

# APAR GIGA-VOLT HYBRID CABLE

Enabling Smart Connectivity  
Sustainable Contribution Towards Time, Space & Capital

Lower  
TCO

Support All  
Network Topologies

Fibre & Power  
Slim Cable



 **APAR**  
TELECOM SOLUTIONS

# 5G



**5G  
Towers**



**Small Cell  
Installations**



**IoT  
Devices**



**Smart  
Metering**



**Wireless  
Cell Sites**



**Datacenter  
Connectivity**

**GIGAVOLT - HYBRID CABLE**  
CATALOGUE

[apar.com](http://apar.com)





# APAR EMPOWERING A SMARTER WORLD SINCE 1958



Presence in

**140+**

Countries

**9**

Manufacturing Units



**#1**

Largest global aluminium & alloy conductor manufacturer



**#3**

Largest global manufacturer of Transformer oils



**#1**

Largest manufacturer of Renewable & Speciality Cables in India



Manufacturer of OFC & Hybrid Cables

**65**

**YEARS**

of Manufacturing Experience

**\$ 1.8**

**BILLION**

FY23 Consolidated Revenue

**19.3%**

**CAGR**

Last 5 years

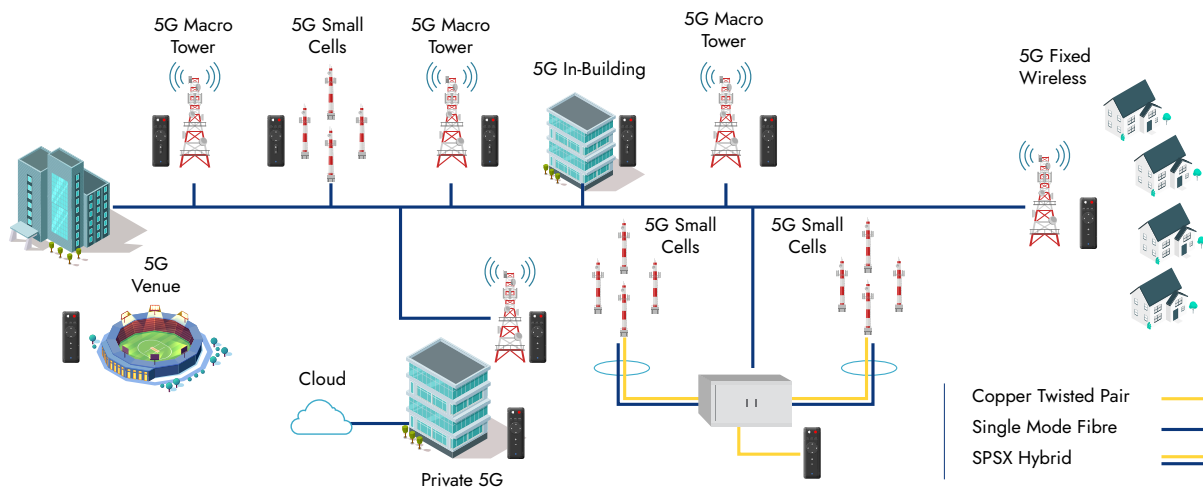
**49%** EXPORT REVENUES

# INTRODUCTION TO 5G

The **5th generation of mobile networks**, commonly known as **5G**, represents the imminent revolution in mobile technology. Its features and usability surpasses the expectation of ordinary users. With ultra-high speed, 5G has the potential to redefine how we use cell phones.

**Innovative features abound:** Your smartphone will become more akin to a laptop. You'll **enjoy broadband internet connections**, along with captivating additions like **expanded gaming options, rich multimedia experiences, seamless connectivity, near-zero latency, rapid response times**, and the ability to transfer **high-quality sound and HD video** between devices without compromising audio or video quality.

## 5G Architecture



## APAR TELECOM SOLUTIONS WITH SMART HYBRID CABLES FOR FUTURE NETWORKS

### The Convergence of 5G Hybrid Fibre Optic and Power Cables: Bridging Data and Energy

The advent of 5G networks brings forth a transformative era in telecommunications. Among the key enablers are hybrid cables, seamlessly integrating data transmission and electrical power delivery within a single cable.



4G Network Cell coverage-25 km<sup>2</sup>



Equivalent 5G Network Cell coverage-60x0.04 km<sup>2</sup>

### Hybrid Configuration:

- ◆ These cables ingeniously combine optical fibres and copper conductors in a unified jacket.
- ◆ Data signals travel through the optical fibres, ensuring high-speed connectivity.
- ◆ Electrical signals flow via the copper conductors, enabling long-distance power supply.

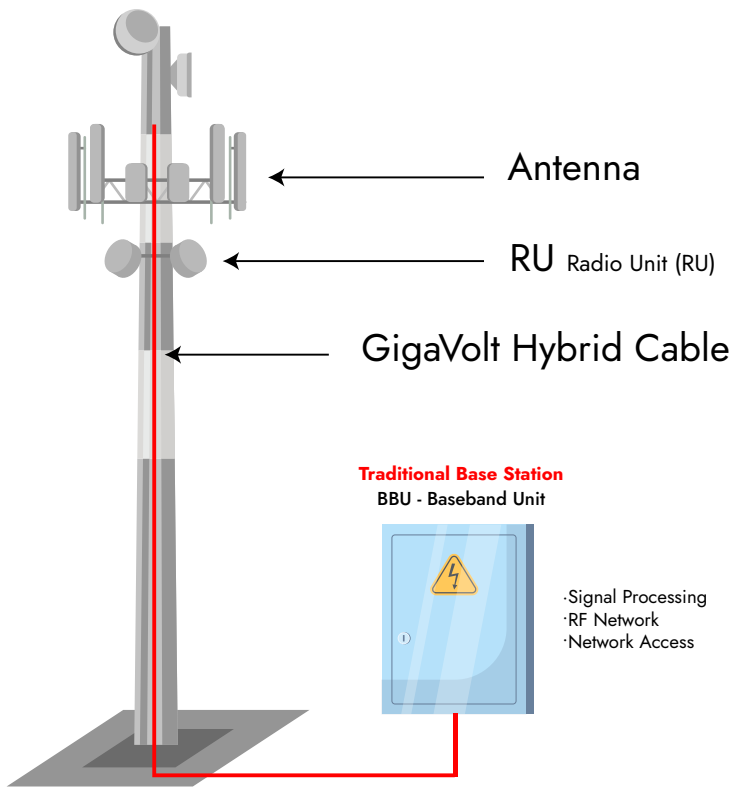
### Voltage Delivery:

- ◆ A single hybrid cable delivers 48-52 volts over short distances (eg. Macro Towers spanning 300 feet).
- ◆ For extended reach (small-cell remote power up to 3 km), it ramps up to 380 volts.

### Industry Convergence:

- ◆ As the telecommunications and building sectors converge on fibre optic infrastructure, copper cabling remains essential in specific scenarios.
- ◆ APAR hybrid cables play a pivotal role, facilitating seamless interconnection of wireless applications within premises.

In summary, these hybrid marvels bridge the gap between data and energy empowering the 5G revolution.



### FEATURES OF HYBRID CABLES

- ◆ Low installation and maintenance cost and time by using single cable (Power+ Optical).
- ◆ Low signal loss

### OPTIONAL CHARACTERISTICS

- ◆ Flame Retardant
- ◆ Halogen Free
- ◆ Single Mode or Multi Mode fibres
- ◆ UL listed.

### POWER PROVISION

- ◆ Low and Medium Voltage for remote power and communication distance up to 1000 Mtrs

### OPERATIONAL VOLTAGES

- ◆ 12V, 24V, 48V, 57V DC
- ◆ 220V, 230V, 300V, 600V AC



DAS



Remote Radio Head



HD Camera Surveillance



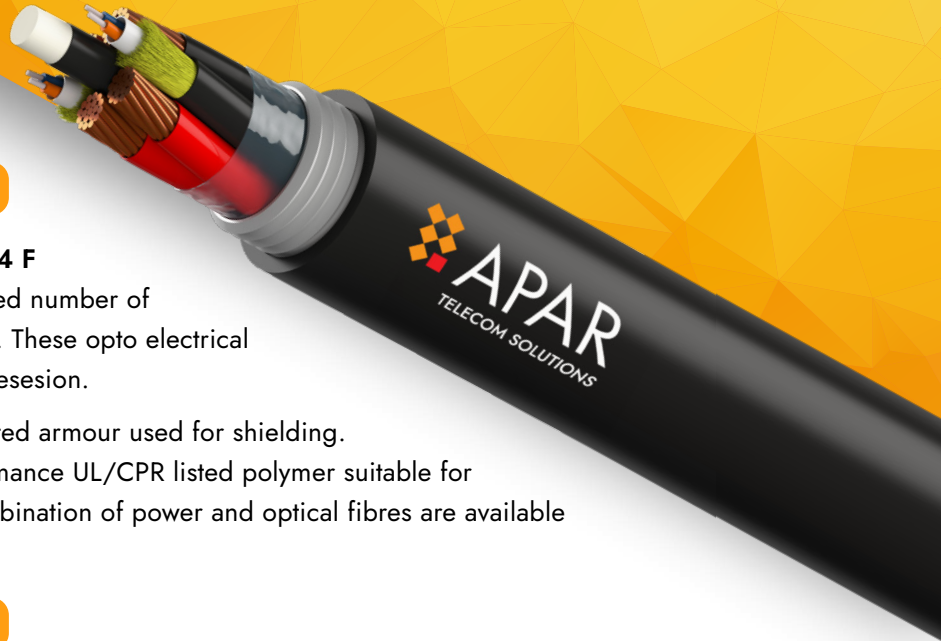
Wi-Fi Access Points

## CELL INSTALLATION TYPES

CELL TYPE	DEPLOYMENT AREA	NUMBER OF TUBE'S	DISTANCE OF COVERAGE
Femto cell	It is primarily used in residences and enterprises	100 mW (Indoor) 0.2 to 1 Watt (Outdoor)	< 30 Mtrs
Pico cell	Public areas such as indoors, outdoors, airports, malls, train stations	250 mW (Indoor) 1 to 5 Watt (Outdoor)	< 100 Mtrs
Micro cell	Urban areas to fill macro coverage gaps	50 to 150 W	< 500 Mtrs
Macro cell	Urban areas to provide additional capacity	100 to 450 W	In Kilometres



# 2-4 CORE (8/10 AWG) + 2 - 24 F HYBRID JUMPER CABLE



## PRODUCT INFORMATION

**APAR's 2-4 Core (8/10 AWG) + 2 - 24 F Hybrid Jumper Cables** consist of desired number of power cores and optical fibre's subunits. These opto electrical units are bunched together with high precision.

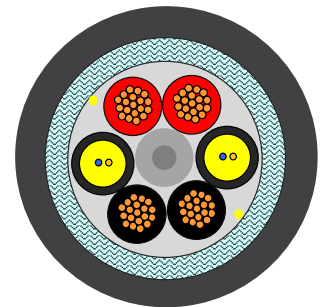
This hybrid unit is covered with corrugated armour used for shielding. The armour is covered with high performance UL/CPR listed polymer suitable for outdoor/indoor application. Varied combination of power and optical fibres are available based on application.

## PRODUCT APPLICATION

- ◆ Remote Radio Heads
- ◆ Small Cell Towers for various spaces.
- ◆ Power and Data system for IP devices
- ◆ DAS Systems
- ◆ Telecommunication Rooms

## PRODUCT FEATURES

- ◆ Power and Fibre Optic Combination in an Compact Design
- ◆ High Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C
- ◆ UL / CPR Listed Product



## COMPLIANCE STANDARDS

UL 1277, ICEA S-119-741-2021, Telcordia GR-20-CORE Issue 4, ICEA S-104-696-2019, UL 83, UL 1063

## VARIOUS OPTIONS

FIBRE COUNT	FIBRE TYPES	CONDUCTOR SIZE (AWG)
2-24 Fibre	Single Mode G.652D, G.657A1,A2 Multimode OM2, OM3, OM4, OM5	2-4 Core X 8/10 AWG (Cables with various range of core and AWG options available)



Flame Retardant



UV Protected



**Note:** Customized specifications can be made available upon specific request.

# 2-12 CORE (4/6 AWG) + 2 - 48 F HYBRID TRUNK CABLE



## PRODUCT INFORMATION

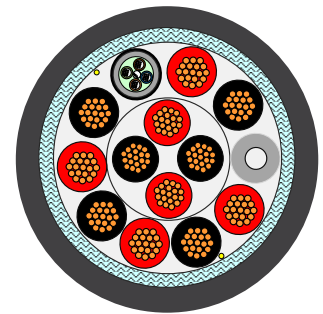
**APAR's 2-12 Core (4/6 AWG) + 2 - 48 F Hybrid Trunk Cables** consist of desired number of power cores and optical fibres subunits. These opto electrical units are bunched together with high precision. This hybrid unit is covered with corrugated armour used for shielding. The armour is covered with high performance UL/CPR listed polymer suitable for outdoor/indoor application. Varied combination of power and optical fibres are available based on application.

## PRODUCT APPLICATION

- ◆ Remote Radio Heads
- ◆ Small Cell Towers for various spaces.
- ◆ Power and Data system for IP devices
- ◆ DAS Systems
- ◆ Telecommunication Rooms

## PRODUCT FEATURES

- ◆ Power and Fibre Optic Combination in an Compact Design
- ◆ High Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C
- ◆ UL / CPR Listed Product



## COMPLIANCE STANDARDS

UL 1277, ICEA S-119-741-2021, Telcordia GR-20-CORE Issue 4, ICEA S-104-696-2019, UL 83, UL 1063

## VARIOUS OPTIONS

FIBRE COUNT	FIBRE TYPES	CONDUCTOR SIZE (AWG)
12-48 Fibre	Single Mode G.652D, G.657A1,A2 Multimode OM2, OM3, OM4, OM5	2-12 Core X 4/6 AWG (Cables with various range of core and AWG options available)



Flame Retardant



UV Protected



**Note:** Customized specifications can be made available upon specific request.



# 3 CORE X (4-14 AWG) + 2 - 4 F IOT - HYBRID FIRE SURVIVAL CABLE



## PRODUCT INFORMATION

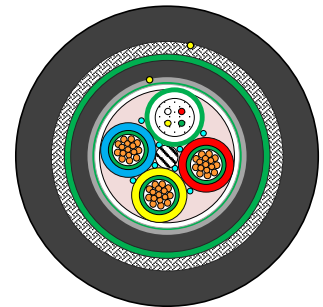
APAR's 3 Core X (4-14 AWG) + 2 - 4 F IoT - Hybrid Fire Survival Cable consist of desired number of power cores and optical fibres subunits. These opto electrical units are bunched together with high precision. This hybrid unit is covered with special flame retardant polymer. This sheathed opto electrical unit is covered with special fire resistant material followed by multiple variants of armouring. The armour is covered with high performance UL/CPR listed polymer suitable for outdoor/indoor application. Varied combination of power and optical fibres are available based on application.

## PRODUCT APPLICATION

- ◆ CCTV surveillance for critical applications to maintain circuit integrity and ensure safety, complying all international fire standards
- ◆ Critical communication systems for nuclear power facilities, petrochemical complexes, mines, and oil & gas sectors.

## PRODUCT FEATURES

- ◆ Power and Fibre Optic combination in a compact design
- ◆ Higher Tensile Strength
- ◆ High Compression Resistance
- ◆ Fire Resistant (Fire Survival cables providing communication and power supply upto 180 Minutes under extreme fire conditions.



## COMPLIANCE STANDARDS

Telcordia GR-20-CORE Issue 4, IEC 60794, IEC 60331, IEC 60332, IEC 60793, IEC 60794

## VARIOUS OPTIONS

FIBRE COUNT	FIBRE TYPES	CONDUCTOR SIZE (AWG)
2-4 Fibre	Single Mode G.652D, G.657A1,A2 Multimode OM2, OM3, OM4, OM5	3 Core X 4-14 AWG (Cables with various range of core and AWG options available)



Flame Retardant



Fire Resistant



UV Protected



**Note:** Customized specifications can be made available upon specific request.

# 2-4 CORE X 1.0 SQ.MM +1 - 48 F MICRODUCT HYBRID CABLE



## PRODUCT INFORMATION

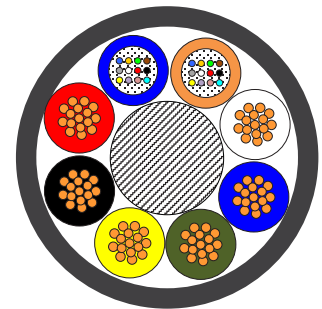
APAR's 2-4 Core X 1.0 Sq.mm +1 - 48 F Micro Duct Hybrid Cable is a unique product designed for feeding power and optical fibres into microducts by air blowing techniques. This cable is easy to install due to slim and flexible design. These cables are used for powering the remote active devices like PoE, 5G cells, CCTV cameras and other communication devices.

## PRODUCT APPLICATION

- ◆ Microduct Blowing
- ◆ Low Power DC Voltage for remote power feed.
- ◆ Telecommunication Rooms
- ◆ Connecting Switches, Antennas, Camera, WiFi, 5G DAS,IOT

## PRODUCT FEATURES

- ◆ Easy and Cost effective installation.
- ◆ Higher Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C
- ◆ UL / CPR Listed Product

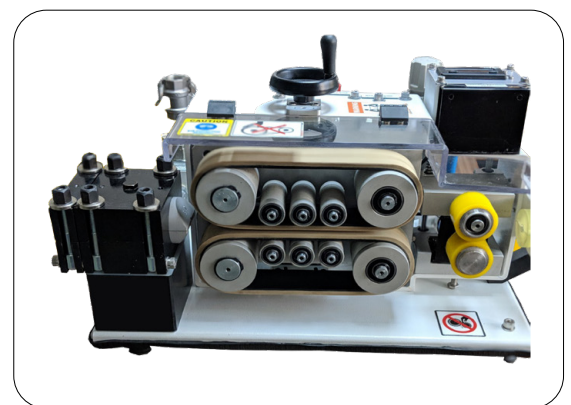


## COMPLIANCE STANDARDS

IEC 60794, Telcordia BELL-GR-20-CORE, ITU-T, IEC 60793, Power wires tested according to EN 50288-7:2005 in

## CABLE BLOWING PERFORMANCE

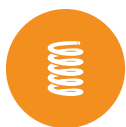
APAR'S Hybrid Micro Duct Cables successfully achieved the blowing distance of > 1200Meters in duct size 14/10mm in accordance to international standards of IEC 60794. The blowing distance was covered within 20 Minutes.



Microduct Laying



UV Protected



Better Flexibility



Water Resistant



**Note:** Customized specifications can be made available upon specific request.



# 2 CORE X 1.0 SQ.MM +1 - 24 F AERIAL HYBRID MINI CABLE



## PRODUCT INFORMATION

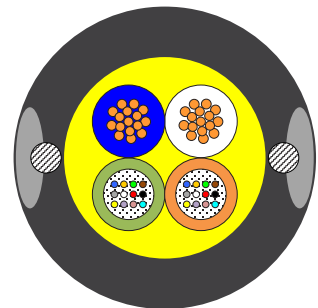
APAR's **2 Core X 1.0 Sq.mm +1 - 24 F Aerial Hybrid Mini Cable** is a unique product designed for feeding power and optical fibres for last mile aerial connections. This cable is easy to install due to its slim, light weight and flexible design. These cables are used for powering remote active devices like PoE, 5G cells, CCTV cameras and other communication devices.

## PRODUCT APPLICATION

- ◆ Light weight, high tensile strength and compact design for aerial short span installation
- ◆ Low Power DC Voltage for remote power feed.
- ◆ Telecommunication Rooms
- ◆ Connecting Switches, Antennas, Camera, WiFi, 5G DAS,IOT

## PRODUCT FEATURES

- ◆ Easy and Cost-Effective Installation
- ◆ Higher Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C



## COMPLIANCE STANDARDS

IEC 60794, Telcordia BELL-GR-20-CORE, ITU-T, IEC 60793,  
Power wires tested according to EN 50288-7:2005



Aerial Cable



Better Flexibility



Water Resistant



UV Protected



**Note:** Customized specifications can be made available upon specific request.

# 2 CORE X 1.0 SQ.MM +1 - 12 F DUCT HYBRID MINI CABLE



## PRODUCT INFORMATION

APAR's **2 Core X 1.0 Sq.mm +1 - 12 F Duct Hybrid Mini Cables** consist of desired number of power cores and optical fibres subunits. These opto electrical units are bunched together with high precision. This hybrid unit is covered with high performance UL/CPR listed polymer suitable for outdoor/indoor application. Varied combination of power and optical fibres are available based on application.

## PRODUCT APPLICATION

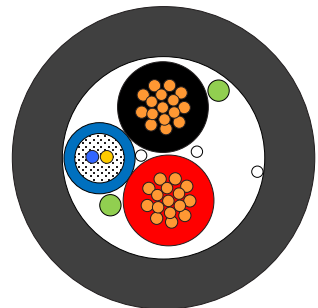
- ◆ Blown into Ducts
- ◆ Low Power DC Voltage for remote power feed.
- ◆ Telecommunication Rooms
- ◆ Connecting Switches, Antennas, Camera, WiFi, 5G DAS,IOT

## PRODUCT FEATURES

- ◆ Power and Fibre Optic Combination in a Compact Design
- ◆ Higher Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C
- ◆ UL / CPR Listed Product

## COMPLIANCE STANDARDS

IEC 60794, Telcordia BELL-GR-20-CORE, ITU-T, IEC 60793,  
Power wires tested according to EN 50288-7:2005



Duct Laying



Flame Retardant



UV Protected



**Note:** Customized specifications can be made available upon specific request.



# 2 CORE X 1.0 SQ.MM +1 - 24 F AERIAL HYBRID MINI CABLE



## PRODUCT INFORMATION

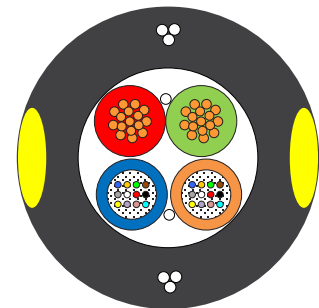
Apar's **2 Core X 1.0 Sq.mm +1 - 24 Fibre Aerial Hybrid Mini Cable** consist of 2 number of 1.0 Sqmm power cores and 24 fibre subunit stranded over central strength member. A jacket is provided over core. High Tensile peripheral strength members for mechanical protection.

## PRODUCT APPLICATION

- ◆ Light weight, high tensile strength and compact design for aerial short span installation
- ◆ Low Power DC Voltage for remote power feed.
- ◆ Telecommunication Rooms
- ◆ Connecting Switches, Antennas, Camera, WiFi, 5G DAS,IOT

## PRODUCT FEATURES

- ◆ Power and Fibre Optic Combination in Compact Design
- ◆ High Tensile Strength
- ◆ Optimum Bending Radius
- ◆ Operational Temperature -40°C to +70°C

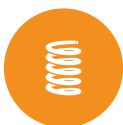


## COMPLIANCE STANDARDS

IEC 60794, Telcordia BELL-GR-20-CORE, ITU-T, IEC 60793, Power wires tested according to EN 50288-7:2005



Aerial Cable



Better Flexibility



Water Resistant



UV Protected





**Note:** Customized specifications can be made available upon specific request.




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