FIBER OPTIC CABLE
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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: Americas, 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!

Alexander Smilgevich
President
alexander.smilgevich@incabamerica.com

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

Dan L Berg
National Sales Director
dan.berg@incabamerica.com

Watch the factory video tour
PRODUCT

Incab America LLC has the widest product range

103 types of cable designs

we design cables based on our Customers’ specific technical requirements

Design is one of the core competencies of Incab which developed from our experience in the production and supply of fiber optic cables.
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 Products
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 closures, fittings, clamps, connectors, vibration dampers, fixtures

Transportation, storage and installation guidelines

Reels placing on a 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 dead ends, suspensions, down leads, splice closures 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! Latest updates 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 is recognized as both effective and ISO compliant by TÜV International Certification;
— declarations for all cable types manufactured by Incab;
— reference letters and certificates provided by federal companies and controlling authorities;
— software to select the right type of fiber optic cable, the right size of the reels, and the optimal arrangement of reels 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;
— check of resistance and tightness of the jacket (for armored cables);
— control of marking and packing.

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 as ISO compliant by TÜV International Certification (TIC). Our environmental management system and health and safety management system are certified as ISO and BS OHSAS compliant by TÜV International Certification (TIC).

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, Comptotec and other manufacturers.

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

OPGW:
— production line for manufacture of stainless steel tubes containing optical fibers;
— pre-cleaning and rewinding line;
— cladding line;
— drawing line;
— stranding lines (planetary type stranding machines).
# OPGW/Ground Wire

**APPLICATION:**
- Protection of power lines from lightning overvoltage
- Construction of optical communication systems

**OPERATING PARAMETERS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature range</td>
<td>-58°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>-58°F...+158°F</td>
</tr>
<tr>
<td>Min bending radius</td>
<td>20×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**

**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)

**FEATURES**

**Crush — 571 lb/in**

<table>
<thead>
<tr>
<th></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 tension, 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

**ADVANTAGES**

- ACS wires are highly corrosion-resistant
- Optical ground wire (OPGW) shields high-voltage conductors from lightning strikes
- Aluminum alloy wires provide conductivity for fault current
## OPGW CA

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

### FEATURES

**Crush** — 857 lb/in

<table>
<thead>
<tr>
<th>Feature</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>Maximum rated design tension, 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 circuit capacity (initial temp 77°F), kA²•s</td>
<td>5...300</td>
</tr>
<tr>
<td>Short circuit current for 0.5 s, kA</td>
<td>3...20</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 AP**

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

**FEATURES**

**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 tension, 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</td>
<td>5...400</td>
</tr>
<tr>
<td>temperature 77°F, final temperature 392°F)</td>
<td></td>
</tr>
<tr>
<td>Short circuit current for 0.5 s, 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

**DESIGN**
1. Central strength member (aluminum-clad steel or aluminum alloy wire)
2. Optical fiber
3. Stainless steel tube filled with water-blocking gel
4. Stranded wires (aluminum-clad steel wires and/or aluminum alloy wires)

**FEATURES**
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 tension, 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 0.5 s, kA</td>
<td>4...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
ACS Ground Wire
(Enhanced Corrosion-resistant Ground Wire)

**DESIGN**
1. Central strength member (aluminum-clad steel wire)
2. Stranded wires (aluminum-clad steel wires)
3. Stranded wires (aluminum-clad steel wires)

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

**FEATURES**

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

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

FEATURES
Crush — 571 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>up to 24</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.610 ... 1.358</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.316 ... 1.939</td>
</tr>
<tr>
<td>Elasticity modulus (final), ksi</td>
<td>9 297 ... 13 938</td>
</tr>
<tr>
<td>Rated breaking strength, lb</td>
<td>9 577 ... 73 513</td>
</tr>
<tr>
<td>Maximum rated design tension, lb</td>
<td>3 754 ... 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
Fire Rated Optical Cable

APPLICATION:

Recommended for installation on sites with increased security requirements

TYPICAL APPLICATIONS

for fire protection and other 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 facilities

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

For child care centers, educational institutions, board and care facilities, hospitals, dormitory blocks
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 Special
    (Stainless Steel Tube Single Jacket Cable)
- **InGround**
  - InGround Standard
    (Multi-Tube Single Armor Double Jacket Cable)
  - InGround Standard Dielectric
    (Multi-Tube Single Armor Double Jacket Cable)
  - InGround Standard Reinforced
    (Multi-Tube Double 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 Stainless Steel Tube
    (Uni-Tube Single Armor Single Jacket Cable)
Fire Rated

ADVANTAGES

- 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

**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

**DESIGN**

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

**FEATURES**

**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

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
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 design
- 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

ADVANTAGES

Remains functional under direct flame for at least 180 minutes
Armor ensures excellent rodent resistance
Up to 144 fibers
Easy to install and splice prep

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

FEATURES

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 Cables
for harsh environment

We would like to present you our new company - Incab Specialty Cables. Incab Specialty Cables (ISC) LLC covers such applications as: Oil&Gas, Security, Structural health monitoring, Rail Roads, Fire Detection, Geophysics, etc. and manufactures custom-made cables, for example, 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
Upstream
Midstream
Downstream

Structural health monitoring
Bridges
Rail Roads
Soil Movements
Geothermal Activity

Pipeline leak monitoring

Security

Fire Detection
InTube

APPLICATION:

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

OPERATING PARAMETERS

Operation temperature
-58°F (-49°F InTube Micro)...+158°F
-22°F...+122°F
-58°F...+158°F
15×cable diameter
25 years
as specified in the supply agreement, min 2 years

Installation temperature
-22°F...+122°F
Transportation and storage temperature
-58°F...+158°F

Minimum bending radius

Life time

Warranty

* 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 Aramid**  
(Multi-Tube Single Jacket 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  
6. Jacket  
7. Ripcord

**ADVANTAGES**
- Max. installation tension up to 337 lb  
- All-dielectric design  
- Easy to install

**FEATURES**
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
InTube Standard Fiberglass
(Multi-Tube Single Jacket 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 design
Reduced weight and size. Convenient for blowing in tubes
Up to 144 fibers

FEATURES
Max. installation tension — 337 lb
Crush — 171 lb/in
Fiber count | up to 48 | up to 72 | up to 96 | up to 144
Cable diameter, in | 0.378 | 0.39 | 0.425 | 0.457
Cable weight, lb/ft | 0.046 | 0.048 | 0.056 | 0.064
Min bending radius, in | 5.669 | 5.846 | 6.378 | 6.85

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

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

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)

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
Max. installation tension — 337 lb
Crush — 57 lb/in

<table>
<thead>
<tr>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
</tr>
<tr>
<td>Cable diameter, in</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
</tr>
<tr>
<td>Min bending radius, in</td>
</tr>
</tbody>
</table>

ADVANTAGES
- All-dielectric design
- Easy to install
- Max. installation tension 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
**InDuct**

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

**OPERATING PARAMETERS**
- Operation temperature* -58°F...+158°F
- Installation temperature -22°F...+122°F
- Transportation and storage temperature -58°F...+158°F
- Minimum bending radius 15x 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)

FEATURES
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>

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
7. Jacket

ADVANTAGES
- The most popular design
- Excellent rodent resistance
- Resistance to crushing load from 171 lb/in
- Max. installation tension up to 607 lb
- Reduced weight and size. Suitable for blowing in tubes
- Cost-effective design
- Increased tightness due to application of water-swellable tape

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

**FEATURES**

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.

**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 yarns  
5. Water-swellable yarns  
6. Inner jacket  
7. Corrugated steel tape armor  
8. Jacket

**ADVANTAGES**

- Proven reliable design  
- Excellent rodent resistance  
- Resistance to crushing load from 171 lb/in  
- Cost-effective design  
- Improved reliability due to inner jacket  
- Max. installation tension up to 607 lb

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
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>Fiber count</td>
<td>up to 12</td>
<td>up to 16</td>
<td>up to 24</td>
</tr>
<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>

ADVANTAGES
Cost-effective design
Excellent rodent resistance
Resistance to crushing load from 286 lb/in
Max. installation tension up to 607 lb
Reduced weight and size
Up to 24 fibers

DESIGN
1. Optical fiber
2. PBT loose tube filled with water-blocking gel
3. Water-blocking gel or water-swellable yarns
4. Corrugated steel tape armor
5. Jacket
6. Steel wires

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)

**DESIGN**
1. Optical fiber
2. PBT loose tube filled with water-blocking gel
3. Water-blocking gel or water-swellable yarns
4. Corrugated steel tape armor
5. Jacket
6. Steel wires

**ADVANTAGES**
- Cost-effective design
- Excellent rodent resistance
- Up to 48 fibers
- Reduced weight and size
- Resistance to crushing load from 171 lb/in
- Max. installation tension up to 607 lb

**FEATURES**

<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
**InDuct Standard Dielectric Double Jacket**
(Multi-Tube Fiberglass Double Jacket 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 yarns
5. Inner jacket
6. Reinforcing member – fiberglass yarns
7. Jacket

**FEATURES**
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

**ADVANTAGES**
- All-dielectric design
- Fiberglass yarns prevent damage by rodents
- Resistance to crushing load from 171 lb/in
- Max. installation tension up to 607 lb

Click here to see detailed features of this design
InDuct Special
(Uni-Tube Galvanized Steel Wires)

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

**FEATURES**

**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**
- Cost-effective design
- Excellent rodent resistance
- Resistance to crushing load from 286 lb/in
- Max. installation tension up to 607 lb
- Reduced weight and size
- Up to 24 fibers
- 100% waterproof

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
(Stainless Steel Tube Single Jacket Cable)

**DESIGN**
1. Optical fiber
2. Stainless steel tube filled with water-blocking gel
3. Jacket

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

**FEATURES**
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. Please, contact us for a cable designed to your exact specifications — sales@incabamerica.com
**InGround**

**APPLICATION:**

- Designed for harsh environments with potential mechanical impact: in all ground types, swamps and harsh rivers.
- Applied in ducts, trays, blocks, tunnels, and collecting channels.
- Suitable for aerial installation between buildings and structures. (However, its higher weight and larger diameter compared to self-supporting cables must be taken into consideration.)

**OPERATING PARAMETERS**

<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 temp.</td>
<td>-58°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 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)

**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 yarns
5. Inner jacket
6. Armor of galvanized steel wires
7. Jacket

**ADVANTAGES**
- The most popular design
- Reliable protection from serious mechanical impact
- Excellent rodent resistance
- Max. installation tension up to 17985 lb
- Resistance to crushing load up to 571 lb/in

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

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</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></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></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></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>Range</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></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></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></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)

**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 yarns
5. Inner jacket
6. Fiberglass rods
7. Jacket

**ADVANTAGES**
- Reduced weight, suitable for aerial installation
- Reliable protection from serious mechanical impact
- Excellent rodent resistance
- All-dielectric design
- Max. installation tension up to 4496 lb
- Resistance to crushing load up to 571 lb/in

**FEATURES**

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

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>Cable diameter, in</th>
<th>Cable weight, lb/ft</th>
<th>Min bending radius, in</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 16</td>
<td>0.488…0.614</td>
<td>0.091…0.165</td>
<td>7.323…9.213</td>
<td></td>
</tr>
<tr>
<td>up to 32</td>
<td>0.496…0.622</td>
<td>0.093…0.168</td>
<td>7.441…9.331</td>
<td></td>
</tr>
<tr>
<td>up to 48</td>
<td>0.512…0.638</td>
<td>0.099…0.178</td>
<td>7.677…9.567</td>
<td></td>
</tr>
<tr>
<td>up to 64</td>
<td>0.520…0.646</td>
<td>0.102…0.180</td>
<td>7.795…9.685</td>
<td></td>
</tr>
<tr>
<td>up to 72</td>
<td>0.567…0.669</td>
<td>0.121…0.190</td>
<td>8.504…10.039</td>
<td></td>
</tr>
<tr>
<td>up to 96</td>
<td>0.567…0.669</td>
<td>0.121…0.190</td>
<td>8.504…10.039</td>
<td></td>
</tr>
<tr>
<td>up to 144</td>
<td>0.693</td>
<td>0.197</td>
<td>10.394</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 Standard Reinforced
(Multi-Tube Double Armor Double Jacket 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 yarns
5. Inner jacket
6. Double armor of galvanized steel wires
7. Jacket

**FEATURES**
Max. installation tension — 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>0.772</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>

**ADVANTAGES**
- Suitable for application in harsh environments: in frozen soil, on the bottom of calm rivers and lakes
- Max. installation tension up to 17985 lb
- Excellent rodent resistance
- Resistance to crushing load 571 lb/in

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)

**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 yarns
5. Inner jacket
6. Double armor of fiberglass plastic rods
7. Jacket

**ADVANTAGES**
- Suitable for application in harsh environments: in frozen soil, on the bottom of calm rivers and lakes
- Max. installation tension up to 8992 lb
- Resistance to crushing load from 571 lb/in
- All-dielectric design
- Excellent rodent resistance

**FEATURES**

<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>

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

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)*

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

**FEATURES**

<table>
<thead>
<tr>
<th></th>
<th>Fiber count</th>
<th>Cable diameter, in</th>
<th>Cable weight, lb/ft</th>
<th>Min bending radius, in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. installation tension</td>
<td>up to 16</td>
<td>0.319</td>
<td>0.078</td>
<td>4.783</td>
</tr>
<tr>
<td></td>
<td>up to 24</td>
<td>0.327</td>
<td>0.083</td>
<td>4.902</td>
</tr>
</tbody>
</table>

**ADVANTAGES**

- Cost-effective design
- Reduced weight and size
- Up to 24 fibers
- Resistance to crushing load from 400 lb/in
- Reliable protection from serious mechanical impact
- Excellent rodent resistance

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)

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

**ADVANTAGES**
- Reduced weight, suitable for aerial installation
- All-dielectric design
- Reliable protection from serious mechanical impact
- Maximum resistance to crushing load from 400 lb/in
- Up to 24 fibers
- Excellent rodent resistance
- Max. installation tension up to 1798 lb

**FEATURES**

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

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 6</td>
<td>up to 8</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.421...0.469</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.075...0.097</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>6.319...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
InGround Light Reinforced
(Uni-Tube Double Armor Single Jacket Cable)

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

**ADVANTAGES**
- Suitable for application in harsh environments
- Maximum resistance to crushing load from 571 lb/in
- Up to 24 fibers
- Excellent rodent resistance
- Max. installation tension up to 11240 lb

**FEATURES**
- **Max. installation tension** — 6744...11240 lb
- **Crush** — 571 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
<th>Crush, in</th>
<th>Fiber diameter, in</th>
<th>Weight, lb/ft</th>
<th>Min bending radius, in</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 12</td>
<td>0.465...0.535</td>
<td>0.198...0.302</td>
<td>6.969...8.031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>up to 16</td>
<td>0.469..0.539</td>
<td>0.203...0.308</td>
<td>7.028...8.091</td>
<td></td>
<td></td>
</tr>
<tr>
<td>up to 24</td>
<td>0.48...0.551</td>
<td>0.214...0.33</td>
<td>7.205...8.268</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
InGround Light Reinforced Dielectric
(Uni-Tube Double Armor Single Jacket Cable)

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

FEATURES
Max. installation tension — 3372...6744 lb
Crush — 571 lb/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>0.500...0.626, 0.500...0.626, 0.500...0.626, 0.500...0.626, 0.508...0.634</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.110...0.184, 0.110...0.184, 0.110...0.184, 0.110...0.184, 0.115...0.190</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.500...9.390, 7.500...9.390, 7.500...9.390, 7.500...9.390, 7.618...9.508</td>
</tr>
</tbody>
</table>

ADVANTAGES
- Suitable for application in harsh environments
- All-dielectric design
- Reduced weight and size. Convenient for blowing in tubes
- Resistance to crushing load from 571 lb/in
- Max. installation tension up to 6744 lb
- Excellent rodent resistance

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)

**FEATURES**

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>

**DESIGN**

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

**ADVANTAGES**

- Up to 96 fibers  
- 100% waterproof  
- Resistance to extreme crushing load — from 799 lb/in  
- Max. installation tension up to 2248 lb  
- Excellent rodent resistance

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)

**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 yarns  
5. Aluminum and polymer tape  
6. Inner jacket  
7. Armor of galvanized steel wires  
8. Jacket

**FEATURES**

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)

**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 yarns
5. Aluminum and polymer tape
6. Inner jacket
7. Double armor of galvanized steel wires
8. Jacket

**FEATURES**

**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>

**ADVANTAGES**
- Excellent solution for wetland and cross-river installation
- Resistance to crushing load up to 571 lb/in
- Max. installation tension up to 17985 lb
- Excellent rodent resistance
- With laminated aluminum polyethylene jacket — to protect the cable core from moisture
- Aluminum compound tape to protect optical fiber from hydrogen penetration
- Suitable for application in harsh environments

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

**OPERATING PARAMETERS**

- **Operation temperature**
  -58°F...+158°F

- **Installation temperature**
  -22°F...+122°F

- **Transportation and storage temperature**
  -58°F...+158°F

- **Minimum bending radius**
  15x cable diameter

- **Life time**
  25 years

- **Warranty**
  as specified in the supply agreement, min 2 years

*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)

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

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

**FEATURES**
- 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>MRDT, lb</td>
<td>4496</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.563</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.254</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>8.445</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)

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

**ADVANTAGES**
- Installation down to 16404 ft
- Suitable for application in harsh environments
- Up to 48 fibers in a tube

**FEATURES**
**Max. installation tension** — 4496...19109 lb
**Crush** — 857 lb/in

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>up to 12</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.512...0.780</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.218...0.703</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.677...11.693</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:**

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

**OPERATING PARAMETERS**

<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>-58°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.
InAir Figure 8 Standard
(Multi-Tube Single Jacket 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 yarns
5. Jacket
6. Steel wire

**FEATUERS**
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>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>0.622...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>0.505...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)

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 yarns
5. Jacket
6. Dielectric rod

FEATURES
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>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)

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

FEATURES
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)

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

**ADVANTAGES**
- All-dielectric design
- Reduced weight and size
- Cost-effective design

**FEATURES**
- 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>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>0.531...0.571</td>
<td>0.535...0.575</td>
<td>0.543...0.583</td>
<td>0.551...0.591</td>
<td>0.563...0.602</td>
</tr>
<tr>
<td>Equivalent cable diameter, in</td>
<td>0.327...0.343</td>
<td>0.331...0.346</td>
<td>0.339...0.354</td>
<td>0.344...0.362</td>
<td>0.354...0.370</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.049...0.061</td>
<td>0.050...0.061</td>
<td>0.051...0.062</td>
<td>0.052...0.064</td>
<td>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

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

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

FEATURES
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>

ADVANTAGES
- All-dielectric design
- Reduced weight and size
- Cost-effective 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

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 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 design — easy to strip.

OPERATING PARAMETERS

Operation temperature* -58°F...+158°F (MASS -58°F...+185°F)

Installation temperature -22°F...+122°F

Transportation and storage temperature -58°F...+158°F

Minimum bending radius 15×cable diameter (MASS 20×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 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)

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
7. Jacket
8. Ripcord

ADVANTAGES
- All-dielectric design – 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
- The most reliable among InAir cables. Double tensile strength
- Maximum rated design tension up to 22481 lb

FEATURES
- Crush – 171 lb/in
- Maximum rated design tension (MRDT) — 899...8992 lb

<table>
<thead>
<tr>
<th>Range</th>
<th>Fiber count up to 48</th>
<th>Fiber count up to 72</th>
<th>Fiber count up to 96</th>
<th>Fiber count 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)

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
7. Jacket
8. Ripcord

ADVANTAGES
- Cost-effective solution for city trunk lines
- All-dielectric design – 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
- Maximum rated design tension up to 3372 lb with span lengths up to 984 ft

FEATURES
Crush – 171 lb/in
Maximum rated design tension (MRDT) — 899...3372 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>Cable diameter, in</td>
<td>0.492...0.547</td>
<td>0.516...0.563</td>
<td>0.539...0.579</td>
<td>0.563...0.606</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.082...0.105</td>
<td>0.090...0.110</td>
<td>0.097...0.115</td>
<td>0.105...0.126</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>7.382...8.209</td>
<td>7.736...8.445</td>
<td>8.091...8.681</td>
<td>8.445...9.094</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 ADSS Light Aramid
(Multi-Tube Aramid Single Jacket Cable)

**ADVANTAGES**

- Cost-effective design
- Aerial installation on distribution and transmission lines up to 34.5 kV
- All-dielectric design – fully resistant to electromagnetic fields
- Wide range of operating temperatures. Installation temperature down to -22°F
- Dry design – easy to strip
- Maximum rated design tension up to 2248 lb with span lengths up to 656 ft
- Reduced weight and size. Low ice and wind load

**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
6. Jacket
7. Ripcord

**FEATURES**

Crush – 171 lb/in
Maximum rated design tension (MRDT) – 337...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>Cable diameter, in</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 weight, lb/ft</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>Min bending radius, in</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>

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
InAir ADSS Light Fiberglass
(Multi-Tube Fiberglass Single Jacket 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
6. Jacket
7. Ripcord

FEATURES
Crush – 171 lb/in
Maximum rated design tension (MRDT) — 450...2248 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>0.331...0.465</td>
<td>0.354...0.48</td>
<td>0.39...0.496</td>
<td>0.445...0.52</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.037...0.075</td>
<td>0.042...0.078</td>
<td>0.049...0.082</td>
<td>0.063...0.089</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>

ADVANTAGES
- Maximum rated design tension up to 2248 lb with span lengths up to 656 ft
- Dry design – easy to strip
- Reduced weight and size. Low ice and wind load
- All-dielectric design – fully resistant to electromagnetic fields
- Cost-effective solution for city trunk lines
- Aerial Installation on distribution and transmission lines up to 34.5 kV
- Wide range of operating temperatures. Installation temperature down to -22°F

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 Defender ADSS
(Multi-Tube Single Armor Double Jacket 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
7. Jacket
8. Ripcord

**FEATURES**

**Crush – from 228 lb/in**

**Maximum rated design tension (MRDT) — 1574 lb... 4496 lb**

<table>
<thead>
<tr>
<th>Range</th>
<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>up to 16</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>
<td></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>
<td></td>
</tr>
</tbody>
</table>

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Metallic Aerial Self-Supporting (MASS)

**FEATURES**

Crush for all cables of the group — 571 lb/in
Maximum rated design tension (MRDT) — 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>

**DESIGN**

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

**ADVANTAGES**

- Increased tension — up to 22481 lb
- ACS wire makes the cable exceedingly
- High strength, small size
- Large spans between towers, installation over rivers and ravines

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

APPLICATION:

- Designed for installation inside buildings (including vertical installation), in trays, channels, for installation on outer sides of the buildings
- Designed for aerial installations: power lines, lamp posts, between buildings and structures

APPLICATION:

APPLICATION:

OPERATING PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</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>10×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

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

**FEATURES**
- **MRDT** — 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>

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**
- Perfect solution for multi-dwelling units: the fiber is buffered up to floor box or subscriber's flat
- Operation temperature range down to -22°F
- All-dielectric design
- Easy access to the fiber at any place of the cable
- Up to 48 fibers
- Maximum rated design tension up to 90 lb
- Resistance to crushing load — 46-114 lb/in
- UV-resistant

Click here to see detailed features of this design.
Riser with Micro Tubes

![Riser with Micro Tubes Diagram](image)

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

**FEATURES**

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>MRDT (operation) — 90 lb</th>
<th>Min crush — 46 lb/in</th>
<th>Max crush — 114 lb/in</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 8</td>
<td>up to 12</td>
<td>up to 16</td>
<td>up to 24</td>
</tr>
<tr>
<td>0.256</td>
<td>0.256</td>
<td>0.256</td>
<td>0.335</td>
</tr>
<tr>
<td>0.026</td>
<td>0.027</td>
<td>0.028</td>
<td>0.039</td>
</tr>
<tr>
<td>2.559</td>
<td>2.559</td>
<td>2.559</td>
<td>3.346</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>MRDT (operation) — 90 lb</th>
<th>Min crush — 46 lb/in</th>
<th>Max crush — 114 lb/in</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 48</td>
<td>up to 64</td>
<td>up to 72</td>
<td>up to 96</td>
</tr>
<tr>
<td>0.413</td>
<td>0.413</td>
<td>0.413</td>
<td>0.531</td>
</tr>
<tr>
<td>0.052</td>
<td>0.055</td>
<td>0.054</td>
<td>0.088</td>
</tr>
<tr>
<td>4.134</td>
<td>4.134</td>
<td>4.134</td>
<td>5.315</td>
</tr>
</tbody>
</table>

**ADVANTAGES**
- Perfect solution for multi-dwelling units: a separate micro loose tube is guided to every inter-floor box. With 100% penetration, the number of micro loose tubes equals the number of floors, the number of fibers equals the number of units on the floor.
- All-dielectric design
- Easy access to fiber at any place of the cable
- Operation temperature down to -22°F
- Flame-retardant
- UV-resistant
- Maximum rated design tension up to 90 lb
- Resistance to crushing load — 46-114 lb/in

We design cables based on our Customers’ specific technical requirements. Please, contact us for a cable designed to your exact specifications — [sales@incabamerica.com](mailto:sales@incabamerica.com)
# Tight-Buffered Distribution

## 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 design
- Easy termination
- Flame-retardant
- UV-resistant
- Maximum rated design tension up to 180 lb
- Resistance to crushing load 114 lb/in

## FEATURES FOR INDOOR AND OUTDOOR INSTALLATION

Crush — 57...114 lb/in
MRDT — 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>1.89...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>

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

**DESIGN**
1. Optical fiber
2. Micro tubes
3. Reinforcing elements — aramid yarns
4. Halogen-free flame-retardant jacket

**ADVANTAGES**
- All-dielectric design
- UV-resistant
- 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
- Flame-retardant
- Maximum rated design tension up to 180 lb
- Resistance to crushing load from 57 lb/in

**FEATURES FOR INDOOR AND OUTDOOR INSTALLATION**

Crush — 57 lb/in
MRDT — 90-180 lb — operation; 180-360 lb — installation

<table>
<thead>
<tr>
<th>Fiber count</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 8</td>
<td>up to 8</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.217...0.236</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.021...0.024</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>2.165...2.362</td>
</tr>
<tr>
<td>Fiber count</td>
<td>Range</td>
</tr>
<tr>
<td>up to 48</td>
<td>up to 64</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.315...0.327</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.037...0.04</td>
</tr>
<tr>
<td>Min bending radius, in</td>
<td>3.15...3.268</td>
</tr>
</tbody>
</table>

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Click here to see detailed features of this design
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.

OPERATING PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation temperature*</td>
<td>+14°F...+122°F</td>
</tr>
<tr>
<td>Installation temperature</td>
<td>+14°F...+122°F</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>+58°F..+122°F</td>
</tr>
<tr>
<td>temperature</td>
<td></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.
Tight-Buffered Simplex

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

**FEATURES**
- **Maximum rated design tension** — 40 lb
- **Crush** — 29 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>1</td>
</tr>
<tr>
<td>Connector</td>
<td>3.0 mm</td>
</tr>
<tr>
<td>Cable diameter, in</td>
<td>0.110</td>
</tr>
<tr>
<td>Cable weight, lb/ft</td>
<td>0.005</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
- UV-resistant
- All-dielectric design
- Maximum rated design tension up to 40 lb
- Perfect solution for patch cord manufacturing
- Resistance to crushing load up to 29 lb/in

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
Tight-Buffered Duplex

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

FEATURES
Maximum rated design tension — 40 lb
Crush — 29 lb/in

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber count</td>
<td>2</td>
</tr>
<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
- UV-resistant
- All-dielectric design
- Perfect solution for patch cord manufacturing
- Resistance to crushing load 29 lb/in

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

APPLICATION:
Designed for aerial installation on transmission towers, lamp posts, between buildings and structures.

Designed for installation inside buildings, in trays, in ducts, on outer sides of buildings.

OPERATING PARAMETERS

Operation temperature*  
-58°F...+158°F  
(Flat Type Drop Reinforced)
-58°F...+122°F  
(Round Type Drop Tight-buffer)
-40°F...+158°F  
(Round Type Drop)

Installation temperature  
+14°F...+122°F  
(Flat Type Drop Reinforced)
-22°F...+122°F  
(Flat Type Drop Reinforced)

Transportation and storage temperature  
-58°F...+122°F  
(Flat Type Drop Reinforced)
-58°F...+158°F  
(Flat Type Drop Reinforced)

Minimum bending radius  
10×cable diameter  
15×cable diameter  
(Flat Type Drop Reinforced)

Life time  
25 years

Warranty  
as specified in the supply agreement, min 2 years

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

**DESIGN**
1. Optical fiber
2. Loose tube
3. Fiberglass rods
4. Jacket

**ADVANTAGES**
- All-dielectric design
- Maximum rated design tension up to 675 lb
- Exceedingly high crush resistance
- Suitable for aerial installation up to 328 ft
- Operation temperature range down to -58°F

**FEATURES**
- **Maximum rated design 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
Round Type Drop Tight-buffer

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

**ADVANTAGES**
- All-dielectric design
- Minimal weight and size
- Maximum rated design tension up to 225 lb
- Resistance to crushing load up to 171 lb/in
- Low cost

**FEATURES**
- Maximum rated design 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>

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

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

**ADVANTAGES**
- All-dielectric design
- Minimal weight and size
- Resistance to crushing load up to 171 lb/in
- Low cost

**FEATURES**

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

Maximum rated design tension — 225...450 lb
Crush — 171 lb/in

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.
Semi-Finished Products

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.

DESIGN
1. Optical fiber
2. Marking thread
3. Water-blocking gel
4. Stainless steel tube

ADVANTAGES
Up to 48 optical fibers in a tube
Small size

FEATURES

<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>1.1...7</td>
</tr>
<tr>
<td>Inner diameter, mm</td>
<td>0.8...6.2</td>
</tr>
<tr>
<td>Module wall thickness, mm</td>
<td>0.15; 0.2; 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>

OPERATING PARAMETERS

<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>-58°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>

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.

**FEATURES**

- **Range**
  - up to 1...48

- **Fiber count**
  - 2.4...4

- **Outer diameter, mm**
  - 0.4

- **Module wall thickness, mm**
  - 0...0.8

- **Optical fiber excessive length, %**
  - Stainless steel 304, 316L, Incoloy

- **Tube**
  - Stainless steel 304, 316L, Incoloy

**OPERATING PARAMETERS**

- **Operation temperature**
  - -58°F...158°F

- **Installation temperature**
  - -22°F...122°F

- **Transportation and storage temperature**
  - -58°F...158°F

- **Minimum bending radius**
  - 25x cable diameter

- **Life time**
  - 25 years

**DESIGN**

1. Optical fiber
2. Marking thread
3. Stainless steel tube filled with water-blocking gel
4. Stainless steel tube

**ADVANTAGES**

- Up to 48 optical fibers in a tube
- A unique combination of small diameter and weight with extremely high strength characteristics

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ACS Wire (aluminum-clad steel wire)

APPLICATION

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

DESIGN

1. Stainless steel wire
2. A layer of aluminum

ADVANTAGES

Aluminum-clad steel wire eliminates corrosion

FEATURES

<table>
<thead>
<tr>
<th>Wire label (Type)</th>
<th>Wire 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, % IACS</th>
</tr>
</thead>
<tbody>
<tr>
<td>20SA (A)</td>
<td>1.80</td>
<td>3.25</td>
<td>1340</td>
<td>1200</td>
<td></td>
<td>84.80</td>
</tr>
<tr>
<td></td>
<td>3.25</td>
<td>3.45</td>
<td>1310</td>
<td>1180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.45</td>
<td>3.65</td>
<td>1270</td>
<td>1140</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.65</td>
<td>3.95</td>
<td>1250</td>
<td>1100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.95</td>
<td>4.10</td>
<td>1210</td>
<td>1100</td>
<td>84.80</td>
<td>20.3</td>
</tr>
<tr>
<td></td>
<td>4.10</td>
<td>4.40</td>
<td>1180</td>
<td>1070</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.40</td>
<td>4.60</td>
<td>1140</td>
<td>1030</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.60</td>
<td>4.75</td>
<td>1100</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.75</td>
<td>5.50</td>
<td>1070</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20SAw (B)</td>
<td>1.80</td>
<td>5.50</td>
<td>1320</td>
<td>1100</td>
<td></td>
<td>63.86</td>
</tr>
<tr>
<td>27SA</td>
<td>2.50</td>
<td>5.00</td>
<td>1080</td>
<td>800</td>
<td>63.86</td>
<td>27</td>
</tr>
<tr>
<td>30SA</td>
<td>2.50</td>
<td>5.00</td>
<td>880</td>
<td>650</td>
<td>57.47</td>
<td>30</td>
</tr>
<tr>
<td>40SA</td>
<td>2.80</td>
<td>5.00</td>
<td>680</td>
<td>500</td>
<td>43.10</td>
<td>40</td>
</tr>
</tbody>
</table>

OPERATING PARAMETERS

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

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## 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 Clear LEAF</td>
<td>Clear Curve XB</td>
<td>Clear Curve LBL</td>
<td>Clear Curve ZBL</td>
</tr>
</tbody>
</table>

### Dimensional Specifications

<table>
<thead>
<tr>
<th>Parameter</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>Core-Clad Concentricity</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Cladding Diameter</td>
<td>125±0.7</td>
<td>125±0.7</td>
<td>125±0.7</td>
<td>125±0.7</td>
<td>125±1</td>
</tr>
<tr>
<td>Cladding Non-Circularity</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Coating Diameter</td>
<td>242±5</td>
<td>245±5</td>
<td>242±5</td>
<td>242±5</td>
<td>242±5</td>
</tr>
</tbody>
</table>

### 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...</th>
<th>1550</th>
<th>1310...</th>
<th>1310...</th>
<th>1310...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310 nm wavelength</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1550 nm wavelength</td>
<td>18</td>
<td>4</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>1625 nm wavelength</td>
<td>22</td>
<td>10</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...</th>
<th>1550</th>
<th>1310...</th>
<th>1310...</th>
<th>1310...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310 nm wavelength</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

---

**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](http://incabamerica.com)

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**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.
<table>
<thead>
<tr>
<th>Fiber type</th>
<th>Fiber type</th>
<th>Fiber brand</th>
<th>Fiber type</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-type</td>
<td>‘M’ Type</td>
<td>Corning</td>
<td>‘G’ Type</td>
</tr>
<tr>
<td>N-type</td>
<td>‘G’ Type</td>
<td>ClearCurve Multimode</td>
<td>Corning 62,5/125</td>
</tr>
<tr>
<td>G.657A1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.657A2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.657B3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Multi-Mode Fiber

#### Polarization Mode Dispersion (PMD), ps/√km

<table>
<thead>
<tr>
<th></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>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>

#### Zero Dispersion, Wavelength, nm

<table>
<thead>
<tr>
<th></th>
<th>Zero Dispersion</th>
<th>Zero Dispersion</th>
<th>Zero Dispersion</th>
<th>Zero Dispersion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.092</td>
<td>0.089</td>
<td>0.092</td>
<td>0.092</td>
</tr>
</tbody>
</table>

#### Cable Cutoff, Wavelength, nm

<table>
<thead>
<tr>
<th></th>
<th>Cable Cutoff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1260</td>
</tr>
</tbody>
</table>

#### Mode-Field Diameter, (μm)

<table>
<thead>
<tr>
<th></th>
<th>1310 nm wavelength</th>
<th>1550 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2±0.4</td>
<td>9.6±0.5</td>
<td></td>
</tr>
<tr>
<td>10.4±0.5</td>
<td>9.8±0.5</td>
<td></td>
</tr>
<tr>
<td>8.6±0.4</td>
<td>9.6±0.5</td>
<td></td>
</tr>
<tr>
<td>8.6±0.4</td>
<td>9.6±0.5</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>(1 turn × ø10.0 mm)</th>
<th>(1 turn × ø7.5 mm)</th>
<th>(1 turn × ø5.0 mm)</th>
<th>(100 turn × ø60 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5/1.5</td>
<td>0.5/1.5</td>
<td></td>
<td></td>
<td>0.5/1.5</td>
</tr>
<tr>
<td>0.4/0.8</td>
<td>0.4/0.8</td>
<td></td>
<td></td>
<td>0.1/0.3</td>
</tr>
<tr>
<td>0.05/0.05</td>
<td>0.05/0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Transmission Specifications

<table>
<thead>
<tr>
<th></th>
<th>Wavelength, nm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1300</td>
</tr>
</tbody>
</table>

#### Maximum Attenuation (dB/km)

<table>
<thead>
<tr>
<th></th>
<th>850 nm wavelength</th>
<th>1300 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.3</td>
<td>0.6</td>
</tr>
</tbody>
</table>

#### Numerical Aperture

|                      | 0.200±0.015       | 0.275±0.015        |

#### Brandwith, MHz

<table>
<thead>
<tr>
<th></th>
<th>850 nm wavelength</th>
<th>1300 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>700</td>
<td>500</td>
</tr>
</tbody>
</table>

#### Effective Group Index of Refraction

<table>
<thead>
<tr>
<th></th>
<th>850 nm wavelength</th>
<th>1300 nm wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.482</td>
<td>1.496</td>
</tr>
<tr>
<td></td>
<td>1.477</td>
<td>1.491</td>
</tr>
</tbody>
</table>
Fiber/Tube Color Code System
ANSI/TIA-598-D-2014

Fiber/Tube count

24 16 12 8 4

Blue
Orange
Green
Brown
Slate
White
Red
Black
Yellow
Violet
Rose
Aqua
Blue with ring marks
Orange with ring marks
Green with ring marks
Brown with ring marks
Slate with ring marks
White with ring marks
Red with ring marks
Natural with ring marks
Yellow with ring marks
Violet with ring marks
Rose with ring marks
Aqua with ring marks

Other colors are available on request
Tube Counting Direction

Basic
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.

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 -58°F ... +158°F.

Installation guides:

1. **OPGW, ADSS, and other self-supporting Incab aerial cables.**
   You may use IEEE Standard 524-2016 as a general guideline for installing these types of cables from Incab. However, you should refer to our datasheet and our detailed installation guidelines for the specific Incab cable that you are working with.
   To obtain a copy of our datasheet or our detailed installation instructions, please send us an email at support@incabamerica.com or you may download them at this [link](#); which will require a very short and simple registration for our Advanced Cable Engineering System (ACES). And, we have posted video summaries of our splice preparation procedures at this [link](#).

2. **For all other types of Incab cable, please refer to our datasheets and standard industry practice.**
   If you have any questions or need any additional information, please contact us at support@incabamerica.com.

Please find detailed information on our website [incabamerica.com](http://incabamerica.com) or upon request at support@incabamerica.com.
Contacts

Incab America LLC
640 107th Street
Arlington, TX 76011

sales@incabamerica.com
support@incabamerica.com

www.incabamerica.com
Find your REP

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

**IL, WI, MI**
Weldy Lamont Group
Main Office:
1040 W. Northwest Hwy., Mt. Prospect, IL 60056
Phone: (847) 868-9750
www.weldylamontgroup.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

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D’Ewart Representatives L.L.C.
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9227 NE 180th St Bothell, WA 98011
Phone: (425) 485-6545
www.dewart.com

**CA**
Young & Co.
Pasadena Office:
530 S. Marengo Ave., Pasadena, CA 91101
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www.youngco.com

**IN, OH, KY**
TESA
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544 Enterprise Drive Lewis Center, OH 43035
Phone: (614) 847-8200
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Power Sales Group
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176 Avergreen Street Suite 105 Danvers, MA 01923
Phone: (978) 535-9800
www.power-sales.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

**AR, MS, LA**
JTH Agencies
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www.jthagencies.com

**TN, AL, GA**
SouthCon
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www.southcon.net

**FL**
Electric Sales Associates
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2121 N Commerce Parkway Weston, FL 33326
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www.electricsalesinc.com

**MI**
HEK, Inc.
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244 N Smith Rd
Owosso, MI 48867
Phone: 734-995-0900
www.hekinc.com

**OK**
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1509 W. 104th St., Oklahoma City, OK 73159
Phone: (405) 692-8100
www.utilitiesalesagentsofoklahoma.com

**TX**
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2505 McAllister Rd., Houston, TX 77092
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www.utilitypowers.com

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