

Optical fibre cables and  
optoelectronic converters



**OPTRAL**

## **INTRODUCTION**

From 1988 Optral design, manufacture and commercialize optical cables as well optoelectronic equipments for audio, video and data signals.

Our philosophy is to supply the best cable for each application, within the shortest possible delivery time and with no minimum length limit.

We are specialized in design and manufacture of cables according to the strict needs of our customers.

We are proud to be the manufacturer with the best service in Europe, replying to any demand of our customers quickly, giving the shorter delivery times and delivering to the expected date.

We strive to keep our customers' satisfaction, more of them being customers from Optral foundation date.

# CAS - S1

## Drop cable

Indoor

### Cable description

- Tight Buffered Fibre
- Aramid
- Outer Jacket

### Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

### Applications

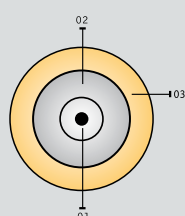
- Indoor
- Pigtail and jumper connections
- Direct connection to terminal equipments FTTx

### Options

- Fibre type
- Special colour code
- Jacket colour
- Special packaging "Reel in a Box" <sup>1</sup>

### Advantages

- Flexible / Dielectric / Direct connectorization.



01. TIGHT BUFFERED FIBRE  
02. ARAMID  
03. OUTER JACKET

### SPECIFICATIONS

| Type                                | S100              | S105       | S110       | S115       |
|-------------------------------------|-------------------|------------|------------|------------|
| Fibre Count                         | 1                 | 2          | 1          | 2          |
| Buffer Diameter (mm)                | 0,9               | 0,6        | 0,9        | 0,9        |
| Fibre Type                          | G.657 A           |            |            |            |
| Strength Members                    | Aramid Yarns      |            |            |            |
| Outer Jacket                        | LSZH <sup>2</sup> |            |            |            |
| Jacket Colour                       | Ivory             |            |            |            |
| Weight (Kg/Km)                      | 7                 | 7          | 14         | 14         |
| Ø Outer (mm)                        | 2.9 ± 0.15        | 2.9 ± 0.15 | 3.6 ± 0.15 | 3.6 ± 0.15 |
| Tensile Load Permanent / Instal.(N) | 200 / 350         | 200 / 350  | 200 / 350  | 200 / 350  |
| Crush (N/100mm)                     | 500               | 500        | 700        | 700        |
| Temperature Range                   | -10°C to + 70°C   |            |            |            |
| Min. Bending Radius (mm)            | 5 x Ø Outer       |            |            |            |

### Standards

Environmental and mechanical tests according to EN187000 and IEC60794.  
Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267 (IEC 60754-1/2) / UNE-EN 61034 (IEC 61034-1/2).  
Fibres colour code : 1 FO: Natural / 2 FO: Red – Green.

<sup>1</sup> Consult available lengths.

<sup>2</sup> LSZH – Halogen free, low smoke emission, flame retardant compound.



TOTALLY  
DIELECTRIC



MOISTURE  
PROTECTED



HIGH  
FLEXIBILITY



FLAME  
RETARDANT



LOW SMOKE  
EMISSION



HALOGEN  
FREE

# CAS FLAT - F1

## Drop cable

Indoor

### Cable description

- Fibre Optics
- FRP
- Outer Jacket

### Fire Resistance

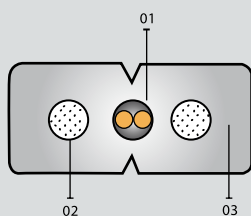
- Halogen free
- Flame retardant
- Low smoke emission

### Applications

- Indoor
- FTTx

### Advantages

- Lightweight / Resistant / Totally dielectric / Reduced diameter



01. FIBRE OPTICS  
02. FRP  
03. OUTER JACKET

### SPECIFICATIONS

|                   |                          |
|-------------------|--------------------------|
| Type              | F100                     |
| Fibre count       | 2                        |
| Fibre Type        | G.657 A                  |
| Identification    | Colour Code <sup>1</sup> |
| Strength Members  | FRP                      |
| Outer Jacket      | LSZH <sup>1</sup>        |
| Jacket Colour     | Ivory                    |
| Weight (Kg/Km)    | 7.6                      |
| Ø Outer (mm)      | 2.0 x 3.0 ± 0.20         |
| Max. Tensile Load | 100                      |
| Crush             | 1000 N / 10 cm           |
| Temperature Range | -30° C to +70°C          |

### Standards

Environmental and mechanical tests according to EN 187000 and IEC 60794.  
Fibres colour code: Red – Green.

<sup>1</sup>LSZH: Halogen free, low smoke, flame retardant compound.



TOTALLY  
DIELECTRIC



FLAME  
RETARDANT



LOW SMOKE  
EMISSION



HALOGEN  
FREE



## Reinforced drop cable

## SPECIFICATIONS

| Type                                | R100              | R105 |
|-------------------------------------|-------------------|------|
| Fibre Count                         | 1                 | 2    |
| Buffer Diameter (mm)                | 0.9               | 0.6  |
| Fibre Type                          | G.657A            |      |
| Strength Members                    | Aramid Yarns      |      |
| Inner Jacket                        | LSZH <sup>2</sup> |      |
| Outer Jacket                        | LSZH <sup>2</sup> |      |
| Jacket Colour                       | Ivory             |      |
| Weight (Kg/Km)                      | 21                |      |
| Ø Outer (mm)                        | 4.6 ±0.2          |      |
| Tensile Load Permanent / Instal.(N) | 350 / 650         |      |
| Crush (N/100mm)                     | 800               |      |
| Temperature Range                   | -10°C to +70°C    |      |
| Min. Bending Radius (mm)            | 5 x Ø Outer       |      |

## Standards

Mechanical and environmental tests according to EN187000, IEC60794.  
Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267-1/2 (IEC60754-1/2) / UNE-EN 61034-1/2 (IEC 61034-1/2).

Fibres colour code : 1 FO: Natural / 2 FO: Red – Green.

<sup>1</sup> Consult available lengths.

<sup>2</sup> LSZH – Halogen free, low smoke emission, flame retardant compound.

## Cable description

- Tight Buffered Fibre
- Aramid
- Inner Jacket
- Aramid
- Outer Jacket

## Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

## Applications

- Indoor
- Drop cable
- Pigtail and jumper connections
- Direct connection to terminal equipments FTTx

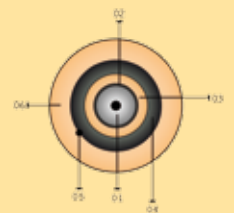
## Options

- Fibre type
- Special colour code
- Jacket colour
- Special packaging "Reel in a Box"<sup>1</sup>

## Advantages

- Flexible / Resilient / Dielectric / Reinforced / Direct connectorization.

Indoor



01. TIGHT BUFFERED FIBRE  
02. ARAMID  
03. INNER JACKET  
04. ARAMID  
05. OUTER JACKET



## Distribution cable

## SPECIFICATIONS

| Type                                | V100                            |           |           |            |            |
|-------------------------------------|---------------------------------|-----------|-----------|------------|------------|
| Fibre Count                         | 2                               | 4         | 6         | 8          | 12         |
| Fibre Type                          | G.657A                          |           |           |            |            |
| Strength Members                    | Aramid Yarns                    |           |           |            |            |
| Outer Jacket                        | Thermoplastic LSZH <sup>2</sup> |           |           |            |            |
| Jacket Colour                       | Ivory                           |           |           |            |            |
| Weight (Kg/Km)                      | 23                              | 26        | 36        | 43         | 56         |
| Ø Outer (mm)                        | 4.9 ±0.3                        | 5.3 ±0.3  | 6.1 ±0.3  | 6.7 ±0.3   | 7.7 ±0.3   |
| Tensile Load Permanent / Instal.(N) | 400 / 650                       | 400 / 650 | 400 / 650 | 550 / 1000 | 550 / 1000 |
| Crush (N/100mm)                     | 1000                            | 1000      | 1000      | 1200       | 1200       |
| Temperature Range                   | -10° C to +70°C                 |           |           |            |            |
| Min. Bending Radius (mm)            | 5 x Ø Outer                     |           |           |            |            |

## Standards

Mechanical and environmental tests acc/ EN 187000, IEC60794.  
Fire tests: UNE-EN 50266 (IEC 60332-3) / UNE-EN 50267 (IEC 60754-2-1/2) / UNE-EN 61034 (IEC 61034-2-1/2).

Fibres colour code: red – green – grey – yellow – blue – natural – white – brown – violet – orange – pink – black.

<sup>1</sup> Consult available lengths.

<sup>2</sup> LSZH – Halogen free, low smoke and flame retardant thermoplastic compound.

## Cable description

- Tight Buffered Fibre (0.9 mm)
- Aramid Yarns
- Outer Jacket

## Fire Resistance

- Flame / Fire retardant
- Halogen free
- Low smoke emission

## Applications

- Indoor
- Drop cable (vertical)
- Direct connectorizations in FTTx applications

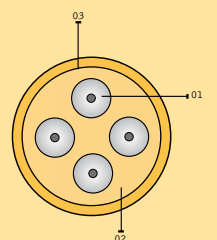
## Options

- Fibre type
- Special colour code
- Outer jacket colour
- Special packaging "Reel in a Box"<sup>1</sup>

## Advantages

- Compact / Lightweight / Flexible / Easy to strip (gel free) / Totally dielectric / Direct connectorization / Saves installation costs.

Indoor



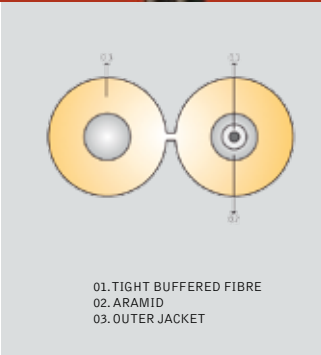
01. TIGHT BUFFERED FIBRE  
02. ARAMID YARN  
03. OUTER JACKET



# CAR - R2

Aerial cable

Outdoor



**Cable description**

- Tight Buffered Fibre
- Aramid
- Outer Jacket

**Applications**

- Outdoor
- Self-supported drop cable FTTx

**Options**

- Fibre type
- Outer jacket colour

**Advantages**

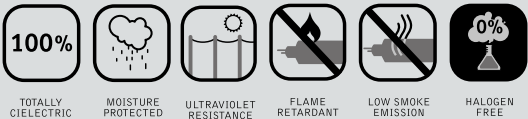
- Excellent mechanical resistance / Dielectric / Tough / Resistant.

**SPECIFICATIONS**

| Type                                 | R200              | R205 |
|--------------------------------------|-------------------|------|
| Fibre Count                          | 1                 | 2    |
| Buffer Diameter (mm)                 | 0.9               | 0.6  |
| Fibre Type                           | G.657A            |      |
| Self-supporting Element              | Aramid Yarns      |      |
| Outer Jacket                         | LSZH <sup>1</sup> |      |
| Jacket Colour                        | Black             |      |
| Weight (Kg/Km)                       | 13                |      |
| Ø Outer (mm)                         | 2.5 x 5.2         |      |
| Tensile Load Permanent / Instal. (N) | 250 / 400         |      |
| Crush (N/100mm)                      | 600               |      |
| Impact (Nm/100 impacts)              | 1.5               |      |
| Temperature Range                    | -20°C to +80°C    |      |

**Standards**

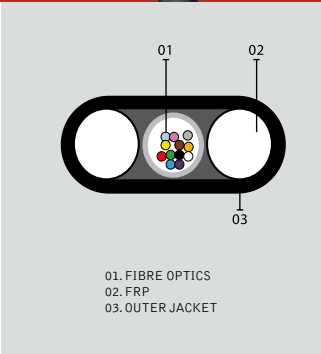
Mechanical and environmental tests according to EN187000, IEC60794.  
Fire tests : UNE-EN 50265 (IEC 60332-1) / UNE-EN 50267-1/2 (IEC60754-1/2) / UNE-EN 61034-1/2 (IEC 61034-1/2).  
Fibres colour code : 1 F0: Natural / 2 F0: Red – Green.  
<sup>1</sup> LSZH: Halogen free, low smoke emission, flame retardant compound.



# ADSS FLAT - F2

Self-supported cable

Outdoor



**Cable description**

- Fibre Optics
- FRP
- Outer Jacket

**Applications**

- Outdoor
- Self-supported drop cable FTTx

**Advantages**

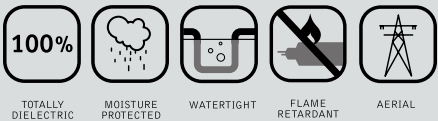
- Excellent mechanical resistance / Dielectric / Tough / Resistant / Aerial drop applications.

**SPECIFICATIONS**

|                                            |                             |
|--------------------------------------------|-----------------------------|
| Type                                       | F200                        |
| Fibre Count                                | Up to 12                    |
| Fibre Type                                 | G652D / G657A               |
| Fibres Identification                      | Colour Code <sup>1</sup>    |
| Strength Members                           | FRP                         |
| Outer Jacket                               | Black PE                    |
| Weight (Kg/Km)                             | 31 Kg/Km                    |
| Ø Outer                                    | 3.8 mm x 7.0 mm ± 0.20      |
| Max. Tensile Load                          | 1200 N                      |
| Min. Bend Radius Static / Dinamic          | 20 x Ø Outer / 30 x Ø Outer |
| Temperature Range Operation / Installation | -40°C to + 70°C             |

**Standards**

Mechanical and environmental tests according to EN187000, IEC60794-1-2.  
<sup>1</sup> Fibres colour code: Red – Green – Blue – Yellow – Grey – Violet – Brown – Orange – White – Pink – Black – Natural.



## Loose tube cables

### SPECIFICATIONS

|                          |                                 |
|--------------------------|---------------------------------|
| Fibre Count              | 2 .. 12                         |
| Strength Members         | Aramid Yarns                    |
| Outer Jacket             | Thermoplastic LSZH <sup>1</sup> |
| Jacket Colour            | Black                           |
| Weight (Kg/Km)           | 10                              |
| ø Outer (mm)             | 3.5 ± 0.1                       |
| Tensile Load (N)         | 80                              |
| Temperature Range        | -30 °C to +70 °C                |
| Min. Bending Radius (mm) | 20 x ø Outer                    |

### Standards

Environmental and Mechanical tests according to EN 187000 and CEI 60794.

Fibres colour code: red, green, blue, yellow, grey, violet, brown, orange, white, pink, black, natural.

### Cable description

- Fibre Optics
- Secondary Loose Tube
- Aramid
- Outer Jacket

### Fire Resistance

- Flame retardant
- Halogen free
- Low smoke emission

### Applications

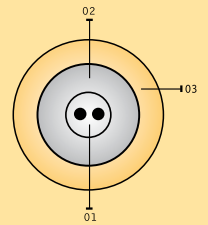
- Indoor

### Advantages

- Compact / Tough / Resistant / Totally Dielectric / Suitable for "blow air" systems.



Indoor



01. FIBRE OPTICS  
02. SECONDARY LOOSE TUBE  
03. ARAMID  
04. OUTER JACKET

## Loose tube cables

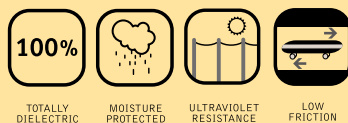
### SPECIFICATIONS

|                     |                  |           |           |           |           |           |
|---------------------|------------------|-----------|-----------|-----------|-----------|-----------|
| Fibre Count         | 24               | 36        | 48        | 72        | 96        | 144       |
| Total Tubes         | 6                | 6         | 6         | 6         | 8         | 12        |
| Active Tubes        | 2                | 3         | 4         | 6         | 8         | 12        |
| Fibres per Tube     | 12               |           |           |           |           |           |
| Outer Jacket        | Polyethylene     |           |           |           |           |           |
| Colour              | Black            |           |           |           |           |           |
| Weight (Kg/Km)      | 29               | 29        | 29        | 29        | 42        | 72        |
| ø Outer (mm)        | 5.7 ± 0.2        | 5.7 ± 0.2 | 5.7 ± 0.2 | 5.7 ± 0.2 | 6.6 ± 0.2 | 8.6 ± 0.2 |
| Tensile Load (N)    | 500              | 500       | 500       | 500       | 1200      | 1500      |
| Temperature Range   | -40 °C to +70 °C |           |           |           |           |           |
| Min. Bending radius | 20 x ø Outer     |           |           |           |           |           |

### Standards

Environmental and Mechanical tests according to EN 187000 and CEI 60794.

Fibres colour code: red, green, blue, yellow, grey, violet, brown, orange, white, pink, black, natural.



### Cable description

- Central Element (GRP)
- Fibre Optics
- Loose Tubes (Jelly Filled)
- Outer Jacket

### Applications

- Outdoor

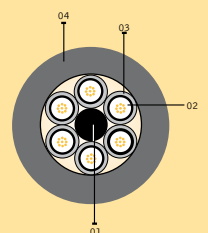
### Options

- LSZH Jacket
- PA12 Jacket

### Advantages

- Compact / Tough / Resistant / Totally Dielectric / Excellent resistance to friction / Suitable for "blow air" systems.

Outdoor



01. CENTRAL ELEMENT (GRP)  
02. FIBRE OPTICS  
03. LOOSE TUBES (JELLY FILLED)  
04. OUTER JACKET

# ABD - 01

# ABD



**Subscriber connection point**

- 01. Base
- 02. Top

**Modularity**

- Support joint (till 4 units)
- Cable access punching
- Rear access cable
- Slide

**Applications**

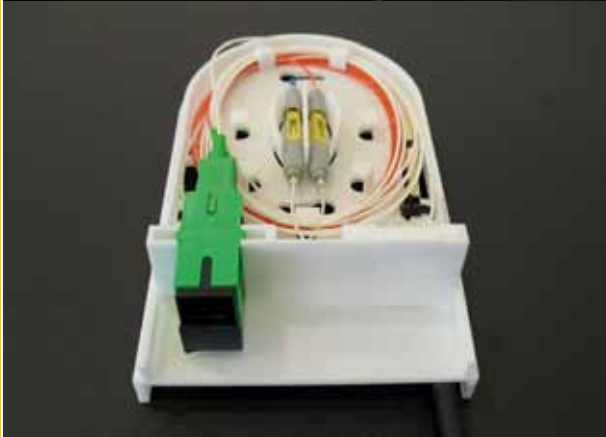
- Into the buildings
- Subscriber Cable (CAS, CAR, CDV)
- Direct Connectorization in FTTx applications

**Options**

- From 1 to 4 SC/APC adaptors
- Supplied with Pre-assembled Cable

**Benefits**

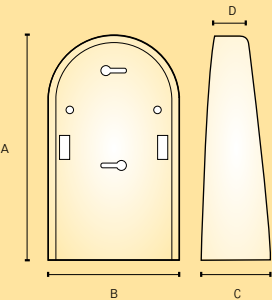
- Compact and Small format.
- Lightweight
- Easy installation
- Modern design
- Installation cost savings



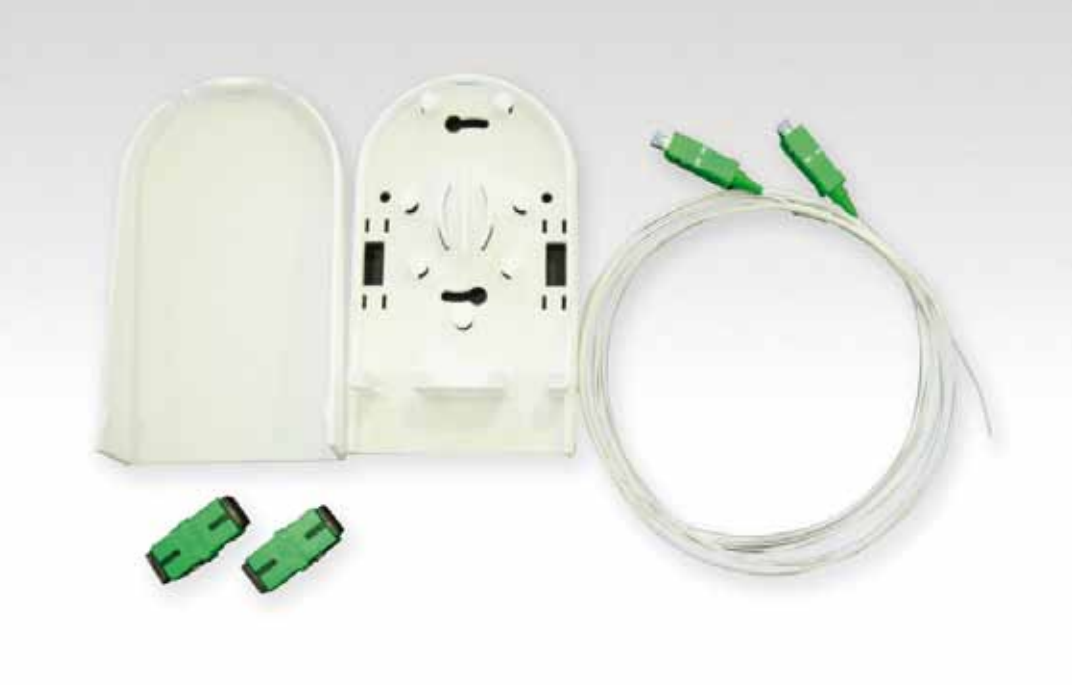
| Dimensiones |        | mm  |
|-------------|--------|-----|
| A           | Large  | 130 |
| B           | Width  | 75  |
| C           | Height | 37  |
| D           | Height | 18  |

# SCP

## Subscriber connection point



# Kit FTTx Line



It will be possible to supply this termination box in 25, 40 or 50 m. with pre-assembled cable in SC/APC adaptors, from 1 to 4 plugs. This means a reduction in time and cost during the installation.

**Kit estandard**

- 1 o 2 Pig-tail FO SM G657 – SC/APC
- +
- 1 o 2 Adaptors – SC/APC
- +
- 1 o 2 Mechanical splices
- +
- 1 o 2 Mechanical splices
- +
- Termination box

# Cable BOX

## Reel in a box:

- Plastic structure
- Spool
- Carton box

## Applications

- Into the buildings
- Subscriber cable (CAS, CAR, ...)
- Internal Distribution cable (CDV)

## Options

- Subscriber cable: 305 / 500 / 1.000 m
- Internal Distribution cable: 150 / 200 / 250 m

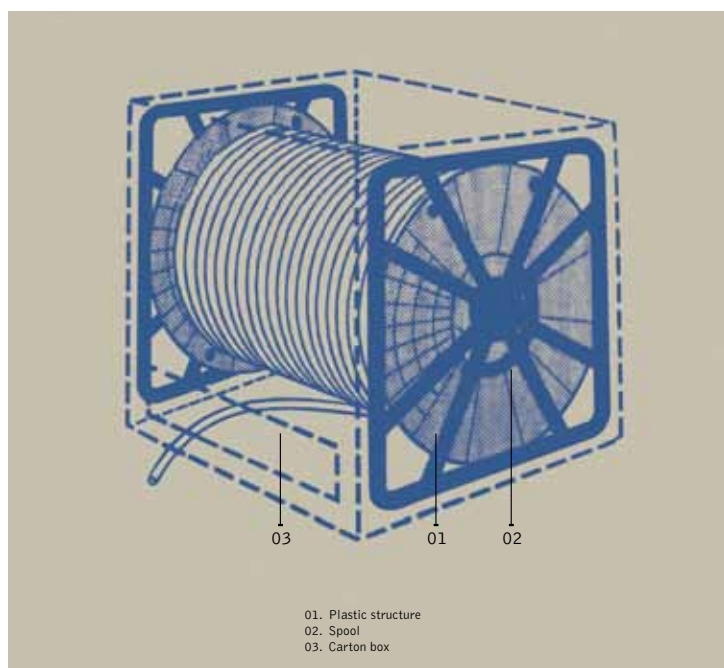
## Benefits

- Lineal unwinding / Compact / Lightweight/ Easy installation / Installation costs savings



## Dimensions

|          |        |        |
|----------|--------|--------|
| <b>A</b> | Height | 350 mm |
| <b>B</b> | Width  | 350 mm |
| <b>C</b> | Depth  | 350 mm |



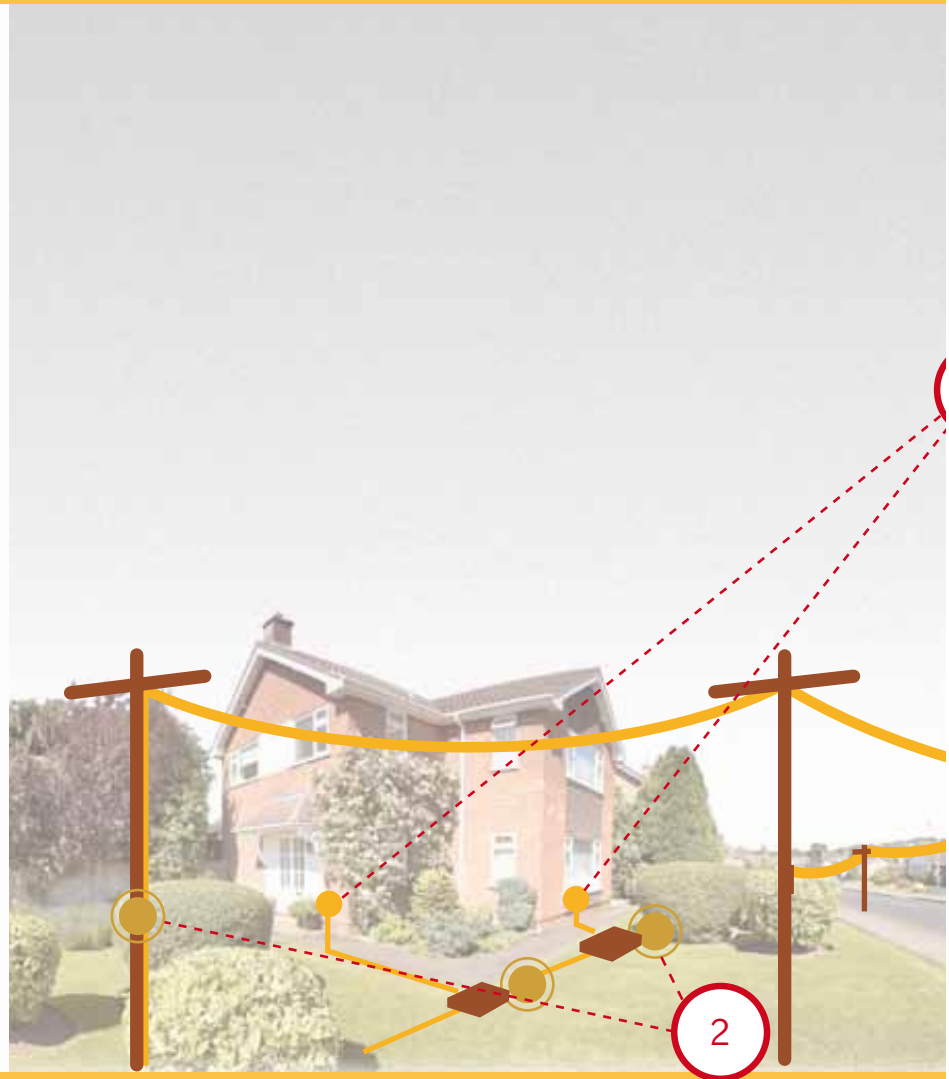
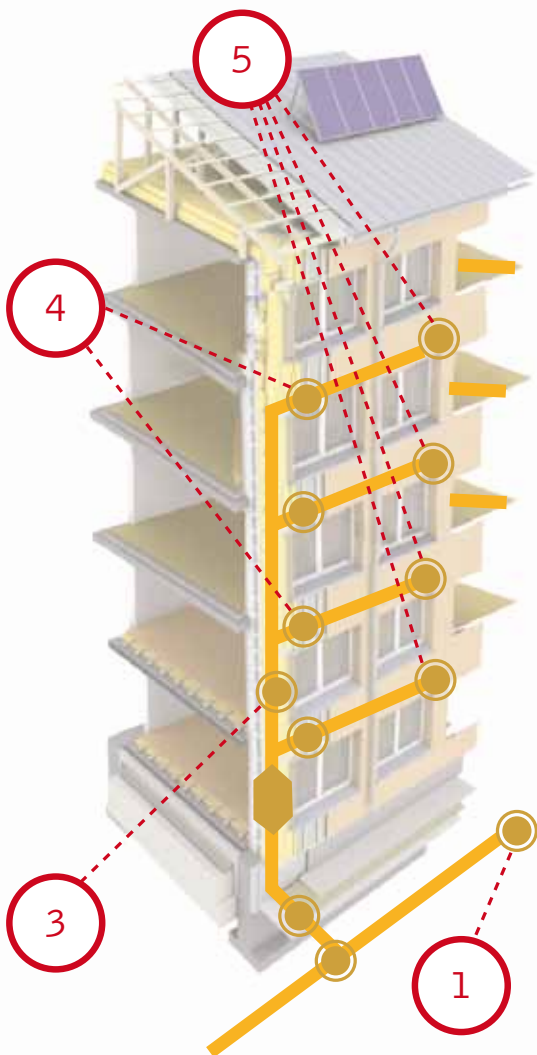
## Characteristics

| CABLE TYPE       | ø mm          | Box 305 | Box 500 | Box 1000 |
|------------------|---------------|---------|---------|----------|
| CAS (S100, S105) | 2,9 ± 0,15    | 4 kg    | 5,5 kg  | 9 kg     |
| CAS (S100, S105) | 3,6 ± 0,2     | 6 kg    | 9 kg    | 16 kg    |
| CAS-FLAT (F100)  | 2×3 ± 0,2     | 4 kg    | 6 kg    | 9,5 kg   |
| CAR (R100, R105) | 4,6 ± 0,2     | 9,5 kg  | 14,5 kg |          |
| CAR (R200, R205) | 2,5×5,2 ± 0,2 | 6 kg    | 8,5 kg  |          |

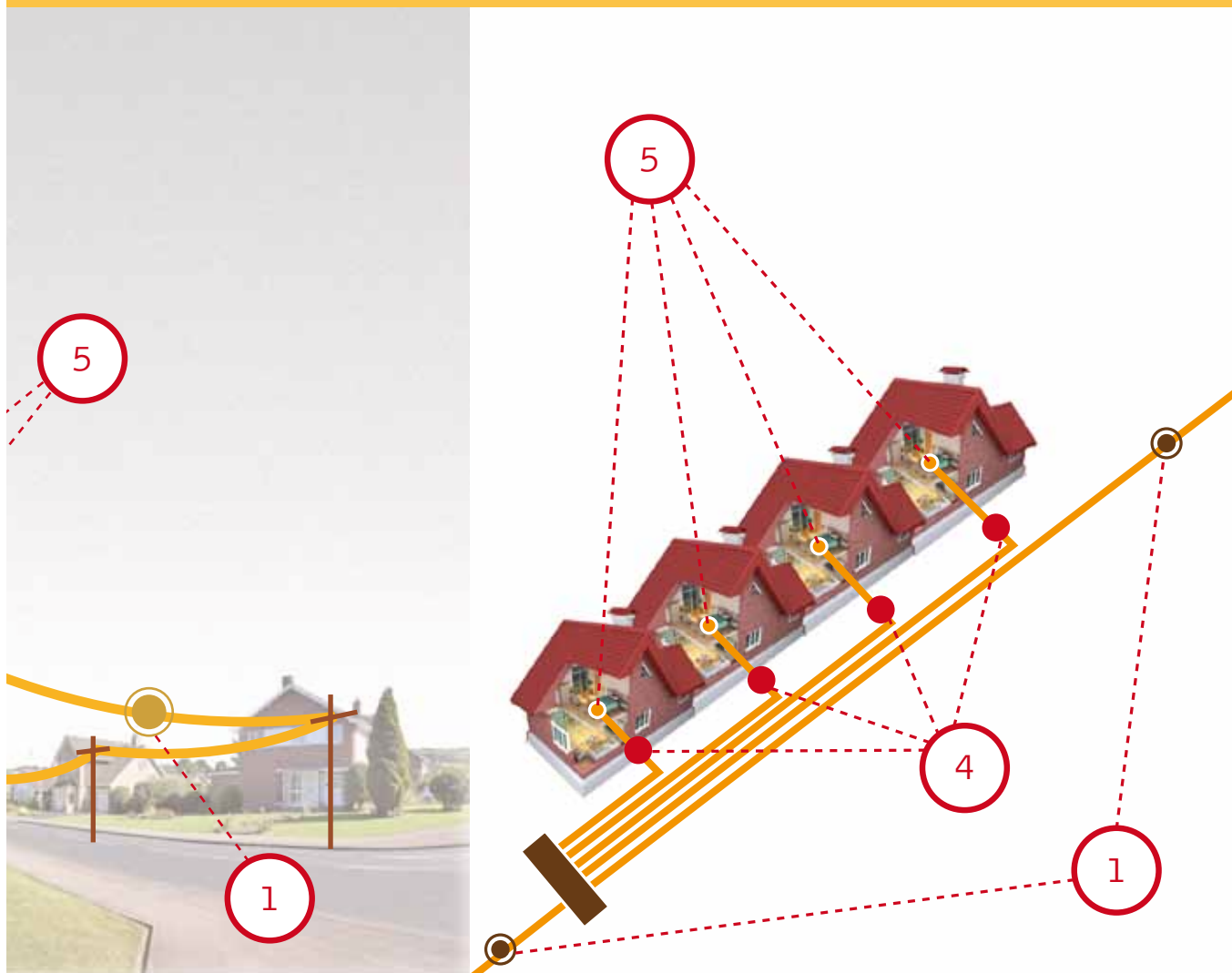
## Characteristics

| CABLE TYPE    | ø mm      | Box 150 | Box 200 | Box 250 |
|---------------|-----------|---------|---------|---------|
| CDV (V100) 4  | 5,5 ± 0,3 |         | 8 kg    | 9 kg    |
| CDV (V100) 6  | 6,2 ± 0,3 | 8 kg    | 9,5 kg  | 11,5 kg |
| CDV (V100) 8  | 6,9 ± 0,3 | 9 kg    | 11 kg   | 13,5 kg |
| CDV (V100) 12 | 7,9 ± 0,3 | 11 kg   | 14 kg   |         |





# Solution FTTx



**TRUNK** Cable (1): Could be used to any type of cable depending on the environment:

|                      |                                 |
|----------------------|---------------------------------|
| Conventional method: | PKP, PSP, DP, DSP, NEXO o TENAX |
| Blow microducts:     | ABD o HD                        |
| Aerial installation: | ADSS, ...                       |

**DROP** Cable: Could be applying any type of cable (usually till 24fo), it has his origin point in a trunk cable and his destination in the building or cabinet in the curb (usually in the distribution boxes):

|                                  |                                                                                                    |
|----------------------------------|----------------------------------------------------------------------------------------------------|
| Outdoor installation (2):        | CAR R200, ADSS F200, ABD-01, ...                                                                   |
| Indoor installation (3):         | CAR R100, CAR R105 o CDV (+ 2 viviendas)                                                           |
| Subscriber installation (4):     | CAS S100 – S115 (bajo tubo)<br>CAS FLAT (bajo tubo o pared)<br>CAR R100 o R105 (bajo tubo o pared) |
| Subscriber connection point (5): | Roseta PCU                                                                                         |



# OPTRAL

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