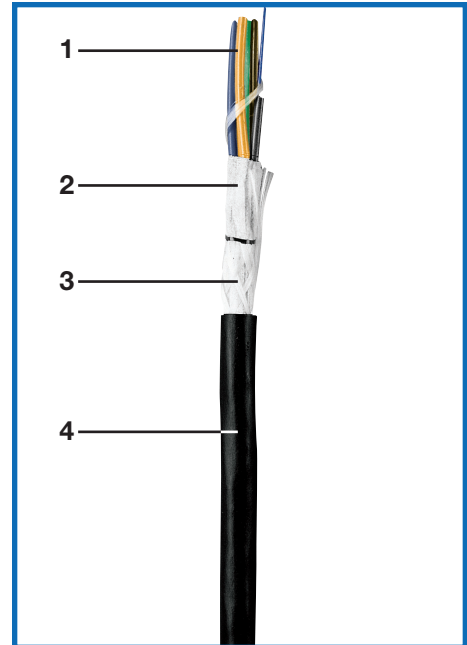
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin-Black

## Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Loose tube cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Standards-compliant, cost-effective solution



## Compliances:

### Fiber:

- ANSI/TIA/EIA 568 B.3
- ICEA S-104-691
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

### Flame/Safety Test:

- Flame...OFNR, UL 1666, IEEE 383  
Pending

### Third-Party Testing:

- ETL has tested and confirmed that this product complies with the flame test in the above specification (report number 3174223CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Lite-Duty Loose Tube Cable  
Unarmored, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0024M1Z-TPL	2	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0044M1Z-TPL	4	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0064M1Z-TPL	6	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0084M1Z-TPL	8	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0104M1Z-TPL	10	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0124M1Z-TPL	12	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0184M1Z-TPL	18	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0244M1Z-TPL	24	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0364M1Z-TPL	36	0.380	10	0.060	1.52	66	98	7.6/19.3	3.8/9.7	600/2670	200/890
XX0484M1Z-TPL	48	0.410	10	0.060	1.52	74	110	8.2/20.8	4.1/10.4	600/2670	200/890

\* XX denotes fiber type. See Fiber Selection Guide.

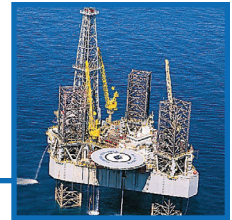
## Fiber Selection Guide

FIBER TYPE	AQ FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	0.40	N/A	N/A
1550nm	0.30	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Lite-Duty Loose Tube Cable**

**Armored & Sheathed, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Loose Tube Dry Filled:

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: TIA/EIA 598

Jacket:

- Low-Smoke thermoplastic Polymer

### 3. Binder Tape:

- Water-swellable tape

### 4. Steel Armor:

- 0.006" corrugated steel tape

### 5. Outer Sheath:

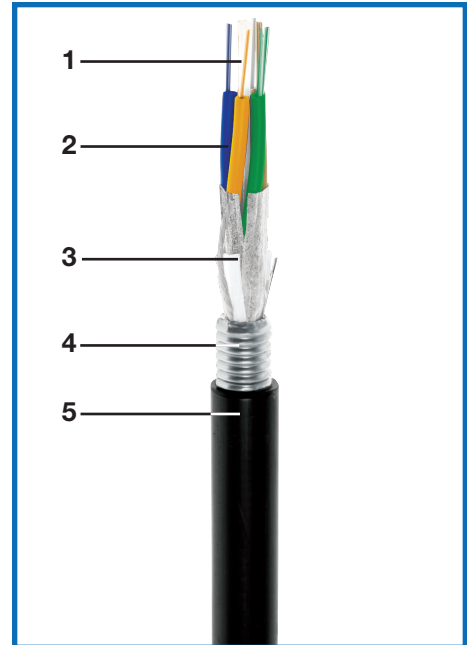
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin-Black

## Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Loose tube cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Steel armor for increased mechanical protection
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area
- Standards-compliant, cost-effective solution



## Compliances:

### Fiber:

- ANSI/TIA/EIA 568 B.3
- ICEA S-104-696
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

### Flame/Safety Test:

- Flame...OFNR, UL 1666, IEEE 383 Pending

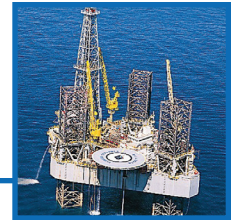
### Third-Party Testing:

- ETL has tested and confirmed that this product complies with the flame test in the above specification (report number 3174223CRT-001)



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Lite-Duty Loose Tube Cable

Armored & Sheathed, Thermoplastic, 2-48 Fibers

ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0024M1Z-ATPL	2	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0044M1Z-ATPL	4	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0064M1Z-ATPL	6	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0084M1Z-ATPL	8	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0104M1Z-ATPL	10	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0124M1Z-ATPL	12	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0184M1Z-ATPL	18	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0244M1Z-ATPL	24	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0364M1Z-ATPL	36	0.470	12.00	0.060	1.52	115	171	9.0/24.0	4.7/12.0	600/2700	150/675
XX0484M1Z-ATPL	48	0.540	13.00	0.060	1.52	120	179	11.0/26.0	5.4/13.0	600/2700	150/675

\* XX denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AQ FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	0.40	N/A	N/A
1550nm	0.30	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable  
Unarmored, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

### 3. Binder Tape:

- Helically applied water-swellable SAP

### 4. Aramid Yarn:

- Contra-helically applied and wrapped with .001" polyester binder tape

### 5. Outer Sheath:

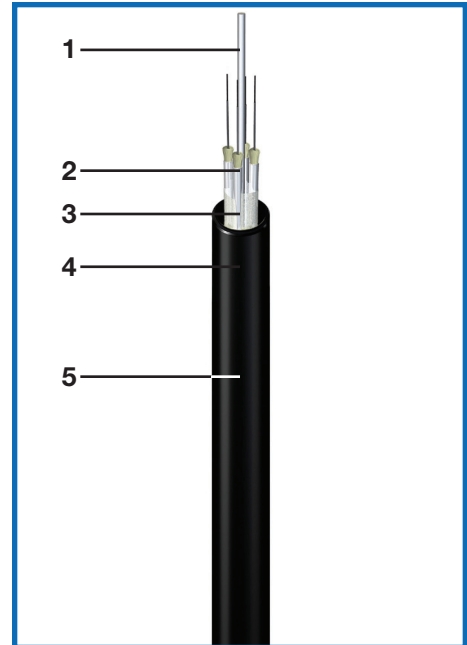
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black

## Applications:

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH thermoplastic UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance



## Compliances:

### Fiber:

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
- Torsion..... IEC 60794-1-2-E7
- Kink ..... IEC 60794-1-2-E10
- Cable Bend ..... IEC 60794-1-2-E11
- Cold Bend..... IEC 60794-1-2-E11

### Flame/Safety Test:

- Flame ..... IEC 60332-3-22 Cat. A
- Halogen Content.....IEC 60754-1 & -2
- Smoke Density.....IEC 61034-1 & -2
- Acidity.....IEC 60754-2

### Third-Party Testing:

ETL has tested and confirmed that this product complies with the above specifications (report number 3118124CRT-001)





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable  
Unarmored, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-TP	2	0.300	7.62	0.050	1.270	41	61	4.8/12.2	2.4/6.1	200/900	50/225
XX0041C1Z-TP	4	0.300	7.62	0.050	1.270	44	66	4.8/12.2	2.4/6.1	200/900	50/225
XX0061C1Z-TP	6	0.355	9.02	0.050	1.270	59	88	5.7/14.4	2.8/7.2	200/900	50/225
XX0081C1Z-TP	8	0.405	10.28	0.050	1.270	85	127	6.5/16.5	3.2/8.2	600/2700	150/675
XX0101C1Z-TP	10	0.435	11.05	0.050	1.270	100	148	7.0/17.7	3.5/8.8	600/2700	150/675
XX0121C1Z-TP	12	0.445	11.30	0.060	1.520	102	152	7.2/18.1	3.6/9.0	600/2700	150/675
XX0161C1Z-TP	16	0.515	13.60	0.060	1.520	115	171	8.2/20.9	4.1/10.5	600/2700	150/675
XX0181C1Z-TP	18	0.540	13.72	0.060	1.520	119	177	8.6/21.9	4.3/11.0	600/2700	150/675
XX0241C1Z-TP	24	0.620	15.75	0.060	1.520	150	284	9.9/25.2	5.0/12.6	600/2700	150/675
XX0361C1Z-TP	36	0.708	17.98	0.060	1.520	200	298	11.3/28.8	5.7/14.4	600/2700	150/675
XX0481C1Z-TP	48	0.809	20.55	0.060	1.520	260	387	12.9/32.9	6.5/16.4	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Fiber Optic Communication Cables



## Low-Smoke, Zero-Halogen Heavy-Duty Breakout Cable

## Armored & Sheathed, Thermoplastic, 2-48 Fibers ABS Type Approval (RQS)



### Product Construction:

#### 1. Central Strength Member:

- Epoxy glass rod

#### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

#### 3. Binder Tape:

- Helically applied water-swellable SAP

#### 4. Aramid Yarn:

- Contra-helically applied and wrapped with .001" polyester binder tape

#### 5. Inner Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black or White

#### 6. Bronze Armor:

- Bronze braid, 88% minimum coverage

#### 7. Outer Sheath:

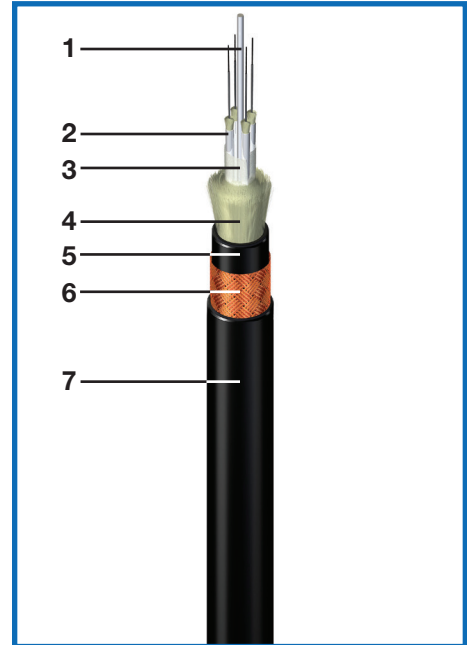
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black

### Applications:

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

### Features:

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Braided bronze armor for increased mechanical protection
- LSZH thermoplastic UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



### Compliances:

#### Fiber:

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
- Torsion..... IEC 60794-1-2-E7
- Kink..... IEC 60794-1-2-E10
- Cable Bend ..... IEC 60794-1-2-E11
- Cold Bend..... IEC 60794-1-2-E11

#### Flame/Safety Test:

- Flame ..... IEC 60332-3-22 Cat. A
- Halogen Content.....IEC 60754-1 & -2
- Smoke Density.....IEC 61034-1 & -2
- Acidity.....IEC 60754-2



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable  
Armored & Sheathed, Thermoplastic, 2-48 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. INNER SHEATH DIAMETER		NOM. OUTER SHEATH DIAMETER		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-ATP	2	0.320	8.13	0.490	12.45	172	256	7.3/18.5	3.6/9.2	200/900	50/225
XX0041C1Z-ATP	4	0.320	8.13	0.490	12.45	172	256	7.3/18.5	3.6/9.2	200/900	50/225
XX0061C1Z-ATP	6	0.355	9.02	0.510	12.95	197	293	8.2/20.7	4.1/10.4	200/900	50/225
XX0081C1Z-ATP	8	0.405	10.29	0.560	14.22	228	340	9.0/22.8	4.5/11.4	600/2700	150/675
XX0101C1Z-ATP	10	0.435	11.05	0.590	15.00	246	366	9.4/24.0	4.7/12.0	600/2700	150/675
XX0121C1Z-ATP	12	0.445	11.30	0.620	15.75	264	393	9.9/25.2	5.0/12.7	600/2700	150/675
XX0161C1Z-ATP	16	0.515	13.08	0.690	17.53	292	435	11.0/28.0	5.5/14.0	600/2700	150/675
XX0181C1Z-ATP	18	0.540	13.72	0.715	18.16	302	449	11.4/29.1	5.7/14.5	600/2700	150/675
XX0241C1Z-ATP	24	0.620	15.75	0.795	20.20	390	580	12.7/32.3	6.4/16.3	600/2700	150/675
XX0361C1Z-ATP	36	0.708	17.98	0.923	23.44	397	591	14.8/37.5	7.4/18.8	600/2700	150/675
XX0481C1Z-ATP	48	0.809	20.55	1.024	26.01	516	768	16.4/41.6	8.2/20.8	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable  
Unarmored, Thermoset, 2-48 Fibers  
ABS Type Approval (RQS)**



**Product Construction:**

**1. Central Strength Member:**

- Epoxy glass rod

**2. Optical Fiber Cable Component (OFCC):**

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

**3. Binder Tape:**

- Helically applied water-swellable SAP

**4. Aramid Yarn:**

- Contra-helically applied and wrapped with .001" polyester binder tape

**5. Outer Sheath:**

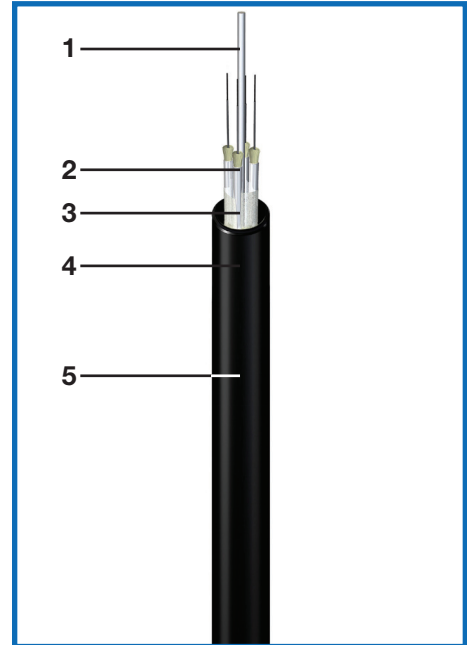
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoset Polyolefin – Black

**Applications:**

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

**Features:**

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH thermoset UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance



**Compliances:**

**Fiber:**

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
- Torsion..... IEC 60794-1-2-E7
- Kink ..... IEC 60794-1-2-E10
- Cable Bend ..... IEC 60794-1-2-E11
- Cold Bend..... IEC 60794-1-2-E11

**Flame/Safety Test:**

- Flame ..... IEC 60332-3-22 Cat. A
- Halogen Content.....IEC 60754-1 & -2
- Smoke Density.....IEC 61034-1 & -2
- Acidity.....IEC 60754-2



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable  
Unarmored, Thermoset, 2-48 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-TSET	2	0.300	7.62	0.050	1.270	41	61	4.8/12.2	2.4/6.1	200/900	50/225
XX0041C1Z-TSET	4	0.300	7.62	0.050	1.270	44	66	4.8/12.2	2.4/6.1	200/900	50/225
XX0061C1Z-TSET	6	0.355	9.02	0.050	1.270	59	88	5.7/14.4	2.8/7.2	200/900	50/225
XX0081C1Z-TSET	8	0.405	10.28	0.050	1.270	85	127	6.5/16.5	3.2/8.2	600/2700	150/675
XX0101C1Z-TSET	10	0.435	11.05	0.050	1.270	100	148	7.0/17.7	3.5/8.8	600/2700	150/675
XX0121C1Z-TSET	12	0.445	11.30	0.060	1.520	102	152	7.2/18.1	3.6/9.0	600/2700	150/675
XX0161C1Z-TSET	16	0.515	13.60	0.060	1.520	115	171	8.2/20.9	4.1/10.5	600/2700	150/675
XX0181C1Z-TSET	18	0.540	13.72	0.060	1.520	119	177	8.6/21.9	4.3/11.0	600/2700	150/675
XX0241C1Z-TSET	24	0.620	15.57	0.060	1.520	191	284	9.9/25.2	5.0/12.6	600/2700	150/675
XX0361C1Z-TSET	36	0.708	17.98	0.060	1.520	200	298	11.3/28.8	5.7/14.4	600/2700	150/675
XX0481C1Z-TSET	48	0.809	20.55	0.060	1.520	260	387	12.9/32.9	6.5/16.4	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	4.50	4.50
1300nm	N/A	2.00	2.00
1310nm	2.00	N/A	N/A
1550nm	2.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi





Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable**  
**Armored & Sheathed, Thermoset, 2-48 Fibers**  
ABS Type Approval (RQS)



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

### 3. Binder Tape:

- Helically applied water-swellable SAP

### 4. Aramid Yarn:

- Contra-helically applied and wrapped with .001" polyester binder tape

### 5. Inner Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black or White

### 6. Bronze Armor:

- Bronze braid, 88% minimum coverage

### 7. Outer Sheath:

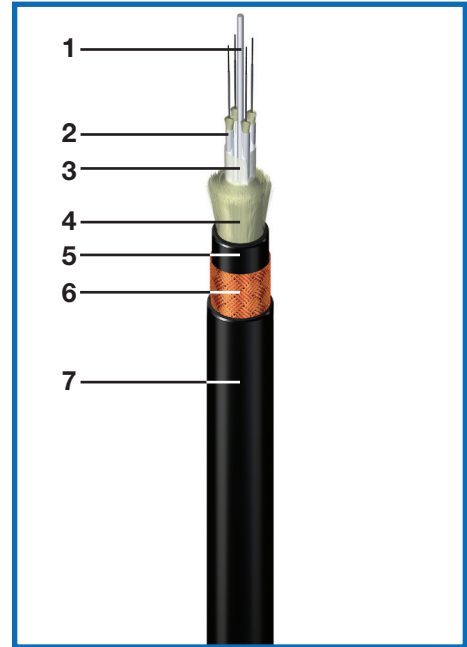
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoset Polyolefin – Black

## Applications:

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Braided bronze armor for increased mechanical protection
- LSZH thermoset UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

### Fiber:

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
- Torsion..... IEC 60794-1-2-E7
- Kink..... IEC 60794-1-2-E10
- Cable Bend ..... IEC 60794-1-2-E11
- Cold Bend..... IEC 60794-1-2-E11

### Flame/Safety Test:

- Flame ..... IEC 60332-3-22 Cat. A
- Halogen Content.....IEC 60754-1 & -2
- Smoke Density.....IEC 61034-1 & -2
- Acidity.....IEC 60754-2



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen  
Heavy-Duty Breakout Cable



Armored & Sheathed, Thermoset, 2-48 Fibers  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. INNER SHEATH DIAMETER		NOM. OUTER SHEATH DIAMETER		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-ATSET	2	0.320	8.13	0.490	12.45	172	256	7.3/18.5	3.6/9.2	200/900	50/225
XX0041C1Z-ATSET	4	0.320	8.13	0.490	12.45	172	256	7.3/18.5	3.6/9.2	200/900	50/225
XX0061C1Z-ATSET	6	0.355	9.02	0.510	12.95	197	293	8.2/20.7	4.1/10.4	200/900	50/225
XX0081C1Z-ATSET	8	0.405	10.29	0.560	14.22	228	340	9.0/22.8	4.5/11.4	600/2700	150/675
XX0101C1Z-ATSET	10	0.435	11.05	0.590	15.00	246	366	9.4/24.0	4.7/12.0	600/2700	150/675
XX0121C1Z-ATSET	12	0.445	11.30	0.620	15.75	264	393	9.9/25.2	5.0/12.7	600/2700	150/675
XX0161C1Z-ATSET	16	0.515	13.08	0.690	17.53	292	435	11.0/28.0	5.5/14.0	600/2700	150/675
XX0181C1Z-ATSET	18	0.540	13.72	0.715	18.16	302	449	11.4/29.1	5.7/14.5	600/2700	150/675
XX0241C1Z-ATSET	24	0.620	15.75	0.795	20.20	390	580	12.7/32.3	6.4/16.3	600/2700	150/675
XX0361C1Z-ATSET	36	0.708	17.98	0.923	23.44	397	591	14.8/37.5	7.4/18.8	600/2700	150/675
XX0481C1Z-ATSET	48	0.809	20.55	1.024	26.01	516	768	16.4/41.6	8.2/20.8	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	4.50	4.50
1300nm	N/A	2.00	2.00
1310nm	2.00	N/A	N/A
1550nm	2.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi

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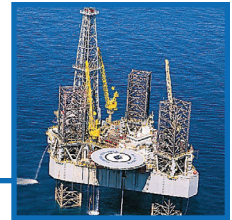
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INS-0092-R0113



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Mud Oil Resistant  
Heavy-Duty Breakout Cable  
Unarmored, 2-48 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

### 3. Binder Tape:

- Helically applied water-swellable SAP

### 4. Aramid Yarn:

- Contra-helically applied and wrapped with .001" polyester binder tape

### 5. Outer Sheath:

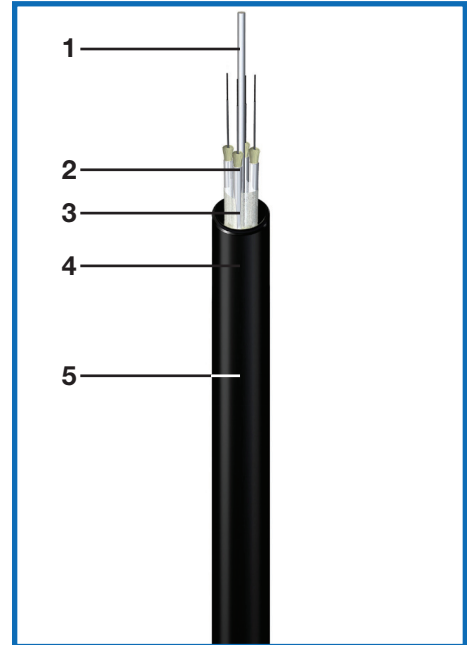
- Black Irradiated Cross-Linked Chlorosulfonated Polyethylene

## Applications:

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Meets NEK 606 Mud Oil Resistant requirements when tested with ester-based muds



## Compliances:

### Fiber:

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact ..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
- Torsion..... IEC 60794-1-2-E7
- Kink ..... IEC 60794-1-2-E10
- Cable Bend ..... IEC 60794-1-2-E11
- Cold Bend..... IEC 60794-1-2-E11

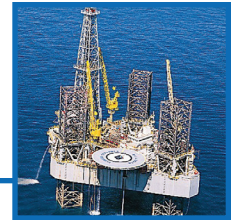
### Flame:

- IEC 60332-3-22 Cat. A



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Mud Oil Resistant  
Heavy-Duty Breakout Cable  
Unarmored, 2-48 Fibers  
ABS Type Approval (RQS)**



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-MOR	2	0.300	7.62	0.050	1.270	37	55	4.8/12.2	2.4/6.1	200/900	50/225
XX0041C1Z-MOR	4	0.300	7.62	0.050	1.270	40	59	4.8/12.2	2.4/6.1	200/900	50/225
XX0061C1Z-MOR	6	0.355	9.02	0.050	1.270	55	82	5.7/14.4	2.8/7.2	200/900	50/225
XX0081C1Z-MOR	8	0.405	10.28	0.050	1.270	80	119	6.5/16.5	3.2/8.2	600/2700	150/675
XX0101C1Z-MOR	10	0.435	11.05	0.050	1.270	95	142	7.0/17.7	3.5/8.8	600/2700	150/675
XX0121C1Z-MOR	12	0.445	11.30	0.060	1.520	95	142	7.2/18.1	3.6/9.0	600/2700	150/675
XX0161C1Z-MOR	16	0.515	13.60	0.060	1.520	107	160	8.2/20.9	4.1/10.5	600/2700	150/675
XX0181C1Z-MOR	18	0.540	13.72	0.060	1.520	110	163	8.6/21.9	4.3/11.0	600/2700	150/675
XX0241C1Z-MOR	24	0.620	15.75	0.060	1.520	180	267	9.9/25.2	5.0/12.6	600/2700	150/675
XX0361C1Z-MOR	36	0.708	17.98	0.060	1.520	200	298	11.3/28.8	5.7/14.4	600/2700	150/675
XX0481C1Z-MOR	48	0.809	20.55	0.060	1.520	260	387	12.9/32.9	6.5/16.4	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	4.50	4.50
1300nm	N/A	2.00	2.00
1310nm	2.00	N/A	N/A
1550nm	2.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE<sup>®</sup> Fiber Optic Communication Cables



**Mud Oil Resistant  
Heavy-Duty Breakout Cable  
Armored & Sheathed, 2-48 Fibers  
ABS Type Approval (RQS)**



## Product Construction:

### 1. Central Strength Member:

- Epoxy glass rod

### 2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: White–numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0 mm) nom. diameter

### 3. Binder Tape:

- Helically applied water-swellable SAP

### 4. Aramid Yarn:

- Contra-helically applied and wrapped with .001" polyester binder tape

### 5. Inner Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black or White

### 6. Bronze Armor:

- Bronze braid, 88% minimum coverage

### 7. Outer Sheath:

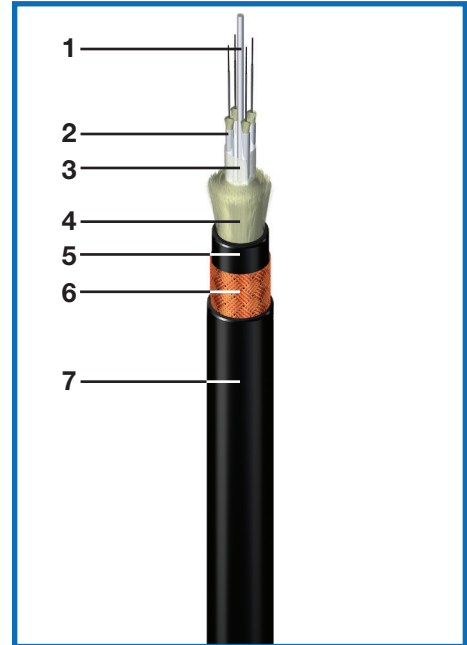
- Black Irradiated Cross-Linked Chlorosulfonated Polyethylene

## Applications:

- On offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

## Features:

- Breakout style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Braided bronze armor for increased mechanical protection
- Meets NEK 606 Mud Oil Resistant requirements when tested with ester-based muds
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area



## Compliances:

### Fiber:

- Temp. Cycling..... IEC 60794-1-2-F1
- Tensile Strength ....IEC 60794-1-2-E1A
- Crush..... IEC 60794-1-2-E3
- Impact..... IEC 60794-1-2-E4
- Repeated Bending... IEC 60794-1-2-E6
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- Cable Bend..... IEC 60794-1-2-E11
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### Flame:

- IEC 60332-3-22 Cat. A



Onshore, Offshore  
and Marine Shipboard  
Cables

# COMMODORE® Fiber Optic Communication Cables



**Mud Oil Resistant**  
**Heavy-Duty Breakout Cable**  
**Armored & Sheathed, 2-48 Fibers**  
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. INNER SHEATH DIAMETER		NOM. OUTER SHEATH DIAMETER		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-AMOR	2	0.320	8.13	0.490	12.45	162	241	7.3/18.5	3.6/9.2	200/900	50/225
XX0041C1Z-AMOR	4	0.320	8.13	0.490	12.45	162	241	7.3/18.5	3.6/9.2	200/900	50/225
XX0061C1Z-AMOR	6	0.355	9.02	0.510	12.95	185	275	8.2/20.7	4.1/10.4	200/900	50/225
XX0081C1Z-AMOR	8	0.405	10.29	0.560	14.22	215	320	9.0/22.8	4.5/11.4	600/2700	150/675
XX0101C1Z-AMOR	10	0.435	11.05	0.590	15.00	232	345	9.4/24.0	4.7/12.0	600/2700	150/675
XX0121C1Z-AMOR	12	0.445	11.30	0.620	15.75	245	365	9.9/25.2	5.0/12.7	600/2700	150/675
XX0161C1Z-AMOR	16	0.515	13.08	0.690	17.53	272	405	11.0/28.0	5.5/14.0	600/2700	150/675
XX0181C1Z-AMOR	18	0.540	13.72	0.715	18.16	280	417	11.4/29.1	5.7/14.5	600/2700	150/675
XX0241C1Z-AMOR	24	0.620	15.75	0.795	20.20	365	545	12.7/32.3	6.4/16.3	600/2700	150/675
XX0361C1Z-AMOR	36	0.708	17.98	0.923	23.44	397	591	14.8/37.5	7.4/18.8	600/2700	150/675
XX0481C1Z-AMOR	48	0.809	20.55	1.024	26.01	516	768	16.4/41.6	8.2/20.8	600/2700	150/675

\* XX Denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
<b>FIBER CHARACTERISTICS</b>			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	242 ± 5µm	242 ± 5µm	242 ± 5µm
Core Non-circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-circularity	≤0.7%	≤1.0%	≤1.0%
Core-clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
<b>ATTENUATION dB/km Max</b>			
850nm	N/A	4.50	4.50
1300nm	N/A	2.00	2.00
1310nm	2.00	N/A	N/A
1550nm	2.00	N/A	N/A
<b>BANDWIDTH MHz • km</b>			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi





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