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INCAB

One of the leading manufacturers of optical cables worldwide.

WORKING SINCE 2007

12 YEARS

7 519 000 miles of fiber

303 000 miles of cable

IN 2019

1 033 000 miles of fiber

49 000 miles of cable

103 cable designs

GEOGRAPHY

of supply: America, Europe and Asia
"Triple I" by Incab

When presenting Incab we always speak about our "triple I": $I^3 = I \times I \times I$: innovative, intellectual, individual.

**INNOVATIVE**
We choose the most innovative technologies from among all available worldwide and build our products around them.

**INTELLECTUAL**
It is vital to us that our products always contain our maximum intellectual potential.

**INDIVIDUAL**
It is essential to us to address even the smallest details when serving our customers, no matter how large we grow.

We would be very happy to prove our "triple I" to you!

---

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Mike Riddle  
Executive Vice President  
mike.riddle@incabamerica.com

Dan L Berg  
National Sales Director  
dan.berg@incabamerica.com
We design cables based on our customers' specific technical requirements.
Cable for all applications

- OPGW/Ground Wire
- Fire Rated
- Specialty Cable
- InTube
- InDuct
- InGround
- InWater
- InAir Figure 8
- InAir Self-Supporting
- FTTH-Distribution
- FTTH-Subscribers
- FTTH-Drop
- Semi-Finished Product
Support

Support at all stages by consulting our customers on all aspects of optical communication and operation. Full range of services allows Incab to accumulate hands-on knowledge and experience, which is used in the development of new cable designs.

Knowledge Base

- Cable selection
- Accessories selection: splice enclosures, fittings, clamps, connectors, vibration dampers, fixtures
- Transportation, storage and installation guidelines
- Winding cable on the reel, placing reels on the truck

Some materials from the Knowledge Base are available in this catalog, pages 100 to 107.
Our Advanced Cable Engineering System (ACES) is a unique software tool to help engineers select the optimal OPGW design along with the associated accessories, including deadends, suspensions, down leads, splice enclosures and dampers.

ACES OPGW will also help engineers and planners prepare cost estimates, generate a complete bill of materials, determine reel lengths, and plan logistics.

ACES was developed by Incab in partnership with Preformed Line Products, and we very much appreciate their assistance.

ACES ADSS is coming soon!
Look for it on our website incabamerica.com
Quality philosophy

“Quality means doing it right when no one is looking”. Henry Ford

PHILOSOPHY
Quality is in the heart of everything we do. Our quality policy is implemented through:
— 100% step-by-step quality control;
— best in the industry Test Center;
— high-quality materials;
— quality management system certified according to TÜV International Certification;
— declarations for all cable types manufactured by Incab;
— reference letters and certificates provided by federal companies and control authorities;
— software to select the right type of fiber optic cable, the right size of the drums, and the optimal arrangement of drums on trucks and in containers;
— software for aerial cable calculations;
— calculation of power line electromagnetic fields;
— continuous customer feedback.

STEP-BY-STEP QUALITY CONTROL
Quality Control employees carry out stringent control at all stages of the manufacturing process, including:
— incoming control of materials;
— measuring parameters of each optical fiber;
— control of fiber length in the tubes;
— verification of compliance with the design requirements;
— checking resistance and tightness of the jacket (for armored cables);
— control of marking and packaging.

Our line operators control the dimensions of the products throughout the manufacturing process. We use advanced high-precision control and measurement equipment:
— MTP 9000 Optical Reflectometer;
— Yokogawa AQ7260 Optical Time Domain Reflectometer;
— Ando AQ6319 Spectrum Analyzer;
— PK2500 Optical Spectrum Analyzer;
— PK2400 Fiber Geometry System;
— EXFO FTB-400 Universal Test System;
— Zumbach Geometry Testers.

All measurements are recorded and analyzed for further quality improvement.
CERTIFICATES
All HFFR cables have the relevant fire safety certificates. Our Quality Management System is certified to ISO 9001:2008 and TÜV Thüringen.

TEST CENTER
Our Test Center is equipped according to the latest industry standards to conduct type approval and periodic mechanical and environmental resistance tests per IEC 60794-1-2 (water penetration, temperature cycling, high humidity, vibration, stretching, bending, torsion, crush, compression).

FEEDBACK
In order to meet the world’s highest quality standards, we continuously monitor feedback from our customers. For comments and suggestions, please, contact us - support@incabamerica.com
Best Materials

To produce Incab cables, we use the most advanced materials available in the market.

**CORNING® SMF-28® ULTRA**

Advantages:

— Increased equipment efficiency, 10% less fiber attenuation.

— Significantly improved reliability and resistance to installation damage. Ten times higher bend-resistance compared to standard single-mode fibers.

**BOREALIS BIMODAL POLYETHYLENE**

Advantages:

— Low shrinkage and high resistance to temperature changes.

— Installation temperatures down to -22°F.
Best Equipment

CAPACITY:
— 4400 mi of cable per month
— 650 mi of OPGW per month

PRODUCTION EQUIPMENT BY:
Maillefer, Medek&Schorner, Nexans, Photonium, Compotec and other manufacturers.

Optic Fiber Cable:
— coloring lines;
— loose tube lines;
— stranding lines;
— sheathing lines with aramid servers;
— steel wire armoring machines.

OPGW:
— production line for manufacturing stainless steel tubes containing optical fibers;
— pre-cleaning and rewinding line;
— cladding line;
— drawing line;
— stranding lines (planetary type stranding machines).
**Incab Range**

**OPGW/Ground Wire**
- OPGW C
- OPGW CA
- OPGW AP
- OPGW S
- ACS Ground Wire
- Optical Phase Conductor

**OPGW Specialty Cable**

- InTube
  - InTube Micro (Multi-Tube Single Jacket Cable, Reduced Size)
  - InTube Standard Fiberglass (Multi-Tube Single Jacket Cable)
  - InTube Standard Aramid (Multi-Tube Single Jacket Cable)

- InDuct
  - InDuct Standard (Multi-Tube Single Armor Double Jacket Cable)
  - InDuct Standard Double Jacket (Multi-Tube Single Armor Double Jacket Cable, Corrugated Steel Tape)
  - InDuct Light (Uni-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

- InGround
  - InGround Standard (Multi-Tube Single Armor Double Jacket Cable)
  - InGround Standard Dielectric (Multi-Tube Fiberglass Double Jacket Cable)
  - InGround Standard Reinforced (Multi-Tube Double Armor Double Jacket Cable)
  - InGround Standard Reinforced Dielectric (Multi-Tube Double Armor Double Jacket Cable)

- Outdoor Fire Rated
  - InDuct Special (Uni-Tube Galvanized Steel Wires)
  - InDuct Special (Stainless Steel Tube Single Jacket Cable)
  - InDuct Special (Stainless Steel Tube Single Jacket Cable)

- InGround Light
  - InGround Light (Uni-Tube Single Armor Single Jacket Cable)
  - InGround Light (Uni-Tube Single Armor Single Jacket Cable)

- Incab Specialty Cable
  - (Multi-Tube Fiberglass Double Jacket Cable)
InGround Light Reinforced Dielectric
(Uni-Tube Double Armor Single Jacket Cable)

InGround Light Reinforced
(Uni-Tube Double Armor Single Jacket Cable)

InGround Stainless Steel Tube
(Steel Tube Double Armor Single Jacket Cable)

InGround Standard Wetland
(Multi-Tube Single Armor Double Jacket Aluminum and Polymer Tape Cable)

InGround Standard Wetland Reinforced
(Multi-Tube Double Armor Double Jacket Aluminum and Polymer Tape Cable)

InWater

InWater Standard
(Uni-Tube Double Armor Double Jacket Cable)

InWater Stainless Steel Tube
(Steel Tube Double Armor Double Cable)

InAir Figure 8

InAir Figure 8 Standard
(Multi-Tube Single Jacket Cable)

InAir Figure 8 Standard Dielectric
(Multi-Tube Single Jacket Cable)

InAir Figure 8 Light
(Uni-Tube Single Jacket Cable)

InAir Figure 8 Light Dielectric
(Uni-Tube Single Jacket Cable)

InAir Self-Supporting

InAir ADSS Standard Aramid
(Multi-Tube Aramid Double Jacket Cable)

InAir ADSS Standard Fiberglass
(Multi-Tube Fiberglass Double Jacket Cable)

InAir ADSS Light Aramid
(Multi-Tube Aramid Single Jacket Cable)

InAir ADSS Light Fiberglass
(Multi-Tube Fiberglass Single Jacket Cable)

Metallic Aerial Self-Supporting
(MASS)

FTTH-Distribution

Tight-Buffered Riser

Riser with Micro Tubes

Tight-Buffered Distribution

Distribution with Micro Tubes

FTTH-Subscribers

Tight-Buffered Simplex

Tight-Buffered Duplex

FTTH-Drop

Flat Type Drop Reinforced

Round Type Drop Tight-buffer

Round Type Drop
**APPLICATION:**

Protection of power lines from lightning overvoltage  
Construction of optical communication systems

**OPERATION PARAMETERS OPGW/GROUND WIRE**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature range</td>
<td>-76°F...+185°F</td>
</tr>
<tr>
<td>Installation temperature range</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature range</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Min bending radius</td>
<td>20 x cable diameter</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical Requirements. Please, contact us for a cable designed to your exact specifications.
OPGW C

CABLE DESIGN
1. Optical fiber.
2. Stainless steel tube filled with water-blocking gel.
3. Stranded wires (Aluminum-clad Steel wires and/or aluminum alloy wires).
4. Stranded wires (Aluminum-clad Steel wires and/or aluminum alloy wires).

FEATURES OPGW C
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 48</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.134...0.827</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.315...0.709</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>5 620...47 210</td>
</tr>
<tr>
<td>Maximum rated design load, lb</td>
<td>3 372...28 101</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>15 737...35 969</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
OPGW CA

CABLE DESIGN
1. Optic fiber.
3. Stranded wires (Aluminum-clad Steel wires and/or aluminum alloy wires).

FEATURES OPGW CA
Crush — 857 lb/in

<table>
<thead>
<tr>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 96</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>5620 ... 47210</td>
</tr>
<tr>
<td>Tensile strength, lb</td>
<td>3372 ... 28101</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.354 ... 0.709</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.134 ... 0.827</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>15737 ... 35969</td>
</tr>
<tr>
<td>Short current circuit capacity (initial temp 77°F), kA²s</td>
<td>5...300</td>
</tr>
<tr>
<td>Short-circuit current for 1s, kA</td>
<td>3...20</td>
</tr>
</tbody>
</table>

Advantages:
- Up to 96 fibers
- Enhanced corrosion resistance: ACS wires and aluminum-clad stainless steel tube
- Optical groundwire (OPGW) shields high-voltage conductors from lightning strikes
- Aluminum alloy wires provide conductivity for fault current

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
OPGW AP

CABLE DESIGN
1. Central strength member (fiberglass reinforced plastic).
2. Optical fibers.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking tape.
5. Thermal barrier.
6. Aluminum pipe.
7. Aluminum-clad steel wire and/or aluminum alloy wires.

FEATURES OPGW AP

Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 144</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.300...0.900</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.527...1.000</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>10 004 ... 45 000</td>
</tr>
<tr>
<td>Maximum rated design load, lb</td>
<td>6 002 ... 45 000</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>6 962 ... 16 679</td>
</tr>
<tr>
<td>Fault current capacity (initial temperature 77°F, final temperature 392°F)</td>
<td>5...400</td>
</tr>
<tr>
<td>Short-circuit current for 1s, kA</td>
<td>3...30</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
OPGW S

CABLE DESIGN
1. Central strength member (Aluminum-clad Steel or aluminum alloy wire).
2. Optical fiber.
4. Stranded wires (Aluminum-clad Steel wires and/or aluminum alloy wires).
5. Stranded wires (Aluminum-clad Steel wires and/or aluminum alloy wires).

FEATURES OPGW S
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 432</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.222...1.028</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.433...0.984</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>10 566...61 822</td>
</tr>
<tr>
<td>Maximum rated design load, lb</td>
<td>6 295...37 093</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>15 737...35 969</td>
</tr>
<tr>
<td>Fault current capacity (initial temperature 77°F, final temperature 392°F)</td>
<td>5...550</td>
</tr>
<tr>
<td>Short-circuit current for 1s, kA</td>
<td>4...30</td>
</tr>
</tbody>
</table>

ADVANTAGES
- Up to 432 fibers
- ACS wires are highly corrosion resistant
- Optical groundwire (OPGW) shields high-voltage conductors from lightning strikes
- Aluminum alloy wires provide conductivity for fault current

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
ACS Ground Wire
(Enhanced Corrosion-resistant Ground Wire)

CABLE DESIGN
1. Central strength member (Aluminum-clad Steel wire).
2. Stranded wires (Aluminum-clad Steel wires).

ADVANTAGES
- Aluminum-clad steel wires are corrosion resistant
- ACS groundwires shield high-voltage conductors from lightning strikes
- A standard component of high voltage transmission lines

FEATURES GROUND WIRE

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer diameter, in</td>
<td>0.299 ... 0.890</td>
<td>inches</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.155 ... 1.337</td>
<td>pounds/foot</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>10 206 ... 86 204</td>
<td>pounds</td>
</tr>
<tr>
<td>Maximum rated design load, lb</td>
<td>6 385 ... 54 022</td>
<td>pounds</td>
</tr>
<tr>
<td>Sectional area of steel elements, sq in</td>
<td>0.054 ... 0.463</td>
<td>square inches</td>
</tr>
<tr>
<td>Sectional area of aluminum elements, sq in</td>
<td>0.0</td>
<td>square inches</td>
</tr>
<tr>
<td>Total sectional area, sq in</td>
<td>0.054 ... 0.463</td>
<td>square inches</td>
</tr>
<tr>
<td>DC resistance at 68°F, Ohm/km</td>
<td>2.472 ... 0.290</td>
<td>ohms/kilometer</td>
</tr>
<tr>
<td>Fault current capacity (initial temperature 77°F, final temperature 392°F)</td>
<td>8.7 ... 636.7</td>
<td>pounds</td>
</tr>
<tr>
<td>Coefficient of linear thermal expansion, 10-6 1/K</td>
<td>12.6</td>
<td>kilowatts per kilometer per degree Celsius</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>22 887 ... 22 553</td>
<td>kilopounds per square inch</td>
</tr>
<tr>
<td>Modulus of elasticity (initial, installation), ksi</td>
<td>20 276 ... 19 972</td>
<td>kilopounds per square inch</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Optical Phase Conductor

CABLE DESIGN
1. Optical fiber.
2. Stainless steel tube.
3. Aluminum-clad steel wire.
4. Aluminum alloy wire or Aluminum wire.

FEATURES OPTICAL PHASE CONDUCTOR
Crush — 571 lb/in

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Count</td>
<td>up to 24 up to 48</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.610 ... 1.358 0.854 ... 1.358</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.316 ... 1.939 0.601 ... 1.939</td>
</tr>
<tr>
<td>Elasticity modulus (f(final), ksi)</td>
<td>9 297 ... 13 938 9 297 ... 13 938</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>9 577 ... 73 513 16 793 ... 73 513</td>
</tr>
<tr>
<td>Maximum rated design load, lb</td>
<td>3 754 ... 42 714 5 778 ... 42 714</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com

ADVANTAGES
- Up to 48 fibers in a tube
- ACS wires are highly corrosion resistant
- Effective solution to provide redundancy in harsh conditions, such as long cable spans, crossings of cable spans, power lines with previously installed OPGW and ADSS and others
Fire Rated Optical Cable

APPLICATION:
Recommended for installation on sites, to increased security requirements

TYPICAL APPLICATIONS
for fire protection and another systems which are needed to work under fire conditions

for child care centers, educational institutions, board and care facilities, hospitals, dormitory blocks

for high-occupancy buildings

for buildings and closed installations

for open cable structures

for individual installation in cable structures and working spaces
FIRE SAFETY LEVELS

1. single cabling
2. group cabling
3. low smoke and gas emission
   - halogen free
   - low toxicity
   - fire-resistant

Typical applications for child care centers, educational institutions, board and care facilities, hospitals, dormitory blocks.

Every next step includes previous steps.
Flame Retardant cable

**LEVEL 3**

Low toxicity

- **FTTH-Distribution**
  - Tight-Buffered Distribution
  - Distribution with Micro Tubes

- **Tight-Buffered Riser**
  - Riser with Micro Tubes

- **FTTH-Subscribers**
  - Tight-Buffered Simplex
  - Tight-Buffered Duplex

- **FTTH-Drop**
  - Flat Type Drop Reinforced
  - Round Type Drop Tight-buffer
  - Round Type Drop

**LEVEL 2**

Group laying, low smoke and gas emission, halogen-free

- **InTube**
  - InTube Standard Fiberglass
    (Multi-Tube Single Jacket Cable)

- **InDuct**
  - InDuct Standard
    (Multi-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

- **InDuct Standard Double Jacket**
  (Multi-Tube Single Armor Double Jacket Cable, Corrugated Steel Tape)

- **InDuct Light**
  (Uni-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

- **InGround**
  - InGround Standard
    (Multi-Tube Single Armor Double Jacket Cable)
  - InGround Standard Dielectric
    (Multi-Tube Single Armor Double Jacket Cable)
  - InGround Standard Reinforced Dielectric
    (Multi-Tube Double Armor Double Jacket Cable)

- **InGround Light**
  (Uni-Tube Single Armor Single Jacket Cable)

- **InGround Light Dielectric**
  (Uni-Tube Single Armor Single Jacket Cable)

- **InGround Standard Reinforced**
  (Uni-Tube Single Armor Single Jacket Cable)

- **InGround Stainless Steel Tube**
  (Uni-Tube Single Armor Single Jacket Cable)
**LEVEL 1**

**Single laying**

- **InDuct Standard**
  (Multi-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

- **InDuct Light**
  (Uni-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

- **InDuct Standard Double Jacket**
  (Multi-Tube Single Armor Double Jacket Cable, Corrugated Steel Tape)

- **InDuct**
  (Multi-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

**InGround**

- **InGround Standard**
  (Multi-Tube Single Armor Double Jacket Cable)

- **InGround Light**
  (Uni-Tube Single Armor Single Jacket Cable)

**InGround Standard Wetland**

- (Multi-Tube Single Armor Double Jacket Aluminum and Polymer Tape Cable)

**Fire Rated**

- **InAir ADSS Standard Aramid**
  (Multi-Tube Aramid Double Jacket Cable)

- **InAir ADSS Standard Fiberglass**
  (Multi-Tube Fiberglass Double Jacket Cable)

- **InAir ADSS Light Aramid**
  (Multi-Tube Aramid Single Jacket Cable)

- **InAir ADSS Light Fiberglass**
  (Multi-Tube Fiberglass Single Jacket Cable)

- **InAir Defender ADSS**
  (Multi-Tube Single Armor Double Jacket Cable)

- **InAir ADSS Standard Aramid**
  (Multi-Tube Aramid Double Jacket Cable)

- **InAir ADSS Standard Fiberglass**
  (Multi-Tube Fiberglass Double Jacket Cable)

- **InAir ADSS Standard**
  (Multi-Tube Aramid Single Jacket Cable)

- **InAir Self-Supporting**

- **InAir ADSS Standard Aramid**
  (Multi-Tube Aramid Double Jacket Cable)

- **InAir ADSS Standard Fiberglass**
  (Multi-Tube Fiberglass Double Jacket Cable)

- **InAir ADSS Light Aramid**
  (Multi-Tube Aramid Single Jacket Cable)

- **InAir ADSS Light Fiberglass**
  (Multi-Tube Fiberglass Single Jacket Cable)

- **InAir Defender ADSS**
  (Multi-Tube Single Armor Double Jacket Cable)

- **InAir ADSS Standard Aramid**
  (Multi-Tube Aramid Double Jacket Cable)

- **InAir ADSS Standard Fiberglass**
  (Multi-Tube Fiberglass Double Jacket Cable)

- **FTTH-Distribution**

- **Tight-Buffered Riser**

- **Tight-Buffered Duplex**

- **FTTH-Drop**
  Flat Type Drop Reinforced

- **InAir ADSS Standard**
  (Multi-Tube Aramid Double Jacket Cable)

- **InAir ADSS Standard Fiberglass**
  (Multi-Tube Fiberglass Double Jacket Cable)

- **Riser with Micro Tubes**

- **Tight-Buffered Distribution**

- **Distribution with Micro Tubes**

- **FTTH-Subscribers**

- **Tight-Buffered Simplex**

- **Round Type Drop**

- **Round Type Drop Tight-buffer**

- **InAir Defender ADSS**
  (Multi-Tube Single Armor Double Jacket Cable)
Fire Rated

ADVANTAGES

- Universal Fire Rated
- Indoor Fire Rated
- Outdoor Fire Rated

remain operative exposed to fire for at least 180 minutes
flame retardant in group laying
low toxicity of combustion products
low smoke
halogen-free

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications.
Universal Fire Rated

CABLE DESIGN
1. Optical fiber.
2. Stainless steel tube.
3. Armor of steel wires.
4. Halogen-free jacket.

ADVANTAGES
- Remains functional under direct flame for at least 180 minutes
- Withstands the physical impact and water used during fire-fighting
- Minimum combustible content
- High resistance to crushing (more than 571 lb/in) which is retained even after the fire
- Small size – thin, light, economical
- Suitable for all applications
- Up to 96 fibers in a tube
- Diameter less than 0.39 in

FEATURES UNIVERSAL FIRE RATED

Max. installation tension — 899 lb
Crush — from 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.346</td>
<td>0.362</td>
<td>0.374</td>
<td>0.39</td>
<td>0.409</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.103</td>
<td>0.112</td>
<td>0.12</td>
<td>0.13</td>
<td>0.142</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.197</td>
<td>5.433</td>
<td>5.61</td>
<td>5.846</td>
<td>6.142</td>
</tr>
</tbody>
</table>

Max. installation tension — 1574 lb
Crush — from 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.378</td>
<td>0.378</td>
<td>0.39</td>
<td>0.406</td>
<td>0.425</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.132</td>
<td>0.131</td>
<td>0.14</td>
<td>0.149</td>
<td>0.16</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.669</td>
<td>5.669</td>
<td>5.846</td>
<td>6.083</td>
<td>6.378</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Indoor Fire Rated

CABLE DESIGN
1. Optical fiber.
2. Tight-buffer.
3. Fiberglass yarns.
4. Inner jacket made of halogen-free flame-retardant polymer compound.
5. Mica glass tape.
6. Halogen-free jacket.

FEATURES INDOOR FIRE RATED
Max. installation tension — 247-427 lb
Crush — 114 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 2</th>
<th>up to 4</th>
<th>up to 6</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.409</td>
<td>0.425</td>
<td>0.445</td>
<td>0.461</td>
<td>0.484</td>
<td>0.504</td>
<td>0.543</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.093</td>
<td>0.098</td>
<td>0.105</td>
<td>0.112</td>
<td>0.122</td>
<td>0.132</td>
<td>0.15</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.094</td>
<td>4.252</td>
<td>4.449</td>
<td>4.606</td>
<td>4.843</td>
<td>5.039</td>
<td>5.433</td>
</tr>
</tbody>
</table>

ADVANTAGES
- Remains functional under direct flame for at least 180 minutes
- All-dielectric construction
- Easy to install and splice prep
- Up to 24 fibers

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Outdoor Fire Rated

CABLE DESIGN
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Inner jacket made of halogen-free flame-retardant polymer compound
6. Corrugated steel tape armor
7. Halogen-free jacket.

ADVANTAGES
- Remains functional under direct flame for at least 180 minutes
- Armor is a perfect protection from rodents
- Up to 144 fibers
- Easy to install and splice prep

FEATURES OUTDOOR FIRE RATED
Max. installation tension — 607 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.488</td>
<td>0.512</td>
<td>0.539</td>
<td>0.575</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.132</td>
<td>0.144</td>
<td>0.154</td>
<td>0.171</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.323</td>
<td>7.677</td>
<td>8.091</td>
<td>8.622</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Incab Specialty Cable
for harsh environment

We would like to present you our new company - Incab Specialty Cables. Incab Specialty Cables (ISC) LLC offers a range of specialty cables for the application in Oil&Gas, Security, Civil structure monitoring, Rail Road, DOT, Fire Detection, Geophysics, this includes Sensing cable with Encapsulated Conductor and Encapsulated Fiber and hybrid cables.

**MEASURE**
- Temperature
- Deformation
- Movement
- Acoustics
- Pressure
- Deviation angle
- Leakage

**REDUCE**
- Emergency reaction time
- Forced downtime of technical facilities
- Emergency damages
- Incidents of theft
- Environmental damage caused by leaks
- Monitoring costs
Application areas

Oil & Gas
- Downhole
- Subsea
- Topside
- Pipeline

Structural health monitoring
- Bridges
- Rail Roads
- Soil Movements
- Geothermal

Pipeline leak monitoring

Security

Fire Detection
**InTube**

**APPLICATION:**

- Designed for duct installations
- Applied in duct, trays, blocks, tunnels, collecting channels, with no risk of rodents' attacks
- Suitable for aerial installation: power lines, lamp posts, railway overhead systems

**OPERATION PARAMETERS IN TUBE**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-76°F (-49°F InTube Micro)...+158°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>15×cable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request

**OPTIONS**

All InTube cables may be produced in these variations: Flame retardant cable/Level 1 and Flame retardant cable/Level 2 (page 28). We design cables based on our Customers’ specific technical Requirements.
**InTube Standard Fiberglass**
(Multi-Tube Single Jacket Cable)

**CABLE DESIGN**
1. Central strength member: FRP.
2. Optical fiber.
3. PBT loose tube filled with water-blocking gel.
4. Water-swellable yarns.
5. Fiberglass yarns.
6. Polymer jacket.
7. Ripcord.

**ADVANTAGES**
- All-dielectric construction
- Reduced weight and size. Convenient for blowing-in in tubes
- Up to 144 fibers

**FEATURES INTUBE STANDARD FIBERGLASS**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. installation tension — 337 lb Crush — 171 lb/in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.378</td>
<td>0.39</td>
<td>0.425</td>
<td>0.457</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.046</td>
<td>0.048</td>
<td>0.056</td>
<td>0.064</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.669</td>
<td>5.846</td>
<td>6.378</td>
<td>6.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. installation tension — 607 lb Crush — 171 lb/in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.39</td>
<td>0.402</td>
<td>0.429</td>
<td>0.457</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.05</td>
<td>0.052</td>
<td>0.057</td>
<td>0.065</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.846</td>
<td>6.024</td>
<td>6.437</td>
<td>6.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. installation tension — 450 lb Crush — 171 lb/in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.386</td>
<td>0.394</td>
<td>0.425</td>
<td>0.457</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.048</td>
<td>0.049</td>
<td>0.056</td>
<td>0.064</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.787</td>
<td>5.906</td>
<td>6.378</td>
<td>6.85</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InTube Micro
(Multi-Tube Single Jacket Cable, Reduced Size)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tube filled with water-blocking gel.
4. Water-swellable yarns.
5. Jacket.

FEATURES INTUBE MICRO
Max. installation tension — 337 lb
Crush — 57 lb/in

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 432</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.236...0.602</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.016...0.095</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>3.543...9.035</td>
</tr>
</tbody>
</table>

ADVANTAGES
- All-dielectric construction
- Easy to install
- Max. installation tensile loads 337 lb
- Up to 432 fibers

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InTube Standard Aramid
(Multi-Tube Single Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tube filled with water-blocking gel.
4. Water-swellable yarns.
5. Reinforcing member – aramid yarns.
7. Ripcord.

ADVANTAGES
- Max. installation tensile loads up to 337 lb
- All-dielectric construction
- Easy to install

FEATURES INTUBE STANDARD ARAMID
Max. installation tension — 337 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.378</td>
<td>0.406</td>
<td>0.441</td>
<td>0.472</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.047</td>
<td>0.053</td>
<td>0.062</td>
<td>0.07</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.669</td>
<td>6.083</td>
<td>6.614</td>
<td>6.791</td>
</tr>
</tbody>
</table>

Max. installation tension — 607 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.386</td>
<td>0.409</td>
<td>0.441</td>
<td>0.472</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.05</td>
<td>0.055</td>
<td>0.062</td>
<td>0.07</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.787</td>
<td>6.142</td>
<td>6.614</td>
<td>6.791</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InDuct

APPLICATION:

- Applied in ducts, trays, blocks, tunnels, collecting channels, with a risk of rodent attacks
- Applied for installation on bridges and overpasses
- Suitable for direct buried installation with no exceeded mechanical exposure of the ground

OPERATION PARAMETERS INDUCT

- Operation temperature*: -58°F...+158°F (InDuct Special -76°F...+158°F)
- Installation temperature: -22°F...+122°F
- Transportation and storage temperature: -76°F...+158°F
- Minimum bending radius: 15×cable diameter
- Life time: 25 years
- Warranty: as specified in the supply agreement, min 2 years

* Operation temperature range can be increased on request

OPTIONS

All InDuct cables may be produced in these variations: Flame retardant cable/Level 1 and Flame retardant cable/Level 2 (page 28).

We design cables based on our Customers' specific technical Requirements.
**InDuct Standard**
(Multi-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

**CABLE DESIGN**
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Water-swellable yarns.
3. Optical fiber.
4. PBT loose tubes filled with water-blocking gel.
5. Water-swellable tape.
6. Corrugated steel tape armor.

**FEATURES INDUCT STANDARD**
**Max. installation tension** — 607 lb
**Crush** — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.417</td>
<td>0.441</td>
<td>0.469</td>
<td>0.504</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.082</td>
<td>0.088</td>
<td>0.099</td>
<td>0.113</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>6.260</td>
<td>6.614</td>
<td>7.028</td>
<td>7.559</td>
</tr>
</tbody>
</table>

---

**ADVANTAGES**
- The most popular design
- Perfect protection from rodents
- Resistance to crushing loads from 171 lb/in
- Max. installation tensile loads up to 607 lb
- Reduced weight and size. Suitable for blowing-in in tubes
- Efficient design
- Increased tightness due to application of water-blocking tape

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InDuct Standard Double Jacket
(Multi-Tube Single Armor Double Jacket Cable, Corrugated Steel Tape)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Water-swellable yarns.
6. Inner jacket.
7. Corrugated steel tape armor.

FEATURES INDUCT STANDARD DOUBLE JACKET

Max. installation tension — 607 lb
Crush — 171 lb/in*

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 28</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 96</th>
<th>up to 144</th>
<th>up to 144</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.457</td>
<td>0.488</td>
<td>0.539</td>
<td>0.512</td>
<td>0.539</td>
<td>0.571</td>
<td>0.575</td>
<td>0.63</td>
<td>0.701</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.092</td>
<td>0.103</td>
<td>0.122</td>
<td>0.113</td>
<td>0.122</td>
<td>0.135</td>
<td>0.137</td>
<td>0.16</td>
<td>0.194</td>
</tr>
</tbody>
</table>

* InDuct Standard cable may be produced with even higher maximum installation tensile loads up to 1,124 lb. Please contact us for details.

ADVANTAGES
- Proven reliable design
- Perfect protection from rodents
- Resistance to crushing loads from 171 lb/in
- Efficient design
- Improved reliability due to inner jacket
- Max. installation tensile loads up to 607 lb

Click here to see detailed features of this design

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
**InDuct Light**
(Uni-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

**FEATURES INDUCT LIGHT**

- Max. installation tension — 607 lb
- Crush — 286 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.287</td>
<td>0.295</td>
<td>0.307</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.047</td>
<td>0.049</td>
<td>0.051</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.311</td>
<td>4.429</td>
<td>4.606</td>
</tr>
</tbody>
</table>

**CABLE DESIGN**

1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
5. Jacket.
6. Steel wires.

**ADVANTAGES**

- Efficient design
- Perfect protection from rodents
- Resistance to crushing loads from 286 lb/in
- Max. installation tensile loads up to 607 lb
- Reduced weight and size
- Up to 24 fibers

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InDuct Light
(Multi-Tube Single Armor Single Jacket Cable, Corrugated Steel Tape)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
5. Jacket.
6. Steel wires.

FEATURES INDUCT LIGHT
Max. installation tension — 607 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.358</td>
<td>0.378</td>
<td>0.390</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.064</td>
<td>0.070</td>
<td>0.072</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.374</td>
<td>5.669</td>
<td>5.846</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com

ADVANTAGES
- Efficient design
- Perfect protection from rodents, suitable for duct installation
- Up to 48 fibers
- Reduced weight and size
- Resistance to crushing loads from 171 lb/in
- Max. installation tensile loads up to 607 lb
InDuct Standard Dielectric Double Jacket
(Multi-Tube Fiberglass Double Jacket Cable)

ADVANTAGES
- All-dielectric construction
- Fiberglass yarns prevent damage by rodents
- Resistance to crushing loads from 171 lb/in
- Max. installation tensile loads up to 607 lb

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Inner jacket.
6. Reinforcing member – fiberglass yarns.

FEATURES INDUCT STANDARD DIELECTRIC DOUBLE JACKET
Max. installation tension — 607 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.417</td>
<td>0.425</td>
<td>0.433</td>
<td>0.469</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.077</td>
<td>0.079</td>
<td>0.080</td>
<td>0.097</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>6.260</td>
<td>6.378</td>
<td>6.496</td>
<td>7.028</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InDuct Special
(Uni-Tube Galvanized Steel Wires)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
4. Armor of galvanized steel wires.
5. Jacket

FEATURES INDUCT SPECIAL
Max. installation tension — 607 lb
Crush — 286 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.315</td>
<td>0.327</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.06</td>
<td>0.065</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.724</td>
<td>4.902</td>
</tr>
</tbody>
</table>

ADVANTAGES
1. Efficient design
2. Perfect protection from rodents
3. Resistance to crushing loads from 286 lb/in
4. Max. installation tensile loads up to 607 lb
5. Reduced weight and size
6. Up to 24 fibers
7. 100% waterproof

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Click here to see detailed features of this design
InDuct Special
(Stainless Steel Tube Single Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. Stainless steel tube filled with water-blocking gel.

ADVANTAGES
- The smallest diameter
- Excellent rodent resistance
- 100% waterproof
- Max. installation tensile loads up to 337 lb
- Maximum resistance to crushing loads from 400 lb/in

FEATURES INDUCT SPECIAL
Max. installation tension — 337 lb
Crush — 400 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 32</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.268</td>
<td>0.283</td>
<td>0.295</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.032</td>
<td>0.035</td>
<td>0.038</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.016</td>
<td>4.252</td>
<td>4.429</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
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InGround

APPLICATION:

Suitable for aerial installation between buildings and constructions (However, its higher weight and larger diameter compared to self-supporting cables must be taken into consideration)

Applied in harsh environments with potential mechanical impact: in grounds of all the groups, bogs, unnavigable rivers

Applied in ducts, trays, blocks, tunnels, and collecting channels

OPERATION PARAMETERS INGROUND

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-58°F...+158°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>15×cable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request

OPTIONS

All InGround cables may be produced in these variations: Flame retardant cable/Level 1 and Flame retardant cable/Level 2 (page 28). InGound Stainless Steel Tube cable may be produced with fire rated jacket (page 31). We design cables based on our Customers’ specific technical requirements.
InGround Standard  
(Multi-Tube Single Armor Double Jacket Cable)

CABLE DESIGN
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Inner jacket.
6. Armor of galvanized steel wires.

ADVANTAGES
- The most popular design
- Reliable protection from serious mechanical impact
- Perfect protection from rodents, suitable for duct installation
- Max. installation tensile loads up to 17985 lb
- Resistance to crushing loads up to 571 lb/in

FEATURES INGROUND STANDARD
Max. installation tension — 1574-3597 lb  
Crush — 228 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.488...0.504</td>
<td>0.496...0.512</td>
<td>0.512</td>
<td>0.52</td>
<td>0.559</td>
<td>0.559</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.155...0.168</td>
<td>0.161...0.170</td>
<td>0.169</td>
<td>0.174</td>
<td>0.197</td>
<td>0.197</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.323...7.559</td>
<td>7.441...7.677</td>
<td>7.677</td>
<td>7.795</td>
<td>8.386</td>
<td>8.386</td>
</tr>
</tbody>
</table>

Max. installation tension — 8992-17985 lb  
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.693...0.791</td>
<td>0.709...0.823</td>
<td>0.732...0.823</td>
<td>0.404...0.596</td>
<td>0.787...0.858</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.350...0.555</td>
<td>0.709...0.823</td>
<td>0.378...0.594</td>
<td>0.404...0.596</td>
<td>0.437...0.629</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>11.870</td>
<td>10.630...12.343</td>
<td>10.984...12.343</td>
<td>11.220...12.402</td>
<td>11.811...12.874</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Standard Dielectric
(Multi-Tube Single Armor Double Jacket Cable)

**CABLE DESIGN**
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Inner jacket.
6. Fiberglass rods.

**ADVANTAGES**
- Reduced weight, suitable for aerial installation
- Reliable protection from serious mechanical impact
- Perfect protection from rodents, suitable for duct installation
- All-dielectric construction
- Max. installation tensile loads up to 4496 lb
- Resistance to crushing loads up to 571 lb/in

**FEATURES INGROUND STANDARD DIELECTRIC**
Max. installation tension — 1574-4496 lb
Crush — 228 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.488...0.614</td>
<td>0.496...0.622</td>
<td>0.512...0.638</td>
<td>0.520...0.646</td>
<td>0.567...0.669</td>
<td>0.567...0.669</td>
<td>0.693</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.091...0.165</td>
<td>0.093...0.168</td>
<td>0.099...0.178</td>
<td>0.102...0.180</td>
<td>0.121...0.190</td>
<td>0.121...0.190</td>
<td>0.197</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.323...9.213</td>
<td>7.441...9.331</td>
<td>7.677...9.567</td>
<td>7.795...9.685</td>
<td>8.504...10.039</td>
<td>8.504...10.039</td>
<td>10.394</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Standard Reinforced
(Multi-Tube Double Armor Double Jacket Cable)

CABLE DESIGN
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Inner jacket.
6. Double armor of galvanized steel wires.

ADVANTAGES
- Suitable for application in harsh environments: in cryosolic grounds, on the bottom of navigable rivers and basins
- Max. installation tensile loads up to 17,985 lb
- Perfect protection from rodents, suitable for duct installation
- Resistance to crushing loads 571 lb/in

FEATURES INGROUND STANDARD REINFORCED
Max. installation tension — 17,985 lb
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.772</td>
<td>0.787</td>
<td>0.819</td>
<td>0.835</td>
<td>0.913</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.536</td>
<td>0.572</td>
<td>0.607</td>
<td>0.629</td>
<td>0.799</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>11.575</td>
<td>11.811</td>
<td>12.283</td>
<td>12.52</td>
<td>13.701</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Standard Reinforced Dielectric
(Multi-Tube Double Armor Double Jacket Cable)

CABLE DESIGN
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Inner jacket.
6. Double armor of fiberglass plastic rods.

ADVANTAGES
- Suitable for application in harsh environments: in cryosolic grounds, on the bottom of navigable rivers and basins.
- Max. installation tensile loads up to 8992 lb.
- Resistance to crushing loads from 571 lb/in.
- All-dielectric construction.
- Perfect protection from rodents, suitable for duct installation.

FEATURES INGROUND STANDARD REINFORCED DIELECTRIC
Max. installation tension — 8992 lb
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.858</td>
<td>0.874</td>
<td>0.906</td>
<td>0.906</td>
<td>0.945</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.333</td>
<td>0.348</td>
<td>0.371</td>
<td>0.368</td>
<td>0.394</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
**InGround Light**
(Uni-Tube Single Armor Single Jacket Cable)

**CABLE DESIGN**
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
4. Armor of galvanized steel wires.
5. Jacket.

**ADVANTAGES**
- Efficient design
- Reduced weight and size
- Up to 24 fibers
- Resistance to crushing loads from 400 lb/in
- Reliable protection from serious mechanical impact
- Perfect protection from rodents, suitable for duct installation

**FEATURES INGROUND LIGHT**

- Max. installation tension — 1574 lb
- Crush — 400 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Up to 16</th>
<th>Up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>0.319</td>
<td>0.327</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.078</td>
<td>0.083</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.783</td>
<td>4.902</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Light Dielectric
(Uni-Tube Single Armor Single Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
4. Armor of fiberglass rods.
5. Jacket.

ADVANTAGES
- Reduced weight, suitable for aerial installation
- All-dielectric construction
- Reliable protection from serious mechanical impact
- Maximum resistance to crushing loads from 400 lb/in
- Up to 24 fibers
- Perfect protection from rodents, suitable for duct installation
- Max. installation tensile loads up to 1798 lb

FEATURES INGROUND LIGHT DIELECTRIC

Max. installation tension — 1798...2698 lb
Crush — 400 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>up to 6</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.421...0.469</td>
<td>0.421...0.469</td>
<td>0.421...0.469</td>
<td>0.421...0.469</td>
<td>0.421...0.469</td>
<td>0.429...0.476</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.075...0.097</td>
<td>0.075...0.097</td>
<td>0.074...0.097</td>
<td>0.074...0.097</td>
<td>0.076...0.099</td>
<td></td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>6.319...7.028</td>
<td>6.319...7.028</td>
<td>6.319...7.028</td>
<td>6.319...7.028</td>
<td>6.437...7.146</td>
<td></td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
# InGround Light Reinforced

(Uni-Tube Double Armor Single Jacket Cable)

## CABLE DESIGN

1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
4. Double armor of galvanized steel wires.
5. Jacket.

## ADVANTAGES

- Suitable for application in harsh environments
- Maximum resistance to crushing loads from 571 lb/in
- Up to 24 fibers
- Perfect protection from rodents, suitable for duct installation
- Max. installation tensile loads up to 11240 lb

## FEATURES INGROUND LIGHT REINFORCED

**Max. installation tension** — 6744...11240 lb

**Crush** — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.465...0.535</td>
<td>0.469...0.539</td>
<td>0.48...0.551</td>
<td></td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.198...0.302</td>
<td>0.203...0.308</td>
<td>0.214...0.33</td>
<td></td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>6.969...8.031</td>
<td>7.028...8.091</td>
<td>7.205...8.268</td>
<td></td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Light Reinforced Dielectric
(Uni-Tube Double Armor Single Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
3. Water-blocking gel or water-swellable yarn.
4. Double armor of fiberglass plastic rods.
5. Jacket.

ADVANTAGES
1. All-dielectric construction
2. Reduced weight and size. Convenient for blowing-in tubes
3. Suitability for application in harsh environments
4. Max. installation tensile loads up to 6744 lb
5. Resistance to crushing loads from 571 lb/in
6. Perfect protection from rodents, suitable for duct installation

FEATURES INGROUND LIGHT REINFORCED DIELECTRIC
Max. installation tension — 3372...6744 lb
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 6</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.500...0.626</td>
<td>0.500...0.626</td>
<td>0.500...0.626</td>
<td>0.500...0.626</td>
<td>0.508...0.634</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.110...0.184</td>
<td>0.110...0.184</td>
<td>0.110...0.184</td>
<td>0.110...0.184</td>
<td>0.115...0.190</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.500...9.390</td>
<td>7.500...9.390</td>
<td>7.500...9.390</td>
<td>7.500...9.390</td>
<td>7.618...9.508</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Stainless Steel Tube
( Uni-Tube Single Armor Single Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. Stainless steel tube filled with water-blocking gel.
3. Armor of steel wires.

FEATURES INGROUND STAINLESS STEEL TUBE

Max. installation tension — 1574 lb
Crush — from 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 36</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.378</td>
<td>0.39</td>
<td>0.406</td>
<td>0.425</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.114</td>
<td>0.122</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>5.669</td>
<td>5.846</td>
<td>6.083</td>
<td>6.378</td>
</tr>
</tbody>
</table>

Max. installation tension — 2248 lb
Crush — from 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.409</td>
<td>0.421</td>
<td>0.453</td>
<td>0.441</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.148</td>
<td>0.152</td>
<td>0.187</td>
<td>0.162</td>
</tr>
</tbody>
</table>

ADVANTAGES
- Up to 96 fibers
- 100% waterproof
- Perfect protection from rodents, suitable for duct installation
- Resistance to extreme crushing loads — from 799 lb/in
- Max. installation tensile loads up to 2248 lb

Click here to see detailed features of this design

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Standard Wetland
(Multi-Tube Single Armor Double Jacket Aluminum and Polymer Tape Cable)

1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Aluminum and polymer tape.
6. Inner jacket.
7. Armor of galvanized steel wires.

**ADVANTAGES**

- Excellent solution for wetland and cross-river installation
- With laminated aluminum polyethylene sheath – to protect the cable core from moisture
- Resistance to crushing loads up to 571 lb/in
- Aluminum compound tape to protect against hydrogen penetration into the optical fiber
- Max. installation tensile loads up to 17985 lb
- Perfect protection from rodents, suitable for duct installation

**FEATURES INGROUND STANDARD WETLAND**

**Max. installation tension — 1574...4496 lb**
**Crush — 228 lb/in**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.516</td>
<td>0.524</td>
<td>0.539</td>
<td>0.547</td>
<td>0.587</td>
<td>0.587</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.175</td>
<td>0.181...0.178</td>
<td>0.190...0.186</td>
<td>0.196...0.192</td>
<td>0.220...0.216</td>
<td>0.220...0.216</td>
</tr>
</tbody>
</table>

**Max. installation tension — 8992...17985 lb**
**Crush — 571 lb/in**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.697...0.791</td>
<td>0.705...0.823</td>
<td>0.736...0.823</td>
<td>0.752...0.823</td>
<td>0.791...0.862</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.352...0.555</td>
<td>0.365...0.594</td>
<td>0.389...0.594</td>
<td>0.406...0.594</td>
<td>0.439...0.632</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InGround Standard Wetland Reinforced
(Multi-Tube Double Armor Double Jacket Aluminum and Polymer Tape Cable)

**CABLE DESIGN**
1. Central strength member (fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Aluminum and polymer tape.
6. Inner jacket.
7. Double armor of galvanized steel wires.
8. Jacket

**ADVANTAGES**
- Excellent solution for wetland and cross-river installation
- Resistance to crushing loads up to 571 lb/in
- Max. installation tensile loads up to 17985 lb
- Perfect protection from rodents, suitable for duct installation
- With laminated aluminum polyethylene sheath – to protect the cable core from moisture
- Aluminum compound tape to protect against hydrogen penetration into the optical fiber
- Suitable for application in harsh environments

**FEATURES INGROUND STANDARD WETLAND REINFORCED**
Max. installation tension — 17985 lb
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24 (4x6)</th>
<th>up to 48 (6x8)</th>
<th>up to 72 (6x12)</th>
<th>up to 96 (6x16)</th>
<th>up to 144 (6x24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.776</td>
<td>0.791</td>
<td>0.823</td>
<td>0.878</td>
<td>0.917</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.542</td>
<td>0.574</td>
<td>0.609</td>
<td>0.746</td>
<td>0.801</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
**InWater**

**APPLICATION:**

Applied in littoral areas (coastal shelf and deep-sea), on navigable rivers, in lakes and water storage basins, in harsh environments, in bogs and unnavigable rivers.

**OPERATION PARAMETERS INWATER**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-58°F...+158°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>15x cable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request.

We design cables based on our Customers’ specific technical requirements.
InWater Standard
(Uni-Tube Double Armor Double Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. Water-blocking gel.
3. Loose tube.
5. Armor of steel wires.
6. Water-blocking tape.
7. Aluminum and polymer tape.
8. Inner jacket.
10. Armor of steel wires.

ADVANTAGES
- Installation down to 8202 ft
- Suitable for application in harsh environments

FEATURES INWATER STANDARD
Max. installation tension — 4496...15737 lb
Crush — 857 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile force, lb</td>
<td>4496 7868 11240 13489 15737</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.563 0.657 0.705 0.76 0.799</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.254 0.416 0.522 0.637 0.721</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>8.445 9.862 10.571 11.398 11.988</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InWater Standard Reinforced
(Steel Tube Double Armor Double Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. Water-blocking gel.
3. Steel tube.
5. Armor of steel wires.
6. Water-blocking tape.
7. Aluminum and polymer tape.
8. Inner jacket.
10. Armor of steel wires.

FEATURES INWATER STANDARD REINFORCED
Max. installation tension — 4496...19109 lb
Crush — 857 lb/in

<table>
<thead>
<tr>
<th>Range</th>
<th>up to 12</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>0.512...0.780</td>
<td>0.528...0.780</td>
<td>0.528...0.780</td>
<td>0.539...0.791</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.218...0.703</td>
<td>0.238...0.703</td>
<td>0.234...0.703</td>
<td>0.240...0.732</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>7.677...11.693</td>
<td>7.913...11.693</td>
<td>7.913...11.693</td>
<td>8.091...11.870</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
APPLICATION:

Applied for aerial installations: on power lines, lamp posts, between buildings and constructions. Suitable for aerial installation on transmission equipment and power facilities in dielectric package.

OPERATION PARAMETERS INAIR FIGURE 8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>15×cable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request

We design cables based on our Customers’ specific technical requirements.
InAir Figure 8 Standard
(Multi-Tube Single Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Jacket.
6. Steel wire.

ADVANTAGES
- Affordable alternative to InAir Self-Supporting Cable
- Low installation cost

FEATURES INAIR FIGURE 8 STANDARD
Crush — 171 lb/in
Max. installation tension — 899...2698 lb
Outer diameter of the external strength member — 0.205...0.276 in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.339</td>
<td>0.350</td>
<td>0.366</td>
<td>0.386</td>
<td>0.409</td>
<td>0.449</td>
<td>0.543</td>
</tr>
<tr>
<td>Max overall cable size, in</td>
<td>0.622...0.693</td>
<td>0.634...0.705</td>
<td>0.650...0.720</td>
<td>0.669...0.740</td>
<td>0.693...0.764</td>
<td>0.732...0.803</td>
<td>0.827...0.898</td>
</tr>
<tr>
<td>Equivalent cable diameter, in</td>
<td>0.406...0.437</td>
<td>0.417...0.445</td>
<td>0.429...0.461</td>
<td>0.446...0.476</td>
<td>0.465...0.496</td>
<td>0.050...0.528</td>
<td>0.579...0.610</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.067...0.109</td>
<td>0.068...0.110</td>
<td>0.072...0.114</td>
<td>0.076...0.117</td>
<td>0.084...0.126</td>
<td>0.095...0.136</td>
<td>0.121...0.163</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InAir Figure 8 Standard Dielectric
(Multi-Tube Single Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-blocking gel or water-swellable yarn.
5. Jacket.
6. Dielectric rod.

FEATURES INAIR FIGURE 8 STANDARD DIELECTRIC
Crush — 171 lb/in
Max. installation tension — 899...1349 lb
Outer diameter of the external strength member — 0.256...0.295 in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.339</td>
<td>0.350</td>
<td>0.366</td>
<td>0.386</td>
<td>0.409</td>
<td>0.449</td>
<td>0.543</td>
</tr>
<tr>
<td>Max overall cable size, in</td>
<td>0.673...0.713</td>
<td>0.685...0.724</td>
<td>0.701...0.740</td>
<td>0.720...0.760</td>
<td>0.744...0.783</td>
<td>0.783...0.823</td>
<td>0.878...0.917</td>
</tr>
<tr>
<td>Equivalent cable diameter, in</td>
<td>0.429...0.445</td>
<td>0.437...0.453</td>
<td>0.453...0.469</td>
<td>0.469...0.484</td>
<td>0.488...0.504</td>
<td>0.520...0.535</td>
<td>0.602...0.618</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.069...0.081</td>
<td>0.070...0.082</td>
<td>0.074...0.086</td>
<td>0.078...0.090</td>
<td>0.086...0.098</td>
<td>0.097...0.108</td>
<td>0.123...0.135</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
**InAir Figure 8 Light**
(Uni-Tube Single Jacket Cable)

**CABLE DESIGN**
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
4. Steel wire.

**FEATURES INAIR FIGURE 8 LIGHT**

- **Crush** — 171 lb/in
- **Max. installation tension** — 899...2698 lb
- **Outer diameter of the external strength member** — 0.197...0.268 in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 6</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.244</td>
<td>0.248</td>
<td>0.256</td>
<td>0.264</td>
<td>0.276</td>
</tr>
<tr>
<td>Max overall cable size, in</td>
<td>0.480...0.551</td>
<td>0.484...0.555</td>
<td>0.492...0.563</td>
<td>0.500...0.571</td>
<td>0.512...0.583</td>
</tr>
<tr>
<td>Equivalent cable diameter, in</td>
<td>0.307...0.335</td>
<td>0.311...0.339</td>
<td>0.315...0.346</td>
<td>0.323...0.354</td>
<td>0.335...0.362</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.047...0.089</td>
<td>0.048...0.089</td>
<td>0.049...0.090</td>
<td>0.050...0.092</td>
<td>0.052...0.094</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InAir Figure 8 Light Dielectric
(Uni-Tube Single Jacket Cable)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
4. Dielectric rod.

ADVANTAGES
- All-dielectric construction
- Reduced weight and size
- Efficient design

FEATURES INAIR FIGURE 8 LIGHT DIELECTRIC

Crush — 171 lb/in
Max. installation tension — 899...1349 lb/in
Outer diameter of the external strength member — 0.248...0.287 in

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 6 up to 8 up to 12 up to 16 up to 24</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.244 0.248 0.256 0.264 0.276</td>
</tr>
<tr>
<td>Max overall cable size, in</td>
<td>0.531...0.571 0.535...0.575 0.543...0.583 0.551...0.591 0.563...0.602</td>
</tr>
<tr>
<td>Equivalent cable diameter, in</td>
<td>0.327...0.343 0.331...0.346 0.339...0.354 0.344...0.362 0.354...0.370</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.049...0.061 0.050...0.061 0.051...0.062 0.052...0.064 0.054...0.066</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InAir Figure 8 Light Dielectric
(Uni-Tube Single Jacket Double Dielectric Rod Cable)

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-blocking gel.
4. Dielectric rod.

FEATURES INAIR FIGURE 8 LIGHT DIELECTRIC
Crush — 799 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength, lb</td>
<td>292</td>
<td>315</td>
<td>382</td>
<td>495</td>
</tr>
<tr>
<td>Max overall cable size, in</td>
<td>0.299×0.118</td>
<td>0.315×0.122</td>
<td>0.339×0.130</td>
<td>0.374×0.142</td>
</tr>
<tr>
<td>Cable weight, lb/in</td>
<td>0.014</td>
<td>0.02</td>
<td>0.023</td>
<td>0.028</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com

ADVANTAGES
- All-dielectric construction
- Reduced weight and size
- Efficient design
- Low susceptibility to ice and wind loads
- Applied as ‘the last mile’ in small towns and rural areas
- High crush resistance
- Suitable for aerial installation up to 328 ft
InAir Self-Supporting

APPLICATION:

- Designed for aerial installation on transmission towers, high voltage power lines and railway catenary; highly resistant to electromagnetic effect.
- Can also be used in ducts or as direct buried cable.
- Dry construction — easy to strip.

OPERATION PARAMETERS INAIR SELF-SUPPORTING

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-76°F...+158°F (MASS -76°F...+185°F)</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-76°F...+158°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>15×cable diameter (MASS 20×cable diameter)</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

*Operation temperature range can be increased on request.

OPTIONS

- All cables of this group may be produced in versions: Flame Retardant/Level 2 (page 29) and with jacket which is made of a tracking-resistant material (can be used in case of cable exposure to the electric field with a potential above 12 kV).
- We design cables based on our Customers' specific technical requirements.
**InAir ADSS Standard Aramid**  
(Multi-Tube Aramid Double Jacket Cable)

**CABLE DESIGN**
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Inner jacket.
6. Reinforcing member – aramid yarns.
8. Ripcord.

**ADVANTAGES**
- All-dielectric construction – fully resistant to electromagnetic fields
- Aerial installation on distribution and transmission lines up to 138 kV and above with tracking-resistant jacket
- For construction of communication lines between towns and cities with distances between towers reaching 1640 ft
- Wide range of operating temperatures. Installation temperature down to -22°F
- The most reliable among InAir cables. Double tensile strength
- Maximum rated design loads up to 22481 lb

**FEATURES INAIR ADSS STANDARD ARAMID**
Crush – 171 lb/in
Maximum rated design loads (MRDL) — 899...8992 lb

<table>
<thead>
<tr>
<th>Range</th>
<th>Fiber count up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>0.480...0.598</td>
<td>0.504...0.614</td>
<td>0.528...0.630</td>
<td>0.551...0.661</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.077...0.119</td>
<td>0.085...0.126</td>
<td>0.092...0.132</td>
<td>0.099...0.144</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>7.205...8.976</td>
<td>7.559...9.213</td>
<td>7.913...9.449</td>
<td>8.268...9.921</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InAir ADSS Standard Fiberglass
(Multi-Tube Fiberglass Double Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Inner jacket.
6. Reinforcing member – fiberglass yarns.
8. Ripcord.

ADVANTAGES
- All-dielectric construction – fully resistant to electromagnetic fields
- Aerial installation on distribution and transmission lines up to 138 kV and above with tracking-resistant jacket
- Wide range of operating temperatures. Installation temperature down to -22°F
- Cost-effective solution for city trunk lines
- In duct applications, fiberglass yarns protect the cable from rodents (medium protection level)
- Maximum rated design loads up to 3372 lb with span lengths up to 984 ft

FEATURES INAIR ADSS STANDARD FIBERGLASS
Crush – 171 lb/in
Maximum rated design loads (MRDL) — 899...3372 lb

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>Cable diameter, in</th>
<th>Range</th>
<th>Cable weight, lb/ft</th>
<th>Range</th>
<th>Min bending radius, in</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 48</td>
<td>0.492..0.547</td>
<td>7.382..8.209</td>
<td>0.082..0.105</td>
<td>0.090..0.110</td>
<td>8.091..8.681</td>
<td>8.445..9.094</td>
<td></td>
</tr>
<tr>
<td>up to 72</td>
<td>0.516..0.563</td>
<td>7.736..8.445</td>
<td>0.090..0.110</td>
<td>0.097..0.115</td>
<td>8.091..8.681</td>
<td>8.445..9.094</td>
<td></td>
</tr>
<tr>
<td>up to 96</td>
<td>0.539..0.579</td>
<td></td>
<td>0.097..0.115</td>
<td>0.105..0.126</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>up to 144</td>
<td>0.563..0.606</td>
<td></td>
<td>0.105..0.126</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
InAir ADSS Light Aramid
(Multi-Tube Aramid Single Jacket Cable)

ADVANTAGES

- Cost-effective design
- Aerial Installation on distribution and transmission lines up to 138 kV
- All-dielectric construction – fully resistant to electromagnetic fields
- Wide range of operating temperatures. Installation temperature down to -22°F
- Dry construction – easy to strip
- Maximum rated design loads up to 2248 lb with span lengths up to 656 ft
- Reduced weight and size. Low ice and wind load

CABLE DESIGN

1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Reinforcing member – aramid yarns.
7. Ripcord.

FEATURES INAIR ADSS LIGHT ARAMID

Crush – 171 lb/in
Maximum rated design loads (MRDL) — 337...2248 lb

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>0.299...0.441</td>
<td>0.327...0.461</td>
<td>0.362...0.484</td>
<td>0.394...0.508</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.029...0.065</td>
<td>0.034...0.070</td>
<td>0.041...0.076</td>
<td>0.047...0.082</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>4.488...6.614</td>
<td>4.921...6.929</td>
<td>5.433...7.283</td>
<td>5.906...7.638</td>
</tr>
</tbody>
</table>

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InAir ADSS Light Fiberglass
(Multi-Tube Fiberglass Single Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Reinforcing member – fiberglass yarns.
7. Ripcord.

ADVANTAGES
- Maximum rated design loads up to 2248 lb with span lengths up to 656 ft
- Dry construction – easy to strip
- Reduced weight and size. Low ice and wind load
- All-dielectric construction – fully resistant to electromagnetic fields
- Cost-effective solution for city trunk lines
- Aerial Installation on distribution and transmission lines up to 138 kV
- Wide range of operating temperatures. Installation temperature down to -22°F

FEATURES INAIR ADSS LIGHT FIBERGLASS
Crush – 171 lb/in
Maximum rated design loads (MRDL) — 450...2248 lb

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.331...0.461</td>
<td>0.354...0.480</td>
<td>0.390...0.496</td>
<td>0.445...0.520</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.037...0.075</td>
<td>0.042...0.078</td>
<td>0.049...0.081</td>
<td>0.063...0.088</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.961...6.909</td>
<td>5.315...7.205</td>
<td>5.846...7.441</td>
<td>6.673...7.795</td>
</tr>
</tbody>
</table>

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InAir Defender ADSS
(Multi-Tube Single Armor Double Jacket Cable)

CABLE DESIGN
1. Central strength member (dielectric fiberglass reinforced plastic).
2. Optical fiber.
3. PBT loose tubes filled with water-blocking gel.
4. Water-swellable yarns.
5. Inner jacket.
6. Fiberglass rods.
8. Ripcord.

ADVANTAGES
- Anti-Rodent additive in the outer jacket for first-line protection
- Completely protected from water ingress
- Superior protection from mechanical damage - FRP rods provide strength and second-line protection
- Designed for use in aerial applications of 138 kV or less where damage from squirrels/rodents is apparent

FEATURES INAIR DEFENDER ADSS

Crush – from 228 lb/in
Maximum rated design loads (MRDL) — 1574 lb... 4496 lb

<table>
<thead>
<tr>
<th>Range</th>
<th>Fiber count up to 16</th>
<th>up to 32</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>0.488...0.614</td>
<td>0.496...0.622</td>
<td>0.512...0.638</td>
<td>0.52...0.646</td>
<td>0.567...0.669</td>
<td>0.567...0.669</td>
<td>0.693</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.091...0.165</td>
<td>0.093...0.168</td>
<td>0.099...0.178</td>
<td>0.102...0.18</td>
<td>0.121...0.19</td>
<td>0.121...0.19</td>
<td>0.197</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>7.323...9.213</td>
<td>7.441...9.331</td>
<td>7.677...9.567</td>
<td>7.795...9.685</td>
<td>8.504...10.039</td>
<td>8.504...10.039</td>
<td>10.394</td>
</tr>
</tbody>
</table>

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Metallic Aerial Self-Supporting (MASS)

**CABLE DESIGN**
1. Optical fiber.
2. Stainless steel tube filled with water-blocking gel.
3. Stranded wires (galvanized steel wires or aluminum clad steel wires).

**FEATURES MASS**
Crush for all cables of the group — 571 lb/in
Maximum rated design loads (MRDL) — 6744...22481 lb

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 12</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.323...0.551</td>
<td>0.323...0.571</td>
<td>0.343...0.571</td>
<td>0.343...0.571</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.194...0.605</td>
<td>0.194...0.638</td>
<td>0.214...0.638</td>
<td>0.214...0.638</td>
</tr>
</tbody>
</table>

**ADVANTAGES**
- Increased tensile loads — up to 22481 lb
- ASC wire makes the cable exceedingly high strength, small size
- Large spans between towers, installation over rivers and ravines

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Click here to see detailed features of this design
**APPLICATION:**

- Applied for installation inside buildings (including vertical installation), in trays, channels, for installation on outer sides of the buildings
- Applied in ducts, trays, blocks, tunnels, collecting channels in protecting tubes
- Applied for aerial installations: power lines, lamp posts, between buildings and constructions

**OPERATION PARAMETERS FTTH-DISTRIBUTION**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-22°F...+122°F (Riser)</td>
</tr>
<tr>
<td></td>
<td>+14°F...+122°F (Tight-Buffered Distribution, Distribution with Micro Tubes)</td>
</tr>
<tr>
<td></td>
<td>-40°F...+140°F (Indoor Fire Rated)</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>+14°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-58°F...+122°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>10x cable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request. Different combinations of fiber counts and loose tubes in a cable are available on request.
Tight-Buffered Riser

**CABLE DESIGN**
1. Optical fiber.
2. Tight-buffer.
3. Fiberglass rods.
4. Halogen free flame-retardant jacket.
5. Match marks (jacket opening marking).

**FEATURES TIGHT-BUFFERED RISER**

Max. installation tension — **90 lb**
Min crush — **46 lb/in**
Max crush — **14 lb/in**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 4</th>
<th>up to 12</th>
<th>up to 24</th>
<th>up to 36</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.256</td>
<td>0.335</td>
<td>0.413</td>
<td>0.571</td>
<td>0.571</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.028</td>
<td>0.043</td>
<td>0.061</td>
<td>0.105</td>
<td>0.113</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>2.559</td>
<td>3.346</td>
<td>4.134</td>
<td>5.709</td>
<td>5.709</td>
</tr>
</tbody>
</table>

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Riser with Micro Tubes

CABLE DESIGN
1. Optical fiber.
3. Fiberglass rods.
4. Halogen free flame-retardant jacket.
5. Match marks (jacket opening marking).

FEATURES RISER WITH MICRO TUBES
Max. installation tension — **90 lb**
Min crush — **46 lb/in** Max crush — **114 lb/in**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
<th>up to 32</th>
<th>up to 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.256</td>
<td>0.256</td>
<td>0.256</td>
<td>0.335</td>
<td>0.335</td>
<td>0.335</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.026</td>
<td>0.027</td>
<td>0.028</td>
<td>0.039</td>
<td>0.04</td>
<td>0.041</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>2.559</td>
<td>2.559</td>
<td>2.559</td>
<td>3.346</td>
<td>3.346</td>
<td>3.346</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 48</th>
<th>up to 64</th>
<th>up to 72</th>
<th>up to 96</th>
<th>up to 144</th>
<th>up to 288</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.413</td>
<td>0.413</td>
<td>0.413</td>
<td>0.531</td>
<td>0.531</td>
<td>0.571</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.052</td>
<td>0.055</td>
<td>0.054</td>
<td>0.088</td>
<td>0.095</td>
<td>0.108</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>4.134</td>
<td>4.134</td>
<td>4.134</td>
<td>5.315</td>
<td>5.315</td>
<td>5.709</td>
</tr>
</tbody>
</table>

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Tight-Buffered Distribution

CABLE DESIGN
1. Optical fiber.
2. Tight-buffer.
3. Reinforcing elements — aramid yarns.
4. Halogen free flame-retardant jacket.

ADVANTAGES
- Perfect solution for offices and data centers
- More flexible compared to standard riser cable
- All-dielectric construction
- Easy termination
- Flame-retardant
- UV-resistant
- Max. installation tensile loads up to 180 lb
- Resistance to crushing loads 114 lb/in

FEATURES TIGHT-BUFFERED DISTRIBUTION FOR INDOOR AND OUTDOOR INSTALLATION

Crush — 57...114 lb/in
Max. installation tension — 90-180 lb — operation; 180-360 lb — installation

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 2</th>
<th>up to 4</th>
<th>up to 6</th>
<th>up to 8</th>
<th>up to 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.189...0.201</td>
<td>0.209...0.22</td>
<td>0.224...0.236</td>
<td>0.24...0.248</td>
<td>0.268...0.272</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.017...0.02</td>
<td>0.021...0.024</td>
<td>0.024...0.027</td>
<td>0.027...0.029</td>
<td>0.033...0.035</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>1.890...2.008</td>
<td>2.087...2.205</td>
<td>2.244...2.362</td>
<td>2.402...2.48</td>
<td>2.677...2.717</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 16</th>
<th>up to 24</th>
<th>up to 32</th>
<th>up to 36</th>
<th>up to 48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.291...0.295</td>
<td>0.327...0.335</td>
<td>0.406...0.413</td>
<td>0.425...0.433</td>
<td>0.472...0.476</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.039...0.04</td>
<td>0.049...0.051</td>
<td>0.062...0.064</td>
<td>0.067...0.069</td>
<td>0.08...0.082</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>2.913...2.953</td>
<td>3.268...3.346</td>
<td>4.055...4.134</td>
<td>4.252...4.331</td>
<td>4.724...4.764</td>
</tr>
</tbody>
</table>

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Distribution with Micro Tubes

CABLE DESIGN
1. Optical fiber.
3. Reinforcing elements — aramid yarns.
4. Halogen-free flame-retardant jacket.

ADVANTAGES
- All-dielectric construction
- UV-resistant
- Flame-retardant
- Resistance to crushing loads from 57 lb/in
- Max. installation tensile loads up to 180 lb
- High density of fibers makes it possible to bundle up to 24 fibers into micro loose tubes and place up to 48 micro loose tubes in a cable

FEATURES DISTRIBUTION WITH MICRO TUBES FOR INDOOR AND OUTDOOR INSTALLATION
Crush — 57 lb/in
Max. installation tension — 90-180 lb — operation; 180-360 lb — installation

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
<th>up to 36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td></td>
<td>0.217...0.236</td>
<td>0.228...0.244</td>
<td>0.244...0.26</td>
<td>0.264...0.28</td>
<td>0.291...0.303</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td></td>
<td>0.021...0.024</td>
<td>0.022...0.026</td>
<td>0.025...0.028</td>
<td>0.029...0.031</td>
<td>0.033...0.035</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td></td>
<td>2.165...2.362</td>
<td>2.232...2.52</td>
<td>2.283...2.441</td>
<td>2.441...2.598</td>
<td>2.638...2.795</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>up to 48</th>
<th>up to 96</th>
<th>up to 144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td></td>
<td>0.315...0.327</td>
<td>0.390...0.398</td>
<td>0.453...0.457</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td></td>
<td>0.037...0.04</td>
<td>0.053...0.055</td>
<td>0.067...0.068</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td></td>
<td>3.15...3.268</td>
<td>3.543...3.661</td>
<td>4.528...4.567</td>
</tr>
</tbody>
</table>

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FTTH-Subscribers

APPLICATION:

- Applied inside buildings, in trays, cable channels, in duct, tubes and blocks. It is also applied on outer sides of buildings and for patch cord manufacturing.

OPERATION PARAMETERS FTTH-SUBSCRIBERS

- Operation temperature*: +14°F...+122°F
- Installation temperature: +14°F...+122°F
- Transportation and storage temperature: +58°F...+122°F
- Minimum bending radius: 10x cable diameter
- Life time: 25 years
- Warranty: as specified in the supply agreement, min 2 years

* Operation temperature range can be increased on request.
Tight-Buffered Simplex

CABLE DESIGN
1. Optical fiber.
2. Tight-buffer.
3. Aramid yarns.
4. Halogen-free flame-retardant jacket.

FEATURS TIGHT-BUFFERED SIMPLEX
Max. installation tension — 40 lb
Crush — 29 lb/in
Fiber count 1
Connector 3.0 mm
Cable diameter, in 0.110
Cable weight, lb/ft 0.005
Min bending radius, in 1.102

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ADVANTAGES
- Cable can be terminated with a standard connector
- Compact and flexible
- Flame-retardant
- UV-resistant
- All-dielectric construction
- Perfect solution for patch cord manufacturing
- Max. installation tensile loads up to 40 lb
- Resistance to crushing loads up to 29 lb/in

Click here to see detailed features of this design.
Tight-Buffered Duplex

CABLE DESIGN
1. Optical fiber.
2. Tight-buffer.
3. Aramid yarns.
4. Halogen-free flame-retardant jacket.

FEATURES TIGHT-BUFFERED DUPLEX
Max. installation tension — 40 lb
Crush — 29 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.11x0.22</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.010</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>1.102</td>
</tr>
</tbody>
</table>

ADVANTAGES
- Cable can be terminated with a standard connector
- Compact and flexible
- Flame-retardant
- All-dielectric construction
- UV-resistant
- Perfect solution for patch cord manufacturing
- Max. installation tensile loads up to 40 lb
- Resistance to crushing loads 29 lb/in

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**APPLICATION:**

- Applied for aerial installation on transmission towers, lamp posts, between buildings and constructions

- Applied for installation inside buildings, in trays, in ducts, on outer sides of buildings

**OPERATION PARAMETERS FTTH–DROP**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>-76°F...+158°F (Flat Type Drop Reinforced)</td>
</tr>
<tr>
<td></td>
<td>-58°F...+122°F (Round Type Drop Tight-buffer)</td>
</tr>
<tr>
<td></td>
<td>-40°F...+158°F (Round Type Drop)</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>+14°F...+122°F (Flat Type Drop Reinforced)</td>
</tr>
<tr>
<td></td>
<td>-22°F...+122°F (Round Type Drop Tight-buffer)</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-58°F...+122°F (Flat Type Drop Reinforced)</td>
</tr>
<tr>
<td></td>
<td>-76°F...+158°F (Round Type Drop Tight-buffer)</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>10×cable diameter</td>
</tr>
<tr>
<td></td>
<td>15×cable diameter (Round Type Drop Tight-buffer)</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
<tr>
<td>Warranty</td>
<td>as specified in the supply agreement, min 2 years</td>
</tr>
</tbody>
</table>

* Operation temperature range can be increased on request.
Flat Type Drop Reinforced

CABLE DESIGN
1. Optical fiber.
2. Loose tube.
3. Fiberglass rods.

FEATURES FLAT TYPE DROP REINFORCED
Max. installation tension – 675 lb
Crush – 799 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>up to 8</th>
<th>up to 12</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions of cable, in</td>
<td>0.118×0.299</td>
<td>0.122×0.315</td>
<td>0.130×0.339</td>
<td>0.142×0.374</td>
</tr>
<tr>
<td>Tensile strength, lb</td>
<td>292</td>
<td>315</td>
<td>382</td>
<td>495</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.018</td>
<td>0.02</td>
<td>0.023</td>
<td>0.028</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications – sales@incabamerica.com

ADVANTAGES
- All-dielectric construction
- Exceedingly high crush resistance
- Allowed tensile loads up to 675 lb
- Suitable for aerial installation up to 328 ft
- Operation temperature range down to -76°F
Round Type Drop Tight-buffer

CABLE DESIGN
1. Optical fiber.
2. Tight-buffer.
3. Water-blocking yarns.
4. PBT loose tube.
5. Aramid yarns.

FEATURES ROUND TYPE DROP TIGHT-BUFFER
- Max. installation tension — 225 lb
- Crush — from 171 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>1</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.177</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.013</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>1.772</td>
</tr>
</tbody>
</table>

ADVANTAGES
- All-dielectric construction
- Minimal weight and size
- Allowed tensile loads up to 225 lb
- Resistance to crushing loads up to 171 lb/in
- Low cost

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com

Click here to see detailed features of this design
Round Type Drop

CABLE DESIGN
1. Optical fiber.
2. PBT loose tube filled with water-swellable gel.
3. Aramid yarns.

ADVANTAGES
- All-dielectric construction
- Minimal weight and size
- Allowed tensile loads up to 225 lb
- Resistance to crushing loads up to 171 lb/in
- Low cost

FEATURES ROUND TYPE DROP
Max. installation tension — 225...450 lb
Crush — 171 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range up to 8</th>
<th>up to 16</th>
<th>up to 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable diameter, in</td>
<td>0.177...0.217</td>
<td>0.197...0.236</td>
<td>0.209...0.244</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.014...0.021</td>
<td>0.017...0.024</td>
<td>0.018...0.026</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>1.772</td>
<td>1.969...2.362</td>
<td>2.087...2.441</td>
</tr>
</tbody>
</table>

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Semi-Finished Product

APPLICATION

Applied as a part of products, that require high corrosion-resistance: ground wires, conductors, wire ropes and other. Or can be used as a finished cable.

Suitable for stationary installations, when the optical fiber need extra protection from mechanical damage.
Fiber in (Stainless) Steel Tube (FIST)

APPLICATION
Used for stationary installation when the optical fiber needs extra protection from mechanical damage.

CABLE DESIGN
1. Optical fiber.
3. Water-blocking gel.
4. Stainless steel tube.

ADVANTAGES
- Up to 48 optical fibers in a tube
- Small size

FEATURES FIST
| Fiber count               | up to 1...48            |
| Outer diameter, mm        | 1.1...7                 |
| Inner diameter, mm        | 0.8...6.2               |
| Module wall thickness, mm | 0.15; 0.2; 0.4          |
| Optical fiber excessive length, % | 0...0.8       |
| Tube                      | Stainless steel 304, 316L, Incoloy |

OPERATION PARAMETERS FIST
- Operation temperature: -76°F...158°F
- Installation temperature: -22°F...122°F
- Transportation and storage temperature: -76°F...158°F
- Minimum bending radius: 25x cable diameter
- Life time: 25 years

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com

Click here to see detailed features of this design
Reinforced FIST

APPLICATION

Designed to monitor physical parameters as a separate sensor cable or as part of logging and downhole cables, high-voltage power cables

Recommended for installation in tunnels, roads, runways and for other industrial applications that require high mechanical strength combined with temperature resistance and fast response times.

CABLE DESIGN

1. Optical fiber.
4. Stainless steel tube.

FEATURES REINFORCED FIST

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 1...48</td>
</tr>
<tr>
<td>Outer diameter, mm</td>
<td>2.4...4</td>
</tr>
<tr>
<td>Module wall thickness, mm</td>
<td>0.4</td>
</tr>
<tr>
<td>Optical fiber excessive length, %</td>
<td>0...0.8</td>
</tr>
<tr>
<td>Tube</td>
<td>Stainless steel 304, 316L, Incoloy</td>
</tr>
</tbody>
</table>

OPERATION PARAMETERS REINFORCED FIST

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature</td>
<td>-76°F...158°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>-22°F...122°F</td>
</tr>
<tr>
<td>Transportation and storage temperature</td>
<td>-76°F...158°F</td>
</tr>
<tr>
<td>Minimum bending radius</td>
<td>25xcable diameter</td>
</tr>
<tr>
<td>Life time</td>
<td>25 years</td>
</tr>
</tbody>
</table>

ADVANTAGES

Up to 48 optical fibers in a tube

A unique combination of small diameter and weight with extremely high strength characteristics

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
ACS Wire (aluminum-clad steel wire)

APPLICATION

Used as part of products, that require high corrosion-resistance: ground wires, conductors, wire ropes and other

CABLE DESIGN

1. Stainless steel wire.
2. A layer of aluminum

ADVANTAGES

Aluminum-clad steel wire eliminates corrosion

FEATURES ACS WIRE

<table>
<thead>
<tr>
<th>Wire label (Type)</th>
<th>Steel core diameter, mm</th>
<th>Wire overall diameter, mm</th>
<th>Minimum tensile strength, MPa</th>
<th>Load at 1% elongation, MPa</th>
<th>Maximum resistance at 20°C, nom•m</th>
<th>Conductivity, %</th>
<th>IACS</th>
</tr>
</thead>
<tbody>
<tr>
<td>20SA (A)</td>
<td>1.80 3.25</td>
<td>3.25 3.45</td>
<td>1340 1200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.25 3.45</td>
<td>3.45 3.65</td>
<td>1310 1180</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.45 3.65</td>
<td>3.65 3.95</td>
<td>1270 1140</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.65 3.95</td>
<td>3.95 4.10</td>
<td>1250 1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.95 4.10</td>
<td>4.10 4.40</td>
<td>1210 1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.10 4.40</td>
<td>4.40 4.60</td>
<td>1180 1070</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.40 4.60</td>
<td>4.60 4.75</td>
<td>1140 1030</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.60 4.75</td>
<td>4.75 5.00</td>
<td>1100 1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.75 5.00</td>
<td>5.00 5.50</td>
<td>1070 1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20SAw (B)</td>
<td>1.80 5.50</td>
<td>5.50 6.00</td>
<td>1320 1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27SA</td>
<td>2.50 5.00</td>
<td>5.00 5.80</td>
<td>1080 880</td>
<td>800</td>
<td>63.86</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>30SA</td>
<td>2.50 5.00</td>
<td>5.00 6.00</td>
<td>880 650</td>
<td>650</td>
<td>57.47</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>40SA</td>
<td>2.80 5.00</td>
<td>5.00 6.00</td>
<td>680 500</td>
<td>500</td>
<td>43.10</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

OPERATION PARAMETERS CLAD WIRE

Maximum short-term heating temperature of the wire | not more than 392°F
Service life | 45 years

We design cables based on our Customers’ specific technical requirements.
Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
Knowledge Base

Our experience in the production and delivery of optical fiber cable is now available for you in our Knowledge Database. Here you can find useful articles and links, calculations and selection templates, data on parameters and color identification of the optical fibers, guidelines for transportation, storage and maintenance of the optical fiber cable, and other information designed to help you build a reliable optical communication system.

Learn more at incabamerica.com

Types and Parameters of Optical Fiber

Corning® SMF-28® Ultra Fiber is used in all Incab cables. Its fiber attenuation is at least 10% lower than that of the other standard single-mode fibers. It is 10-times more bend-resistant compared to other standard single-mode fibers, and is 100%-compatible with other single-mode fibers. We normally use Corning optical fibers in our cables, but we can also use fibers of other manufacturers on request.

Single Mode Fiber

<table>
<thead>
<tr>
<th>Fiber type</th>
<th>U-type</th>
<th>N-type</th>
<th>G.657A1</th>
<th>G.657A2</th>
<th>G.657B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber brand</td>
<td>Corning® SMF-28® Ultra</td>
<td>Corning LEAF</td>
<td>Clear Curve XB</td>
<td>Clear Curve LBL</td>
<td>Clear Curve ZBL</td>
</tr>
</tbody>
</table>

**Dimensional Specifications**

| Core-Clad Concentricity | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Cladding Diameter       | 125±0.7 | 125±0.7 | 125±0.7 | 125±0.7 | 125±1 |
| Cladding Non-Circularity | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Coating Diameter        | 242±5 | 245±5 | 242±5 | 242±5 | 242±5 |

**Transmission Specifications**

<table>
<thead>
<tr>
<th>Wavelength, nm</th>
<th>1310...</th>
<th>1550</th>
<th>1310...</th>
<th>1310...</th>
<th>1310...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310 nm wavelength</td>
<td>0.32</td>
<td>—</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>1383 nm wavelength</td>
<td>0.32</td>
<td>—</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>1490 nm wavelength</td>
<td>0.21</td>
<td>—</td>
<td>0.24</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td>1550 nm wavelength</td>
<td>0.18</td>
<td>0.22</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>1625 nm wavelength</td>
<td>0.20</td>
<td>0.24</td>
<td>0.23</td>
<td>0.23</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Maximum Attenuation (dB/km):

<table>
<thead>
<tr>
<th>Wavelength, nm</th>
<th>1310 nm wavelength</th>
<th>1550 nm wavelength</th>
<th>1625 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310 nm wavelength</td>
<td>18</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>1550 nm wavelength</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>1625 nm wavelength</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

Dispersion ps/(nm*km)

<table>
<thead>
<tr>
<th>Wavelength, nm</th>
<th>1310 nm wavelength</th>
<th>1550 nm wavelength</th>
<th>1625 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310 nm wavelength</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1550 nm wavelength</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>1625 nm wavelength</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>
## Multi-Mode Fiber

<table>
<thead>
<tr>
<th>Fiber type</th>
<th>U-type</th>
<th>N-type</th>
<th>G.657A1</th>
<th>G.657A2</th>
<th>G.657B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polarization Mode Dispersion (PMD), ps/√km</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Zero Dispersion</td>
<td>0.092</td>
<td>—</td>
<td>0.089</td>
<td>0.092</td>
<td>0.092</td>
</tr>
<tr>
<td>Zero Dispersion Wavelength, nm</td>
<td>1310...</td>
<td>1304...</td>
<td>1304...</td>
<td>1304...</td>
<td>1304...</td>
</tr>
<tr>
<td>Wavelength, nm</td>
<td>1324</td>
<td>—</td>
<td>1324</td>
<td>1324</td>
<td>1324</td>
</tr>
<tr>
<td>Cable Cutoff Wavelength, nm</td>
<td>1260</td>
<td>1480</td>
<td>1260</td>
<td>1260</td>
<td>1260</td>
</tr>
</tbody>
</table>

### Mode-Field Diameter, (μm)

| 1310 nm wavelength | 9.2±0.4 | 8.6±0.4 | 8.6±0.4 | 8.6±0.4 | — |
| 1550 nm wavelength | 10.4±0.5 | 9.6±0.4 | 9.6±0.5 | 9.6±0.5 | 9.6±0.5 |

### Macrobend Loss, dB, λ=1550 nm/1625 nm

| (1 turn x ø10.0 mm) | 0.5/1.5 | — | 0.5/1.5 | — | — |
| (1 turn x ø7.5 mm) | — | — | — | 0.4/0.8 | — |
| (1 turn x ø5.0 mm) | — | — | — | — | 0.1/0.3 |
| (100 turn x ø60 mm) | — | 0.05/0.05 | — | — | — |

### Fiber type

<table>
<thead>
<tr>
<th>Fiber type</th>
<th>‘M’ Type</th>
<th>‘G’ Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber brand</td>
<td>Corning ClearCurve Multimode</td>
<td>Corning 62.5/125</td>
</tr>
<tr>
<td>ITU recommendation</td>
<td>G.651.1</td>
<td>IEC 60793-2-10</td>
</tr>
</tbody>
</table>

### Dimensional Specifications

| Core Diameter | 50.0±2.5 | 62.5±3.0 |
| Core-Clad Concentricity | 1.5 | 3 |
| Cladding Diameter | 125±1 | 125±2 |
| Cladding Non-Circularity | 1 | 2 |
| Coating Diameter | 242±5 | 245±5 |

### Transmission Specifications

| Wavelength, nm | 1300 | 1300 |
| Maximum Attenuation (dB/km) | 2.3 | 3 |
| 850 nm wavelength | 0.6 | 0.7 |
| 1300 nm wavelength | — | — |
| Numerical Aperture | 0.200±0.015 | 0.275±0.015 |
| Bandwidth, MHz | 700 | 200 |
| 850 nm wavelength | 500 | 500 |
| 1300 nm wavelength | — | — |
| Effective Group Index of Refraction | 1.482 | 1.496 |
| 850 nm wavelength | 1.477 | 1.491 |
Other colors are available on request
Transportation. Maintenance. Installation

Transportation:
1. Do not lay reels on the flange. They must remain upright.
2. The bolts on wooden reels should be re-tightened prior to installation. Do not use nails to repair wooden reels.
3. When transporting reels by truck, the truck should have a wooden deck.

Installation guideline overview. Ask Incab for the installation guidelines for the specific cable you are using:
1. Our cables are designed for installation by hand or standard installation equipment.
2. Cable termination and installation should be done in ways and with instruments that eliminate the danger of cable damage.
3. Basic requirements:
   - Length of cable axial torsion at an angle $\pm 360^\circ \geq 4$ m
   - Admissible static bending radius for duct cables $\geq 250$ mm
   - Admissible static bending radius of loose tube $\geq 20 \times$ cable diameter

Maintenance:
1. Keep reels protected from external environmental effects such as, sun, precipitation and dust.
2. Do not lay reels on the flange.
3. Storage temperature range is from -76°F ... +158°F.

Admissible static bending radius of loose tube $\geq 20 \times$ cable diameter

Admissible installation bending radius of optical fiber $\geq 3$ mm (for up to 10 minutes)

Please find detailed information on our website incabamerica.com or upon request at support@incabamerica.com
Find your REP

KY
TESA
Main Office:
544 Enterprise Drive Lewis Center, OH 43035
Phone: (614) 847-8200
www.tesa-inc.com

LA
JTH Agencies
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8251 Summa Avenue # A, Baton Rouge, LA 70809
Phone: 225-767-7420
www.jthagencies.com

MI
HEK, Inc.
Kenny Stevens:
3991 S. Portage Rd. Jackson, MI. 49201
Office: (734) 995-0900
Mobile: (248) 595-3377
www.hekinc.com

IN, OH, KY
WE
Peterson Company
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10700 W. 50th Avenue, Wheat Ridge, CO. 80033
Phone: (303) 388-6322
www.peterson-co.com

VI
Actual information
on the website

IL, WI, MI
Weldy Lamont Group
Main Office:
351 Commerce Court, Vadnais Heights, MN 55127
Phone: (651) 312-4200
www.weldylamontgroup.com

VT, NY, ME, PA, NJ, CT, MA, NH, RI
Power Sales Group
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175 A Power Street Suite 105 Danvers, MA 01923
Phone: (978) 535-9800
www.power-sales.com

ND, SD, MN, WI
Energy Product Sales
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351 Commerce Court, Vadnais Heights, MN 55127
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www.energyproductsales.com

VA, NC, SC, MD, DE
Chapman Company
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1338 Hundred Oaks Drive, Suite D Charlotte, NC 28217
Phone: (704) 525-2421
www.rwchapman.com

AK, WA, OR, ID, MT, UT
D’Ewart Representatives L.L.C.
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www.dewart.com

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Young & Co.
Pasadena Office:
530 S. Marengo Ave., Pasadena, CA 91101
Phone 626-683-9955
Oakland Office:
360 22nd Street, Suite 700, Oakland, CA 94612
Phone: (510) 465-5550
www.youngco.com

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Energy Solutions, Inc.
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1417 N. 203rd St, Elkhorn, NE 68022
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www.energysolutions-inc.com

KS, MO, IL
Power Equipment Sales
Main Office:
1507 Lake Ave Kansas City, KS 66103-1732
Phone: (913) 384-3848
www.powerequipsales.com

AR, MS, LA
JTH Agencies
Main Office:
8251 Summa Avenue # A, Baton Rouge, LA 70809
Phone: 225-767-7420
www.jthagencies.com

OK
Utility Sales Agents of Oklahoma
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1509 W. 104th St., Oklahoma City, OK 73159
Phone: (405) 692-8100
www.utilitysalesagentsofoklahoma.com

TX
Utility Power Solutions, LLC
Main Office:
2505 McAllister Rd., Houston, TX 77092
Phone: (817) 312-5286
www.utilitypowers.com

TX
Utility Sales Agents of South Texas
Main Office:
2505 McAllister Rd., Houston, TX 77092
Phone: (713) 688-2236
www.usasouthtexas.com

AZ, NV, NM
Verde Power Sales
Main Office:
7777 E Paradise Lane, Suite 106, Scottsdale, AZ 85260
Phone: (480) 991-9191
www.verdepowersales.com

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Sales Support Dan L Berg
Phone: +1-706-388-1226
Email: dan.berg@incabamerica.com

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Sales Support Leonardo Rojas
Phone: +1-682-307-9031
Email: leonardo.rojas@incabamerica.com
INNOVATIVE INTELLECTUAL INDIVIDUAL

INcab

NOW PRODUCING

IN TEXAS

MORE LIFE
factory video tour

MORE FUN
parcel of color and light

KEEP IT REEL
ACES OPGW

MORE JOY
digital gifts

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