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

JANUARY 2013
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 world’s 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.
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.*
### 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 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: Z016P0022189 .......................................................... 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 Ω One Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO22P0011203 .......................................................... 38

### 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
- Heavy-Duty Thermoset Breakout Cable, Unarmored, Low-Smoke, Zero-Halogen — ABS Type Approval .................. 54
- Heavy-Duty Thermoset Breakout Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — ABS Type Approval ........ 56
- Mud Oil Resistant, Heavy-Duty Breakout Cable, Unarmored — ABS Type Approval ........................................ 58
- Mud Oil Resistant, Heavy-Duty Breakout Cable, Armored & Sheathed — ABS Type Approval ............................ 60
- Catalog Number Index ................................................................................................................................................. 62
# Table of Contents

**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: LO24P0048070.... 10
- RS485 120 V Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: EO24P0022188 .......................... 12
- RS422 100 V Two Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED24P00022186 .................................................... 14
- RS422 100 V Four Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED24P00042186 .................................................... 16
- RS422 100 V Eight Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED24P00082186 .................................................... 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: ED18P0015337 .................................................... 32
- Fieldbus Two Pair Cable, Individually/Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED18P0025337 .................................................... 34
- Fieldbus Five Pair Cable, Individually/Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED18P0055337 .................................................... 36
- Profibus 150 V One Pair Cable, Overall Shielded, Armored & Sheathed, Low-Smoke, Zero-Halogen — Catalog number: ED22P0011203 .................................................... 38

---

**General Cable**
Phone (800) 424-5666 • Int’l Phone +1 859 572 8000
www.generalcable.com

**ONSHORE, OFFSHORE AND MARINE SHIPBOARD CABLES**
Phone (800) 424-5666 • Int’l Phone +1 859 572 8000
www.generalcable.com

**COMMODORE®**
Copper Communication Cables—ABS Type Approved, ETL Confirmed

- FLAME-RETARDANT
- LOW SMOKE EMISSION
- LOW TOXICITY
- LOW CORROSIVE FUME EMISSION
- MECHANICAL RESISTANCE
- OIL RESISTANT
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
     P2: White/Orange, Orange
     P3: White/Green, Green
     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** XXXXXXX***
     *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)
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.

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

Catalog number: LO24P0045170X
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**
     XXXXXXX***
     *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)
Low-Smoke, Zero-Halogen
Category 6 UTP Cable
Unarmed
ABS Type Approved, ETL Confirmed

**Electrical Characteristics:**
DC Resistance: 9.38 Ω/100 m (28.6 Ω/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 Ω ± 15 Ω (1-250 MHz)
Input Impedance: 100 Ω ± 15 Ω (1-100 MHz)
100 Ω ± 22 Ω (>100-200 MHz)
100 Ω ± 32 Ω (>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.

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

Catalog number: LO23P0047075
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-24634B
• 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)
Low-Smoke, Zero-Halogen
Category 6 UTP Cable,
Armored & Sheathed
ABS Type Approved, ETL Confirmed

Electrical Characteristics:
DC Resistance: 9.38 Ω/100m (28.6 Ω/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 Ω ± 15 Ω (1-250 MHz)
Input Impedance: 100 Ω ± 15 Ω (1-100 MHz)
100 Ω ± 22 Ω (>100-200 MHz)
100 Ω ± 32 Ω (>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.

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

Catalog number: L023P0047070
Low-Smoke, Zero-Halogen
Category 7 S/FTP Cable,
Armored & Sheathed
ABS Type Approved, ETL Confirmed

Product Construction:
1. Conductor:
   • 22 AWG solid bare copper: .0253" nom. O.D.
2. Insulation:
   • FHDPE: .062" nom. O.D.
3. Pairs:
   • Two insulated conductors twisted together – varying pair lays
     Color Code:
     P1: White, Blue
     P2: White, Orange
     P3: White, Green
     P4: White, Brown
4. Shields:
   • Each pair is individually shielded with an aluminum/polyester tape
     Overall 36 AWG tinned copper braid, 60% nom. coverage
     24 AWG solid tinned copper drain wire
5. Inner Sheath:
   • Flame-retardant Low-Smoke, Zero-Halogen Polyolefin — Black: .342" nom. O.D.
6. Armor:
   • 28 AWG bronze braid, 88% min. coverage
7. Outer Sheath:
   • Low-Smoke, Zero-Halogen Polyolefin, .045" nom. wall,
     Black: .487" nom. O.D. — optional jacket colors available
8. Print:
   • GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 4 PR
     22 AWG S/FTP CAT7 PAT 5767441 IEC 60332-3-22 CAT A AAAAA* MO/
     YR** XXXXXXX***
     *Order Number   **Date     ***Footage Markings every 2 ft
9. Cable Weight:
   • 170 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: IEC 11801

Third-Party Testing:
ETL has tested and confirmed that
this product complies with the above
specifications (report number 3116259CRT-009)
Low-Smoke, Zero-Halogen
Category 7 S/FTP Cable,
Armored & Sheathed
ABS Type Approved, ETL Confirmed

Electrical Characteristics:
DC Resistance: 6.56 Ω/100m (20 Ω/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 Ω ± 15 Ω (1-300 MHz)
100 Ω ± 22 Ω (>100-200 MHz)
100 Ω ± 25 Ω (>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.

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

Catalog number: LO22P0048070
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** XXXXXXX***
    *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)
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: EO24P0022188
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® LSZH ARMORED MARINE CABLE 2 PR 24 AWG 100 OHM RS422 IEC 60332-3-22 CAT A AAAAA* MO/YR** XXXXXXX***
   - *Order Number **Date ***Footage Markings every 2 ft
10. Cable Weight:
    - 95 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)
Low-Smoke, Zero-Halogen, 100 Ω RS422 Network Cable, Two Pair Overall Shielded, Armored & Sheathed ABS Type Approved, ETL Confirmed

**Electrical Characteristics**

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

Catalog number: EO24P0022186
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
     - P2: White, Orange
     - P3: White, Green
     - 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)
Low-Smoke, Zero-Halogen, 100 Ω RS422 Network Cable, Four Pair Overall Shielded, Armored & Sheathed ABS Type Approved, ETL Confirmed

**Electrical Characteristics**
Conductor DCR: 25.7 Ω/kft nom.
Mutual Capacitance: 13.5 pF/ft nom.
Impedance: 100 ± 10 Ω
Velocity of Propagation: 76% nom.
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: E024P0042186
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
     P2: White, Orange
     P3: White, Green
     P4: White, Brown
     P5: White, Gray
     P6: Red, Blue
     P7: Red, Orange
     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** XXXXXXX***
   - *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)
Low-Smoke, Zero-Halogen, 100 Ω RS422 Network Cable, Eight Pair Overall Shielded, Armored & Sheathed ABS Type Approved, ETL Confirmed

**Electrical Characteristics**
- Conductor DCR: 25.7 Ω/kft nom.
- Mutual Capacitance: 13.5 pF/ft nom.
- Impedance: 100 ± 10 Ω
- Velocity of Propagation: 76% nom.
- Temperature & Voltage Rating: -30°C to +75°C/300 V Max.

Catalog number: EO24P0082186
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
   a. Conductor:
      • 16 AWG 19/.0117 tinned copper: .056” nom. O.D.
   b. Insulation:
      • Low-Smoke, Zero-Halogen Polyolefin, .022” nom. wall: .100” nom. O.D.
   c. Color Code:
      • C1: Red  C2: Black
   d. Shield:
      • Aluminum/Polyester tape 25% overlap 100% coverage (aluminum side out)
2. 1 Pair 18 AWG Shielded
   a. Conductor:
      • 18 AWG 19/30 tinned copper: .049” nom. O.D.
   b. Insulation:
      • Foam Polyolefin, .053” nom. wall: .155” nom. O.D.
   c. Color Code:
      • C1: Blue  C2: White
   d. Shield:
      • Aluminum/Polyester tape 25% overlap 100% coverage (aluminum side out)

3. Final Assembly 2 Pairs Cabled Left-Hand Lay
   a. Drain Wire:
      • 16 AWG 19/29 tinned copper
   b. Overall Shield:
      • 36 AWG tinned copper, 65% min. coverage
   c. 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 AAAA* MO/ YR** XXXX***
   *Order Number  **Date  ***Footage Markings every 2 ft

5. 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

Third-Party Testing:
ETL has tested and confirmed that this product complies with the above specifications (report number 3316259CRT-004)
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.):
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**
     XXXXXXX***
   *Order Number  **Date  ***Footage Markings every 2 ft
8. Cable Weight:
   • 140 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-001)
Low-Smoke, Zero-Halogen
RG-6/U Type Coax
Armored & Sheathed
ABS Type Approved, ETL Confirmed

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

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

Catalog number: CO18C0012170
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.

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-001)
Low-Smoke, Zero-Halogen
RG-11/U Type Coax
Armored & Sheathed
ABS Type Approved, ETL Confirmed

**Electrical Characteristics:**
- Impedance: 75 Ω ± 5 Ω
- Capacitance: 16.3 pF/ft nom.
- Velocity of Propagation: 83% nom.
- Conductor DCR: 2.58 Ω/kft nom.
- Shield DCR: 3.70 Ω/kft nom.
- Inductance: 0.097 µH/ft
- Time Delay: 1.22 ns/ft
- Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.

**Attenuation (Nom.):**

<table>
<thead>
<tr>
<th>FREQ. (MHz)</th>
<th>dB/100 FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>0.15</td>
</tr>
<tr>
<td>100.0</td>
<td>1.38</td>
</tr>
<tr>
<td>270.0</td>
<td>2.31</td>
</tr>
<tr>
<td>540.0</td>
<td>3.29</td>
</tr>
<tr>
<td>750.0</td>
<td>3.89</td>
</tr>
<tr>
<td>1000.0</td>
<td>4.52</td>
</tr>
<tr>
<td>2000.0</td>
<td>6.65</td>
</tr>
<tr>
<td>3000.0</td>
<td>8.10</td>
</tr>
</tbody>
</table>

Catalog number: CO14C0012170
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 AAAAA* MO/YR**
     XXXXXXX***
   *Order Number **Date ***Footage Markings every 2 ft
8. **Cable Weight:**
   • 100 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)
Copper Communication Cables

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

**Electrical Characteristics:**
- Impedance: 50 Ω ± 3 Ω
- Capacitance: 30.8 pF/ft nom.
- Velocity of Propagation: 66% nom.
- Conductor DCR: 10.8 Ω/kft nom.
- Inductance: 0.075 µH/ft
- Time Delay: 1.51 ns/ft
- Temperature & Voltage Ratings: -30°C to +75°C/300 V Max.
- Attenuation (Nom.):

<table>
<thead>
<tr>
<th>FREQ. (MHz)</th>
<th>dB/100 FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>5</td>
<td>1.1</td>
</tr>
<tr>
<td>10</td>
<td>1.6</td>
</tr>
<tr>
<td>20</td>
<td>2.3</td>
</tr>
<tr>
<td>50</td>
<td>3.5</td>
</tr>
<tr>
<td>100</td>
<td>4.8</td>
</tr>
<tr>
<td>200</td>
<td>6.8</td>
</tr>
<tr>
<td>400</td>
<td>10.0</td>
</tr>
<tr>
<td>700</td>
<td>14.2</td>
</tr>
<tr>
<td>900</td>
<td>16.5</td>
</tr>
<tr>
<td>1000</td>
<td>17.7</td>
</tr>
</tbody>
</table>

Catalog number: CO21C0012170
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® LSZH ARMORED MARINE CABLE
     20 AWG RG-59/U TYPE COAX IEC 60332-3-22 CAT A AAAAA* MO/YR**
     XXXXXXX***
   *Order Number **Date ***Footage Markings every 2 ft
8. Cable Weight
   • 119 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-001)
Low-Smoke, Zero-Halogen
RG-59/U Type Coax
Armored & Sheathed
ABS Type Approved, ETL Confirmed

Electrical Characteristics:
Impedance: 75 \( \pm 5 \) \( \Omega \)
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.):

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

Catalog number: CO20C0012170
**COMMODORE®**

**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® LSZH ARMORED MARINE CABLE 13
     AWG RG-213/U TYPE COAX IEC 60332-3-22 CAT A AAAAA* MO/YR**
     XXXXXXX***
     *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)
Low-Smoke, Zero-Halogen
RG-213/U Type Coax
Armored & Sheathed
ABS Type Approved, ETL Confirmed

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

<table>
<thead>
<tr>
<th>FREQ. (MHz)</th>
<th>dB/100 FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>0.66</td>
</tr>
<tr>
<td>50.0</td>
<td>1.20</td>
</tr>
<tr>
<td>100.0</td>
<td>2.30</td>
</tr>
<tr>
<td>200.0</td>
<td>3.20</td>
</tr>
<tr>
<td>400.0</td>
<td>4.60</td>
</tr>
<tr>
<td>1000.0</td>
<td>9.00</td>
</tr>
</tbody>
</table>

Catalog number: CO13C0012170
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** XXXXXXX***
     *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)
Low-Smoke, Zero-Halogen Fieldbus Cable
One Pair, Overall Shielded
Armored & Sheathed
ABS Type Approved, ETL Confirmed

**Electrical Characteristics**
Conductor DCR: 6.5 Ω/kft nom.
Mutual Capacitance: 13.0 pF/ft nom.
Impedance: 100 ± 20 Ω
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.
Pull Tensions: 1250 N

Catalog number: EO18P0015337
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/PR** XXXXX***
    *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)
Low-Smoke, Zero-Halogen Fieldbus Cable
Two Pair Individually/Overall Shielded
Armored & Sheathed
ABS Type Approved, ETL Confirmed

Electrical Characteristics
Conductor DCR: 6.5 Ω/kft nom.
Mutual Capacitance: 13.0 pF/ft nom.
Impedance: 100 ± 20 Ω
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.
Pull Tension: 2570 N

Catalog number: EO18P0025337
Low-Smoke, Zero-Halogen Fieldbus Cable
Five 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
     P3: White, Green
     P4: White, Brown
     P5: White, Gray
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: .655" 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: .800" nom. O.D.
10. Print:
    • GENERAL CABLE (F) COMMODORE® LSZH ARMORED MARINE CABLE 5 PR
        18 AWG 100 OHM FIELDBUS IEC 60332-3-22 CAT A AAAAA* MO/YR**
        XXXXXXX***
    *Order Number  **Date  ***Footage Markings every 2 ft
11. Cable Weight:
    • 340 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)
Low-Smoke, Zero-Halogen Fieldbus Cable
Five Pair, Individually/Overall Shielded
Armored & Sheathed
ABS Type Approved, ETL Confirmed

**Electrical Characteristics**
Conductor DCR: 6.5 Ω/kft nom.
Mutual Capacitance: 13.0 pF/ft nom.
Impedance: 100 ± 20 Ω
Temperature & Voltage Rating: -30°C to +75°C/300 V Max.
Pull Tension: 4000 N

Catalog number: EO18P0055337
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**
    XXXXXXX***
    *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)
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.):

<table>
<thead>
<tr>
<th>FREQ. (MHz)</th>
<th>dB/100 FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>0.27</td>
</tr>
<tr>
<td>4.0</td>
<td>0.67</td>
</tr>
<tr>
<td>16.0</td>
<td>1.37</td>
</tr>
<tr>
<td>100.0</td>
<td>3.75</td>
</tr>
<tr>
<td>300.0</td>
<td>6.52</td>
</tr>
</tbody>
</table>

Catalog number: EO22P0011203
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
- Heavy-Duty Thermoset Breakout Cable, Unarmored, Low-Smoke, Zero-Halogen — ABS Type Approval .......................... 54
- Heavy-Duty Thermoset Breakout Cable, Armored & Sheathed, Low-Smoke, Zero-Halogen — ABS Type Approval .......................... 56
- Mud Oil Resistant, Heavy-Duty Breakout Cable, Unarmored — ABS Type Approval ........................................ 58
- Mud Oil Resistant, Heavy-Duty Breakout Cable, Armored & Sheathed — ABS Type Approval ........................................ 60

FLAME-RETARDANT
FIRE-RESISTANT
LOW SMOKE EMISSION
LOW CORROSIVE FUME EMISSION
INCREASED FLEXIBILITY
MECHANICAL RESISTANCE
OIL RESISTANT
MUD OIL RESISTANT
HEAVY-DUTY
WEATHERING-RESISTANT
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)
Low-Smoke, Zero-Halogen Lite-Duty Breakout Cable
Low-Smoke, Zero-Halogen Lite-Duty Breakout Cable
Unarmored, Thermoplastic, 2-24 Fibers
ABS Type Approval (RQS)

Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIBER CHARACTERISTICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± 0.4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± 0.7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-Circularity</td>
<td>N/A</td>
<td>≤0.5%</td>
<td>≤0.5%</td>
</tr>
<tr>
<td>Coating Cladding Concentration</td>
<td>≤12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-Clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>ATTENUATION dB/km Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1310nm</td>
<td>1.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1550nm</td>
<td>1.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>220</td>
<td>700</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>

*XX denotes fiber type. See Fiber Selection Guide.
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…OFCR, 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)
# Fiber Optic Communication Cables

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

**Armored & Sheathed, Thermoplastic, 2-24 Fibers**

**ABS Type Approval (RQS)**

<table>
<thead>
<tr>
<th>CATALOG NUMBER*</th>
<th>FIBER COUNT</th>
<th>NOM. OUTER SHEATH DIAMETER</th>
<th>NOM. OUTER SHEATH THICKNESS</th>
<th>MAXIMUM WEIGHT</th>
<th>MINIMUM BEND RADIUS</th>
<th>MAXIMUM TENSILE LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INCHES</td>
<td>mm</td>
<td>INCHES</td>
<td>mm</td>
<td>LBS/1000 FT</td>
<td>kg/km</td>
</tr>
<tr>
<td>XX0021C1Z-ATPL</td>
<td>2</td>
<td>0.434</td>
<td>11.00</td>
<td>0.045</td>
<td>1.14</td>
<td>137</td>
</tr>
<tr>
<td>XX0041C1Z-ATPL</td>
<td>4</td>
<td>0.434</td>
<td>11.00</td>
<td>0.045</td>
<td>1.14</td>
<td>137</td>
</tr>
<tr>
<td>XX0061C1Z-ATPL</td>
<td>6</td>
<td>0.480</td>
<td>12.20</td>
<td>0.045</td>
<td>1.14</td>
<td>190</td>
</tr>
<tr>
<td>XX0081C1Z-ATPL</td>
<td>8</td>
<td>0.529</td>
<td>13.40</td>
<td>0.045</td>
<td>1.14</td>
<td>214</td>
</tr>
<tr>
<td>XX0101C1Z-ATPL</td>
<td>10</td>
<td>0.578</td>
<td>14.70</td>
<td>0.045</td>
<td>1.14</td>
<td>250</td>
</tr>
<tr>
<td>XX0121C1Z-ATPL</td>
<td>12</td>
<td>0.628</td>
<td>15.90</td>
<td>0.045</td>
<td>1.14</td>
<td>279</td>
</tr>
<tr>
<td>XX0181C1Z-ATPL</td>
<td>18</td>
<td>0.661</td>
<td>16.80</td>
<td>0.050</td>
<td>1.27</td>
<td>309</td>
</tr>
<tr>
<td>XX0241C1Z-ATPL</td>
<td>24</td>
<td>0.731</td>
<td>18.60</td>
<td>0.050</td>
<td>1.27</td>
<td>341</td>
</tr>
</tbody>
</table>

* XX denotes fiber type. See Fiber Selection Guide.

## Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-Circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-Clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
</tbody>
</table>

**ATTENUATION dB/km Max**

- 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

**BANDWIDTH MHz • km**

- 850nm: N/A, 220, 700
- 1300nm: N/A, 500, 500

**Dispersion**

- ≤18.0 ps/nm – km @ 1550: N/A, N/A, N/A

**Proof Test**

- > or = 100 kpsi

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-Circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-Clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
</tbody>
</table>

**ATTENUATION dB/km Max**

- 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

**BANDWIDTH MHz • km**

- 850nm: N/A, 220, 700
- 1300nm: N/A, 500, 500

**Dispersion**

- ≤18.0 ps/nm – km @ 1550: N/A, N/A, N/A

**Proof Test**

- > or = 100 kpsi
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)
Fiber Optic Communication Cables

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

<table>
<thead>
<tr>
<th>CATALOG NUMBER*</th>
<th>FIBER COUNT</th>
<th>NOM. OUTER SHEATH DIAMETER</th>
<th>NOM. OUTER SHEATH THICKNESS</th>
<th>MAXIMUM WEIGHT</th>
<th>INSTALLATION BEND RADIUS</th>
<th>MINIMUM TENSILE LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES</td>
<td>mm</td>
<td>INCHES</td>
<td>mm</td>
<td>LBS/1000 FT</td>
</tr>
<tr>
<td>XX0024M1Z-TPL</td>
<td>2</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0044M1Z-TPL</td>
<td>4</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0064M1Z-TPL</td>
<td>6</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0084M1Z-TPL</td>
<td>8</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0104M1Z-TPL</td>
<td>10</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0124M1Z-TPL</td>
<td>12</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0184M1Z-TPL</td>
<td>18</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0244M1Z-TPL</td>
<td>24</td>
<td>0.360</td>
<td>9</td>
<td>0.060</td>
<td>1.52</td>
<td>59</td>
</tr>
<tr>
<td>XX0364M1Z-TPL</td>
<td>36</td>
<td>0.380</td>
<td>10</td>
<td>0.060</td>
<td>1.52</td>
<td>66</td>
</tr>
<tr>
<td>XX0484M1Z-TPL</td>
<td>48</td>
<td>0.410</td>
<td>10</td>
<td>0.060</td>
<td>1.52</td>
<td>74</td>
</tr>
</tbody>
</table>

* XX denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER CHARACTERISTICS</th>
<th>AQ FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-Circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-Clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>ATTENUATION dB/km Max</td>
<td></td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1310nm</td>
<td>0.40</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1550nm</td>
<td>0.30</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td></td>
<td>220</td>
<td>700</td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>
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)
**Low-Smoke, Zero-Halogen Lite-Duty Loose Tube Cable**

Armored & Sheathed, Thermoplastic, 2-48 Fibers

ABS Type Approval (RQS)

<table>
<thead>
<tr>
<th>CATALOG NUMBER*</th>
<th>FIBER COUNT</th>
<th>NOM. OUTER SHEATH DIAMETER</th>
<th>NOM. OUTER SHEATH THICKNESS</th>
<th>MAXIMUM WEIGHT</th>
<th>INSTALLATION IN-SERVICE</th>
<th>INSTALLATION IN-SERVICE</th>
<th>INSTALLATION LBS/N</th>
<th>IN-SERVICE LBS/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX0024M1Z-ATPL</td>
<td>2</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0044M1Z-ATPL</td>
<td>4</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0064M1Z-ATPL</td>
<td>6</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0084M1Z-ATPL</td>
<td>8</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0104M1Z-ATPL</td>
<td>10</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0124M1Z-ATPL</td>
<td>12</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0184M1Z-ATPL</td>
<td>18</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0244M1Z-ATPL</td>
<td>24</td>
<td>0.450 11.00</td>
<td>0.060 1.52</td>
<td>102 152</td>
<td>9.0/22.0 4.5/11.0</td>
<td>9.0/22.0 4.5/11.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0364M1Z-ATPL</td>
<td>36</td>
<td>0.470 12.00</td>
<td>0.060 1.52</td>
<td>115 171</td>
<td>9.0/24.0 4.7/12.0</td>
<td>9.0/24.0 4.7/12.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
<tr>
<td>XX0484M1Z-ATPL</td>
<td>48</td>
<td>0.540 13.00</td>
<td>0.060 1.52</td>
<td>120 179</td>
<td>11.0/26.0 5.4/13.0</td>
<td>11.0/26.0 5.4/13.0</td>
<td>600/2700</td>
<td>150/675</td>
</tr>
</tbody>
</table>

* XX denotes fiber type. See Fiber Selection Guide.

**Fiber Selection Guide**

<table>
<thead>
<tr>
<th>FIBER CHARACTERISTICS</th>
<th>AQ FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode Field Diameter</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>8.3µm nominal</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-Circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-Clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>ATTENUATION dB/km Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1310nm</td>
<td>0.40</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1550nm</td>
<td>0.30</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>220</td>
<td>700</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>
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)
Low-Smoke, Zero-Halogen Heavy-Duty Breakout Cable
Unarmored, Thermoplastic, 2-48 Fibers
ABS Type Approval (RQS)

<table>
<thead>
<tr>
<th>CATALOG NUMBER</th>
<th>FIBER COUNT</th>
<th>NOM. OUTER SHEATH DIAMETER</th>
<th>NOM. OUTER SHEATH THICKNESS</th>
<th>MAXIMUM WEIGHT</th>
<th>MINIMUM BEND RADIUS</th>
<th>MAXIMUM TENSILE LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INCHES</td>
<td>mm</td>
<td>LBS/1000 FT</td>
<td>IN-SERVICE INCHES/cm</td>
<td>IN-SERVICE INCHES/cm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>KG/KM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INSTALLATION</td>
<td>INSTALLATION LBS/N</td>
<td>INSTALLATION LBS/N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IN-SERVICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LBS/N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Cladding Con.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-clad Con.</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
</tbody>
</table>

ATTENUATION dB/km Max

| 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                           |

BANDWIDTH MHz • km

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

### Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER CHARACTERISTICS</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode Field Diameter</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>9.2 ± 0.4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>125 ± 0.7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>≤5%</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>ATTENUATION dB/km Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1310nm</td>
<td>1.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1550nm</td>
<td>1.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td></td>
<td>220</td>
<td>N/A</td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>700</td>
<td>N/A</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>500</td>
<td>N/A</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>

* XX Denotes fiber type. See Fiber Selection Guide.
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: 0.078* (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
### Fiber Optic Communication Cables

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

Unarmored, Thermoset, 2-48 Fibers

ABS Type Approval (RQS)

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

*XX Denotes fiber type. See Fiber Selection Guide.

### Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FIBER CHARACTERISTICS</th>
<th>Matched Clad</th>
<th>Graded Index</th>
<th>Graded Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>245 ± 5µm</td>
<td>245 ± 5µm</td>
<td>245 ± 5µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>core-clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATTENUATION dB/km Max</th>
<th>850nm</th>
<th>1300nm</th>
<th>1310nm</th>
<th>1550nm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>N/A</td>
<td>N/A</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>N/A</td>
<td>N/A</td>
<td>2.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BANDWIDTH MHz • km</th>
<th>850nm</th>
<th>1300nm</th>
<th>Dispersion</th>
<th>Proof Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>220</td>
<td>≤18.0 ps/nm - km @ 1550</td>
<td>&gt; or = 100 kpsi</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>N/A</td>
<td>N/A</td>
<td>&gt; or = 100 kpsi</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>N/A</td>
<td>N/A</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>

*XX Denotes fiber type. See Fiber Selection Guide.
Low-Smoke, Zero-Halogen
Heavy-Duty Breakout Cable
Armored & Sheathed, Thermost, 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: 0.078” (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
Low-Smoke, Zero-Halogen
Heavy-Duty Breakout Cable
Armored & Sheathed, Thermoset, 2-48 Fibers
ABS Type Approval (RQS)

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

* XX Denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER TYPE</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>245 ± 5µm</td>
<td>245 ± 5µm</td>
<td>245 ± 5µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>ATTENUATION dB/km Max</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>4.50</td>
<td>4.50</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>1310nm</td>
<td>2.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1550nm</td>
<td>2.00</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>850nm</td>
<td>N/A</td>
<td>220</td>
<td>700</td>
</tr>
<tr>
<td>1300nm</td>
<td>N/A</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>
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
Mud Oil Resistant Heavy-Duty Breakout Cable
Unarmored, 2-48 Fibers
ABS Type Approval (RQS)

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

* XX Denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

<table>
<thead>
<tr>
<th>FIBER CHARACTERISTICS</th>
<th>AP FIBER TYPE SINGLEMODE</th>
<th>CG FIBER TYPE MULTIMODE 62.5/125</th>
<th>BI FIBER TYPE MULTIMODE 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± 4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
</tbody>
</table>

ATTENUATION dB/km Max

| 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                            |

BANDWIDTH MHz • km

| 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                |
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
• 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
## Mud Oil Resistant Heavy-Duty Breakout Cable

**Armored & Sheathed, 2-48 Fibers**

**ABS Type Approval (RQS)**

### Fiber Selection Guide

<table>
<thead>
<tr>
<th>Catalog Number*</th>
<th>Fiber Count</th>
<th>Nom. Inner Sheath Diameter</th>
<th>Nom. Outer Sheath Diameter</th>
<th>Maximum Weight</th>
<th>Minimum Installation Bend Radius</th>
<th>Maximum Installation Tensile Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>INCHES</strong></td>
<td><strong>mm</strong></td>
<td><strong>INCHES</strong></td>
<td><strong>mm</strong></td>
<td><strong>LBS/1000 FT</strong></td>
<td><strong>kg/km</strong></td>
</tr>
<tr>
<td>XX0021C1Z-AMOR</td>
<td>2</td>
<td>0.320</td>
<td>8.13</td>
<td>0.490</td>
<td>12.45</td>
<td>162</td>
</tr>
<tr>
<td>XX0041C1Z-AMOR</td>
<td>4</td>
<td>0.320</td>
<td>8.13</td>
<td>0.490</td>
<td>12.45</td>
<td>162</td>
</tr>
<tr>
<td>XX0061C1Z-AMOR</td>
<td>6</td>
<td>0.355</td>
<td>9.02</td>
<td>0.510</td>
<td>12.95</td>
<td>185</td>
</tr>
<tr>
<td>XX0081C1Z-AMOR</td>
<td>8</td>
<td>0.405</td>
<td>10.29</td>
<td>0.560</td>
<td>14.22</td>
<td>215</td>
</tr>
<tr>
<td>XX0101C1Z-AMOR</td>
<td>10</td>
<td>0.435</td>
<td>11.05</td>
<td>0.590</td>
<td>15.00</td>
<td>232</td>
</tr>
<tr>
<td>XX0121C1Z-AMOR</td>
<td>12</td>
<td>0.445</td>
<td>11.30</td>
<td>0.620</td>
<td>15.75</td>
<td>245</td>
</tr>
<tr>
<td>XX0161C1Z-AMOR</td>
<td>16</td>
<td>0.515</td>
<td>13.08</td>
<td>0.690</td>
<td>17.53</td>
<td>272</td>
</tr>
<tr>
<td>XX0181C1Z-AMOR</td>
<td>18</td>
<td>0.540</td>
<td>13.72</td>
<td>0.715</td>
<td>18.16</td>
<td>280</td>
</tr>
<tr>
<td>XX0241C1Z-AMOR</td>
<td>24</td>
<td>0.620</td>
<td>15.75</td>
<td>0.795</td>
<td>20.20</td>
<td>365</td>
</tr>
<tr>
<td>XX0361C1Z-AMOR</td>
<td>36</td>
<td>0.708</td>
<td>17.98</td>
<td>0.923</td>
<td>23.44</td>
<td>397</td>
</tr>
<tr>
<td>XX0481C1Z-AMOR</td>
<td>48</td>
<td>0.809</td>
<td>20.55</td>
<td>1.024</td>
<td>26.01</td>
<td>516</td>
</tr>
</tbody>
</table>

*XX Denotes fiber type. See Fiber Selection Guide.

### Fiber Selection Guide

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>AP Fiber Type Singlemode</th>
<th>CG Fiber Type Multimode 62.5/125</th>
<th>BI Fiber Type Multimode 50/125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Matched Clad</td>
<td>Graded Index</td>
<td>Graded Index</td>
</tr>
<tr>
<td>Mode Field Diameter</td>
<td>9.2 ± .4 @ 1310nm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Core Diameter</td>
<td>8.3µm nominal</td>
<td>62.5 ± 3µm</td>
<td>50.0 ± 2.5µm</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125 ± .7µm</td>
<td>125 ± 2µm</td>
<td>125 ± 2µm</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
<td>242 ± 5µm</td>
</tr>
<tr>
<td>Core Non-circularity</td>
<td>N/A</td>
<td>≤5%</td>
<td>≤5%</td>
</tr>
<tr>
<td>Coating Cladding Conc.</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
<td>&lt;12µm</td>
</tr>
<tr>
<td>Cladding Non-circularity</td>
<td>≤0.7%</td>
<td>≤1.0%</td>
<td>≤1.0%</td>
</tr>
<tr>
<td>Core-clad Concentricity</td>
<td>≤0.5µm</td>
<td>≤1.5µm</td>
<td>≤1.5µm</td>
</tr>
<tr>
<td>Attenuation dB/km Max</td>
<td>850nm</td>
<td>4.50</td>
<td>4.50</td>
</tr>
<tr>
<td>BANDWIDTH MHz • km</td>
<td>850nm</td>
<td>220</td>
<td>700</td>
</tr>
<tr>
<td>Dispersion</td>
<td>≤18.0 ps/nm – km @ 1550</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Proof Test</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
<td>&gt; or = 100 kpsi</td>
</tr>
</tbody>
</table>

61
<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO13C0012170</td>
<td>31</td>
</tr>
<tr>
<td>CO14C0012170</td>
<td>25</td>
</tr>
<tr>
<td>CO18C0012170</td>
<td>23</td>
</tr>
<tr>
<td>CO20C0012170</td>
<td>29</td>
</tr>
<tr>
<td>CO21C0012170</td>
<td>27</td>
</tr>
<tr>
<td>EO18P0015337</td>
<td>33</td>
</tr>
<tr>
<td>EO18P0025337</td>
<td>35</td>
</tr>
<tr>
<td>EO18P0055337</td>
<td>37</td>
</tr>
<tr>
<td>EO22P0011203</td>
<td>39</td>
</tr>
<tr>
<td>EO24P0022186</td>
<td>15</td>
</tr>
<tr>
<td>EO24P0022188</td>
<td>13</td>
</tr>
<tr>
<td>EO24P0042186</td>
<td>17</td>
</tr>
<tr>
<td>EO24P0082186</td>
<td>19</td>
</tr>
<tr>
<td>LO22P0048070</td>
<td>11</td>
</tr>
<tr>
<td>LO23P0047070</td>
<td>9</td>
</tr>
<tr>
<td>LO23P0047075</td>
<td>7</td>
</tr>
<tr>
<td>LO24P0045170X</td>
<td>5</td>
</tr>
<tr>
<td>XX0021C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0021C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0021C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0021C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0021C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0021C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0021C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0021C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0041C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0041C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0041C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0041C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0041C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0041C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0041C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0041C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0044M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0044M1Z-ATPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0061C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0061C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0061C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0061C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0061C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0061C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0061C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0064M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0064M1Z-ATPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0081C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0081C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0081C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0081C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0081C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0081C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0081C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0081C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0084M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>Catalog Number</td>
<td>Page</td>
</tr>
<tr>
<td>----------------</td>
<td>------</td>
</tr>
<tr>
<td>XX0104M1Z-TPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0121C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0121C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0121C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0121C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0121C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0121C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0121C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0121C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0124M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0124M1Z-TPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0161C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0161C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0161C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0161C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0161C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0161C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0161C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0161C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0181C1Z-AMOR</td>
<td>57</td>
</tr>
<tr>
<td>XX0181C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0181C1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0181C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0181C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0181C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0181C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0181C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0184M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0184M1Z-TPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0184M1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0241C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0241C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0241C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0241C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0241C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0241C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0241C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0241C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0244M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0244M1Z-TPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0244M1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0361C1Z-AMOR</td>
<td>61</td>
</tr>
<tr>
<td>XX0361C1Z-ATP</td>
<td>53</td>
</tr>
<tr>
<td>XX0361C1Z-ATPL</td>
<td>45</td>
</tr>
<tr>
<td>XX0361C1Z-ATSET</td>
<td>57</td>
</tr>
<tr>
<td>XX0361C1Z-MOR</td>
<td>59</td>
</tr>
<tr>
<td>XX0361C1Z-TP</td>
<td>51</td>
</tr>
<tr>
<td>XX0361C1Z-TPL</td>
<td>43</td>
</tr>
<tr>
<td>XX0361C1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>XX0364M1Z-ATPL</td>
<td>49</td>
</tr>
<tr>
<td>XX0364M1Z-TPL</td>
<td>47</td>
</tr>
<tr>
<td>XX0364M1Z-TSET</td>
<td>55</td>
</tr>
<tr>
<td>ZO16P0022189</td>
<td>21</td>
</tr>
</tbody>
</table>

XX0184M1Z-AMOR          | 61   |
XX0184M1Z-ATP            | 53   |
XX0184M1Z-ATPL           | 45   |
XX0184M1Z-ATSET          | 57   |
XX0184M1Z-MOR            | 59   |
XX0184M1Z-TP             | 51   |
XX0184M1Z-TPL            | 43   |
XX0184M1Z-TSET           | 55   |
XX0364M1Z-AMOR           | 61   |
XX0364M1Z-ATP            | 53   |
XX0364M1Z-ATPL           | 45   |
XX0364M1Z-ATSET          | 57   |
XX0364M1Z-MOR            | 59   |
XX0364M1Z-TP             | 51   |
XX0364M1Z-TPL            | 43   |
XX0364M1Z-TSET           | 55   |