
# UNIVERSAL CABLES

**SPECIAL**
WIRES AND CABLES

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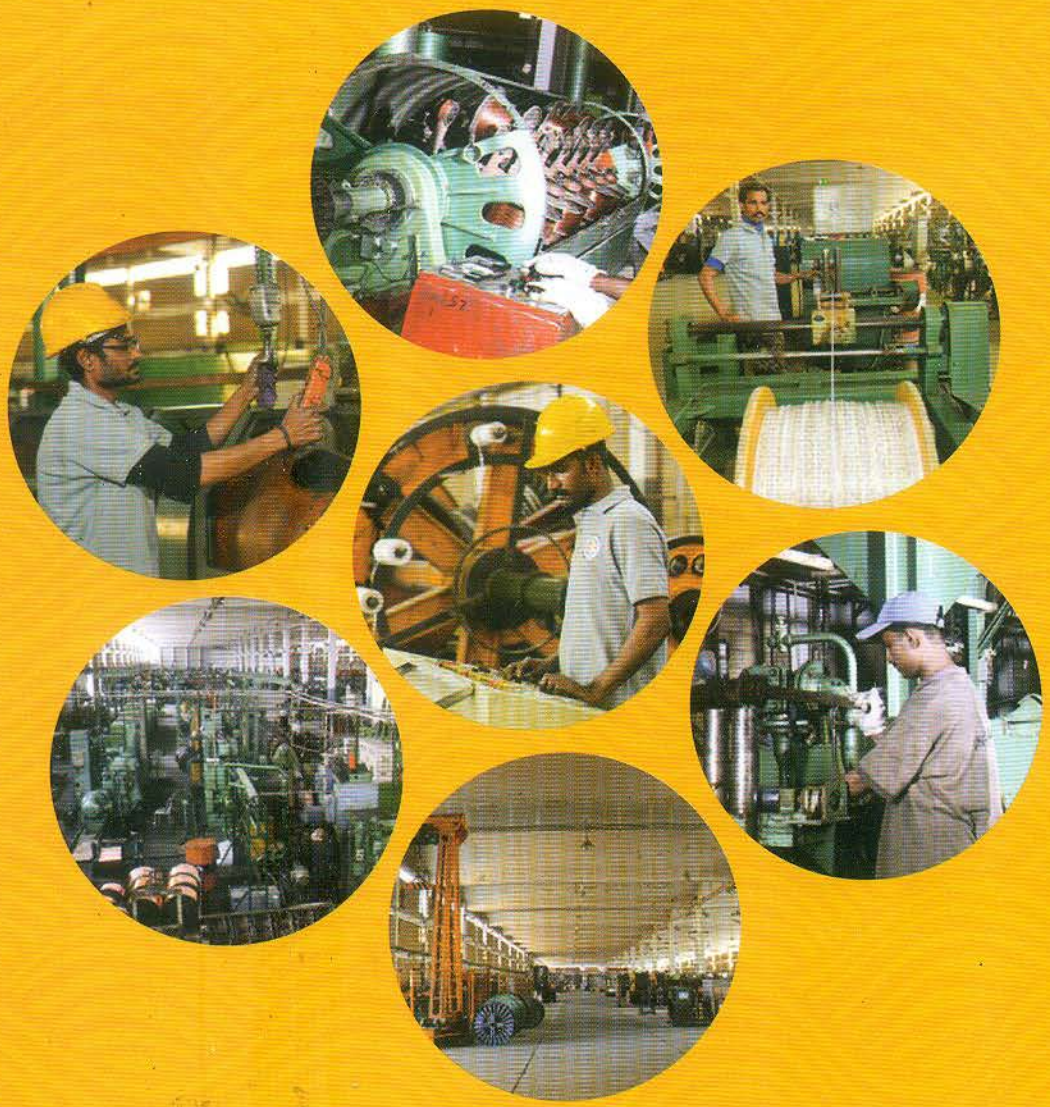
## About us

The effort of setting up a small yet strong setup in 1978 was the birth of a shining star in the Cable Industry. Initiated as a manufacturer of PVC insulated wires, cables and flexible cords, Universal Cables Industries Ltd. made its mark in its field of expertise. With a diverse product range, foresighted vision and advance technology, Universal Cables Industries Ltd. proudly crossed its benchmark of Quality and Customer satisfaction after it became ISO9001:2008 certified.



UNIVERSAL CABLES INDUSTRIES LTD.

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**Note :** "Zero Halogen or high temperature (105°C) oil, gas and fuel resistant cables are available on request

# FLEXIBLE CORDS

## PVC Insulated flexible cords 300 / 300 Volts to BS 6500

### Single and twisted twin

**SPECIFICATION:**

Plain annealed copper conductor, PVC insulation
Single Core.
Twin Twisted (Two core twisted)

**Identification of Core:**

Single core Blue or Brown
Twin twisted Blue and Brown

**Table-1**

| Conductors | | Radial thickness of insulation | *Over all diameter (single core) | Approx.weight single core | Approx.weight twisted twin |
|---|---|---|---|---|---|
| Nominal area | Nominal number and nominal size of wires | | | | |
| mm ² | mm | mm | mm | Kg / Km | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 2.3 | 10 | 20 |
| 0.75 | 24 / 0.20 | 0.6 | 2.5 | 13 | 26 |
| 1.0 | 32 / 0.20 | 0.6 | 2.7 | 16 | 32 |
| 1.5 | 30 / 0.25 | 0.6 | 3.0 | 24 | 48 |
| 2.5 | 50 / 0.25 | 0.7 | 3.6 | 35 | 70 |
| 4.0 | 56 / 0.30 | 0.8 | 4.4 | 55 | 110 |

**Parallel Twin**

**SPECIFICATION:**

Plain annealed copper conductor.
Two conductors laid parallel and insulated simultaneously with PVC in such a way that the core are joined but can be readily separated with out damage.

**IDENTIFICATION OF CORE:**

One core to be provided with longitudinal rib.

**CORE COLOUR:**

White

**Table -1a**

| Conductors | | Radial thickness of insulation | * Over all dimention | | Approx. weight |
|---|---|---|---|---|---|
| Nominal area | Nominal number & nominal size of wires | | Lower limit | Upper limit | |
| mm ² | mm | mm | mm | mm | Kg / Km |
| 0.50 | 28 / 0.15 | 0.8 | 2.5 x 5.0 | 3.0 x 6.0 | 24 |
| 0.75 | 42 / 0.15 | 0.8 | 2.7 x 5.4 | 3.2 x 6.4 | 29 |

* Overall diameter and dimensions are subject to the tolerances.

## FLEXIBLE CORDS

**Ordinary duty PVC -insulated, PVC sheathed flexible cord, 300 / 500 V**
**Parallel twin,circular twin, 3-core, 4-core, 5-core, (Generally to BS:6500)**

**Specification:**
Annealed copper conductor, class 5 flexible conductor

**PVC insulation type TI 2**
Parallel twin, circular twin, 3-core, 4-core & 5-core The cores are twisted together and outer interstices filled with suitable material

**PVC Sheath type TM 2**
Parallel flat twin, circular twin, 3-core, 4-core & 5-core

**Identification of Core:**

| | |
|---|---|
| Twin | Blue and brown |
| 3 core : | Green/yellow,blue and brown |
| 4 core : | Green/yellow, black, blue and brown |
| 5 core : | Green/yellow, black, blue, brown and black |

**Colour of Outer Sheath:** Not specified

**Table-2**

| Nominal cross-sectional area of conductor mm² | Nominal number & nominal size of wires mm | Radial thickness of insulation mm | Twin Core | | | | Three Core | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Radial thickness of sheath mm | Mean overall dimensions | | Approx. net weight kg/km | Radial thickness of insulation mm | Radial thickness of sheath mm | Mean overall diameters | | Approx. net weight kg/km |
| | | | | Lower limit mm | Upper limit mm | | | | Lower limit mm | Upper limit mm | |
| 0.75+ | 24/0.20 | 0.6 | 0.8 | 3.8x6.0 | 5.2x7.6 | 47 | - | - | - | - | - |
| 1.0 | 32/0.20 | 0.6 | 0.8 | 3.9x6.4 | 5.2x8.0 | 49 | - | - | - | - | - |
| 0.5 | 16/0.20 | 0.6 | 0.8 | 5.6 | 7.0 | 55 | - | - | - | - | - |
| 0.75 | 24/0.20 | 0.6 | 0.8 | 6.0 | 7.6 | 65 | 0.6 | 0.8 | 6.4 | 8.0 | 75 |
| 1.0 | 32/.020 | 0.6 | 0.8 | 6.4 | 8.0 | 75 | 0.6 | 0.8 | 6.6 | 8.4 | 85 |
| 1.5 | 30/0.25 | 0.7 | 0.8 | 7.4 | 9.0 | 90 | 0.7 | 0.9 | 8.0 | 9.8 | 110 |
| 2.5 | 50/0.25 | 0.8 | 1.0 | 8.9 | 11.0 | 135 | 0.8 | 1.1 | 9.6 | 12.0 | 170 |
| 4.0 | 56/0.30 | 0.8 | 1.1 | 10.1 | 12.0 | 155 | 0.8 | 1.2 | 11.0 | 13.0 | 215 |

| Nominal cross-sectional area of conductor mm² | Nominal number & nominal size of wires mm | Radial thickness of insulation mm | Four Core | | | | Five Core | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Radial thickness of sheath mm | Mean overall diameters | | Approx. net weight kg/km | Radial thickness of insulation mm | Radial thickness of sheath mm | Mean overall diameters | | Approx. net weight kg/km |
| | | | | Lower limit mm | Upper limit mm | | | | Lower limit mm | Upper limit mm | |
| 0.75 | 24/0.20 | 0.6 | 0.8 | 6.8 | 8.6 | 90 | 0.6 | 0.9 | 7.4 | 9.6 | 102 |
| 1.0 | 32/0.20 | 0.6 | 0.8 | 7.6 | 9.4 | 110 | 0.6 | 0.9 | 8.3 | 10.0 | 122 |
| 1.5 | 30/0.25 | 0.7 | 1.0 | 9.0 | 11.0 | 140 | 0.7 | 1.1 | 10.0 | 12.0 | 150 |
| 2.5 | 50/0.25 | 0.8 | 1.1 | 10.5 | 13.0 | 205 | 0.7 | 1.2 | 11.5 | 14.0 | 218 |
| 4.0 | 56/0.30 | 0.8 | 1.2 | 12.5 | 14.0 | 275 | 0.8 | 1.4 | 13.5 | 15.5 | 342 |

+ Flat twin flexible cords
+ Overall diameter are subject to the tolerance

## FLEXIBLE CORDS

**Heat resisting PVC insulated and sheathed cords 300 / 500 V BS 6500.**
**Single, twin, three and four core circular**

**SPECIFICATION:**

Plain annealed copper conductor(class-5), heat resisting PVC insulation.
Twin, three and four core.
Core twisted together and the outer interstices filled with suitable material.
Heating resisting PVC sheath.

**IDENTIFICATION OF CORE:**

| | |
|---|---|
| Single core | Blue or brown |
| Twin core | Blue and brown |
| Three core | Green/yellow, blue and brown |
| Four core | Green/yellow, black, blue and brown |
| **COLOUR OF SHEATH:** | Black (other colours on request) |

**Table-3**

| Conductor | | Radial thickness of insulation | Single Core | | | Twin | | |
|---|---|---|---|---|---|---|---|---|
| Nominal area | Nominal number and nominal size of wires | | Radial thickness of sheath | *Overall diameter | Approx. nett weight | Radial thickness of sheath | *Overall diameter | Approx. weight |
| mm ² | mm | mm | mm | mm | Kg / Km | mm | mm | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 0.8 | 4.0 | 20 | 0.8 | 6.1 | 46 |
| 0.75 | 24 / 0.20 | 0.6 | 0.8 | 4.2 | 24 | 0.8 | 6.5 | 55 |
| 1.0 | 32 / 0.20 | 0.6 | 0.8 | 4.4 | 27 | 0.8 | 6.9 | 65 |
| 1.5 | 30 / 0.25 | 0.6 | 0.8 | 4.7 | 33 | 0.8 | 7.5 | 80 |
| 2.5 | 50 / 0.25 | 0.7 | 0.8 | 5.3 | 46 | 1.0 | 9.1 | 125 |
| 4.0 | 56 / 0.30 | 0.8 | 0.8 | 6.1 | 65 | 1.0 | 10.8 | 145 |
| | | | Three Core | | | Four Core | | |
| mm ² | mm | mm | mm | mm | Kg / Km | mm | mm | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 0.8 | 6.5 | 55 | 0.8 | 7.0 | 70 |
| 0.75 | 24 / 0.20 | 0.6 | 0.8 | 6.9 | 70 | 0.8 | 7.5 | 85 |
| 1.0 | 32 / 0.20 | 0.6 | 0.8 | 7.3 | 80 | 0.9 | 8.2 | 100 |
| 1.5 | 30 / 0.25 | 0.6 | 0.9 | 8.1 | 100 | 1.0 | 9.0 | 130 |
| 2.5 | 50 / 0.25 | 0.7 | 1.1 | 9.8 | 155 | 1.1 | 10.8 | 195 |
| 4.0 | 56 / 0.30 | 0.8 | 1.1 | 11.6 | 200 | 1.1 | 12.7 | 275 |

* Overall diameter are subject to the tolerances.

## FLEXIBLE CORDS

### PVC insulated, screened and sheathed cords 300 / 500 V (BS 6500) twin, three and four core circular

**SPECIFICATION:**

Plain annealed copper conductor, PVC insulation.
Core twisted together and the outer interstices filled with suitable material. PVC inner sheath.
Plain annealed copper wire braid. PVC outer sheath.

Twin, three & four Core

**IDENTIFICATION OF CORE:**

| | |
|---|---|
| Twin core | Blue and brown |
| Three core | Green/yellow,blue and brown |
| Four core | Green/yellow, black, blue and brown |

**COLOUR OF OUTER SHEATH:** Black

**Table-4**

| Conductors | | Radial thickness of insulation | Twin Core | | | | |
|---|---|---|---|---|---|---|---|
| Nominal area | Nominal number and nominal size of wires | | Radial thickness of inner sheath | Size of plain copper wire braid | Radial thickness of outer sheath | *Overall diameter | Approx. weight |
| mm² | mm | mm | mm | mm | mm | mm | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 0.8 | 0.20 | 0.9 | 9.1 | 130 |
| 0.75 | 24 / 0.20 | 0.6 | 0.8 | 0.20 | 1.0 | 9.7 | 150 |
| 1.0 | 32 / 0.20 | 0.6 | 0.8 | 0.20 | 1.0 | 10.1 | 165 |
| 1.5 | 30 / 0.25 | 0.6 | 0.8 | 0.20 | 1.0 | 10.8 | 185 |
| 2.5 | 50 / 0.25 | 0.7 | 1.0 | 0.20 | 1.1 | 12.6 | 255 |
| 4.0 | 56 / 0.30 | 0.8 | 1.0 | 0.20 | 1.2 | 14.4 | 325 |
| | | | Three Core | | | | |
| mm² | mm | mm | mm | mm | mm | mm | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 0.8 | 0.20 | 0.9 | 9.5 | 145 |
| 0.75 | 24 / 0.20 | 0.6 | 0.8 | 0.20 | 1.0 | 10.1 | 165 |
| 1.0 | 32 / 0.20 | 0.6 | 0.8 | 0.20 | 1.0 | 10.6 | 185 |
| 1.5 | 30 / 0.25 | 0.7 | 0.9 | 0.20 | 1.1 | 11.6 | 220 |
| 2.5 | 50 / 0.25 | 0.8 | 1.1 | 0.20 | 1.3 | 13.3 | 300 |
| 4.0 | 56 / 0.30 | 0.8 | 1.1 | 0.20 | 1.2 | 15.2 | 375 |
| | | | Four Core | | | | |
| mm² | mm | mm | mm | mm | mm | mm | Kg / Km |
| 0.50 | 16 / 0.20 | 0.6 | 0.8 | 0.20 | 1.0 | 10.2 | 165 |
| 0.75 | 24 / 0.20 | 0.6 | 0.8 | 0.20 | 1.1 | 10.8 | 190 |
| 1.0 | 32 / 0.20 | 0.6 | 0.9 | 0.20 | 1.1 | 11.7 | 220 |
| 1.5 | 30 / 0.25 | 0.7 | 1.0 | 0.20 | 1.1 | 12.5 | 245 |
| 2.5 | 50 / 0.25 | 0.7 | 1.1 | 0.20 | 1.2 | 14.4 | 375 |
| 4.0 | 56 / 0.30 | 0.8 | 1.1 | 0.20 | 1.2 | 16.4 | 450 |

* Overall diameter are subject to the tolerances.

## Control cables
## copper conductor PVC insulated
## PVC sheathed 600 / 1000 V

**Specification:**

600 / 1000 Volts auxiliary control cables solid, stranded or flexible copper conductors, non-armoured, armoured or shielded to BSS 6346/IEC 502.

**Conductor**: Plain annealed copper (solid, stranded or flexible)
**Insulation**: PVC
**Bedding**: PVC
**Armouring**: Galvanized steel wire
**Sheath**: PVC
**Shielding**: Plain or tinned copper wire braid, or aluminium foil, to meet a specific requirement.
**Core identification** Non repeating colours or numbers printed on insulation
**Note**: Control cable between 5 core to 61 core can also be manufactured in 1.5 $mm^2$, 2.5 $mm^2$, 4 $mm^2$ and 6 $mm^2$. Data sheet can be submitted against specific requirement. **Table-1**

| Numbers of core | Nominal area | Max. resistance at 20°C | Thickness of insulation | Thickness of outer sheath | Approx. overall diameter |
|---|---|---|---|---|---|
| No. | $mm^2$ | ohm / Km | mm | mm | mm |
| 5 | 1.5 | 12.1 | 0.6 | 1.8 | 11.6 |
| 7 | 1.5 | 12.1 | 0.6 | 1.8 | 12.4 |
| 10 | 1.5 | 12.1 | 0.6 | 1.8 | 15.3 |
| 12 | 1.5 | 12.1 | 0.6 | 1.8 | 15.8 |
| 19 | 1.5 | 12.1 | 0.6 | 1.8 | 18.2 |
| 27 | 1.5 | 12.1 | 0.6 | 1.8 | 21.3 |
| 37 | 1.5 | 12.1 | 0.6 | 1.8 | 23.7 |
| 48 | 1.5 | 12.1 | 0.6 | 1.8 | 27.0 |
| 52 | 1.5 | 12.1 | 0.6 | 1.9 | 27.8 |
| 61 | 1.5 | 12.1 | 0.6 | 1.9 | 29.6 |
| 5 | 2.5 | 7.41 | 0.7 | 1.8 | 13.1 |
| 7 | 2.5 | 7.41 | 0.7 | 1.8 | 14.2 |
| 10 | 2.5 | 7.41 | 0.7 | 1.8 | 17.5 |
| 12 | 2.5 | 7.41 | 0.7 | 1.8 | 18.1 |
| 19 | 2.5 | 7.41 | 0.7 | 1.8 | 21.0 |
| 27 | 2.5 | 7.41 | 0.7 | 1.8 | 25.0 |
| 37 | 2.5 | 7.41 | 0.7 | 1.8 | 28.0 |
| 48 | 2.5 | 7.41 | 0.7 | 1.9 | 32.0 |
| 52 | 2.5 | 7.41 | 0.7 | 2.0 | 33.0 |
| 61 | 2.5 | 7.41 | 0.7 | 2.0 | 35.0 |

**Note:** The cross- sectional area of cables specific to customer's requirement can also be manufactured.

## Control cables
## solid copper conductor, PVC insulated, steel wire armoured, PVC sheathed 600/1000 V

1.5 mm² solid copper conductors (class 1)
Thickness of Insulation (minimum average) : 0.6 mm
Max resistance at 20°C : 12.1 ohm / km.

Table-2

| Number of cores* | Thickness of extruded bedding | Nominal armour wire diameter | Thickness of oversheath | Approximate overall diameter |
|---|---|---|---|---|
| | mm | mm | mm | mm |
| 5 | 0.8 | 0.9 | 1.4 | 13.8 |
| 6 | 0.8 | 0.9 | 1.4 | 14.5 |
| 7 | 0.8 | 0.9 | 1.4 | 14.5 |
| 8 | 0.8 | 0.9 | 1.4 | 15.4 |
| 9 | 0.8 | 0.9 | 1.5 | 16.5 |
| 10 | 0.8 | 1.25 | 1.5 | 18.1 |
| 11 | 0.8 | 1.25 | 1.5 | 18.6 |
| 12 | 0.8 | 1.25 | 1.5 | 18.6 |
| 13 | 0.8 | 1.25 | 1.5 | 18.9 |
| 14 | 0.8 | 1.25 | 1.5 | 19.2 |
| 15 | 0.8 | 1.25 | 1.6 | 20.1 |
| 16 | 0.8 | 1.25 | 1.6 | 20.1 |
| 17 | 0.8 | 1.25 | 1.6 | 21.1 |
| 18 | 0.8 | 1.25 | 1.6 | 21.1 |
| 19 | 0.8 | 1.25 | 1.6 | 21.1 |
| 20 | 0.8 | 1.25 | 1.6 | 22.0 |
| 21 | 0.8 | 1.25 | 1.6 | 22.0 |
| 22 | 1.0 | 1.6 | 1.7 | 25.0 |
| 23 | 1.0 | 1.6 | 1.7 | 25.0 |
| 24 | 1.0 | 1.6 | 1.7 | 25.0 |
| 25 | 1.0 | 1.6 | 1.7 | 25.0 |
| 26 | 1.0 | 1.6 | 1.7 | 25.4 |
| 27 | 1.0 | 1.6 | 1.7 | 25.4 |
| 28 | 1.0 | 1.6 | 1.7 | 25.6 |
| 29 | 1.0 | 1.6 | 1.7 | 26.1 |
| 30 | 1.0 | 1.6 | 1.7 | 26.1 |
| 31 | 1.0 | 1.6 | 1.7 | 26.5 |
| 32 | 1.0 | 1.6 | 1.7 | 26.8 |
| 33 | 1.0 | 1.6 | 1.7 | 26.8 |
| 34 | 1.0 | 1.6 | 1.8 | 27.8 |
| 35 | 1.0 | 1.6 | 1.8 | 27.8 |
| 36 | 1.0 | 1.6 | 1.8 | 27.8 |
| 37 | 1.0 | 1.6 | 1.8 | 27.8 |
| 38 | 1.0 | 1.6 | 1.8 | 28.7 |
| 39 | 1.0 | 1.6 | 1.8 | 28.7 |
| 40 | 1.0 | 1.6 | 1.8 | 28.7 |
| 41 | 1.0 | 1.6 | 1.8 | 29.6 |
| 42 | 1.0 | 1.6 | 1.8 | 30.3 |
| 43 | 1.0 | 1.6 | 1.8 | 30.3 |
| 44 | 1.0 | 1.6 | 1.8 | 30.3 |
| 45 | 1.0 | 1.6 | 1.8 | 30.3 |
| 46 | 1.0 | 1.6 | 1.8 | 30.8 |
| 47 | 1.0 | 1.6 | 1.8 | 30.8 |
| 48 | 1.0 | 1.6 | 1.8 | 30.8 |

## Control cables
## circular stranded copper conductor, PVC insulated, steel wire armoured, PVC sheathed 600 / 1000 V

1.5 mm² circular stranded copper (class-2)
Thickness of Insulation (minimum average) : 0.6 mm
Max resistance at 20°C : 12.1 ohm / km.

Table-3

| Number of cores* | Thickness of extruded bedding | Nominal armour wire diameter | Thickness of oversheath | Approximate overall diameter |
|---|---|---|---|---|
| | mm | mm | mm | mm |
| 5 | 0.8 | 0.9 | 1.4 | 14.3 |
| 6 | 0.8 | 0.9 | 1.4 | 15.2 |
| 7 | 0.8 | 0.9 | 1.4 | 15.2 |
| 8 | 0.8 | 0.9 | 1.4 | 16.5 |
| 9 | 0.8 | 0.9 | 1.5 | 18.0 |
| 10 | 0.8 | 1.25 | 1.5 | 19.0 |
| 11 | 0.8 | 1.25 | 1.5 | 19.4 |
| 12 | 0.8 | 1.25 | 1.5 | 19.4 |
| 13 | 0.8 | 1.25 | 1.5 | 20.0 |
| 14 | 0.8 | 1.25 | 1.5 | 20.3 |
| 15 | 0.8 | 1.25 | 1.6 | 21.3 |
| 16 | 0.8 | 1.25 | 1.6 | 21.3 |
| 17 | 0.8 | 1.25 | 1.6 | 22.2 |
| 18 | 0.8 | 1.25 | 1.6 | 22.2 |
| 19 | 0.8 | 1.25 | 1.6 | 22.2 |
| 20 | 0.8 | 1.25 | 1.6 | 23.1 |
| 21 | 0.8 | 1.25 | 1.6 | 23.1 |
| 22 | 1.0 | 1.6 | 1.7 | 26.2 |
| 23 | 1.0 | 1.6 | 1.7 | 26.2 |
| 24 | 1.0 | 1.6 | 1.7 | 26.2 |
| 25 | 1.0 | 1.6 | 1.7 | 26.2 |
| 26 | 1.0 | 1.6 | 1.7 | 26.7 |
| 27 | 1.0 | 1.6 | 1.7 | 26.7 |
| 28 | 1.0 | 1.6 | 1.7 | 26.9 |
| 29 | 1.0 | 1.6 | 1.7 | 27.4 |
| 30 | 1.0 | 1.6 | 1.7 | 27.4 |
| 31 | 1.0 | 1.6 | 1.7 | 28.1 |
| 32 | 1.0 | 1.6 | 1.7 | 28.4 |
| 33 | 1.0 | 1.6 | 1.7 | 28.4 |
| 34 | 1.0 | 1.6 | 1.8 | 29.2 |
| 35 | 1.0 | 1.6 | 1.8 | 29.2 |
| 36 | 1.0 | 1.6 | 1.8 | 29.2 |
| 37 | 1.0 | 1.6 | 1.8 | 29.2 |
| 38 | 1.0 | 1.6 | 1.8 | 30.2 |
| 39 | 1.0 | 1.6 | 1.8 | 30.2 |
| 40 | 1.0 | 1.6 | 1.8 | 30.2 |
| 41 | 1.0 | 1.6 | 1.8 | 31.6 |
| 42 | 1.0 | 1.6 | 1.8 | 32.4 |
| 43 | 1.0 | 1.6 | 1.8 | 32.4 |
| 44 | 1.0 | 1.6 | 1.8 | 32.4 |
| 45 | 1.0 | 1.6 | 1.8 | 32.4 |
| 46 | 1.0 | 1.6 | 1.8 | 32.9 |
| 47 | 1.0 | 1.6 | 1.8 | 32.9 |
| 48 | 1.0 | 1.6 | 1.8 | 32.9 |

## CONTROL CABLES continued.....

### Control cables
### solid copper conductor, PVC insulated,
### steel wire armoured,
### PVC sheathed 600 / 1000 V

2.5 mm² solid copper conductor (class 1)
Thickness of insulation (minimum average) : 0.7 mm
Max resistance at 20°C : 7.41 ohm / km.

Table-4

| Number of cores* | Thickness of extruded bedding | Nominal armour wire diameter | Thickness of oversheath | Approximate overall diameter |
|---|---|---|---|---|
| | mm | mm | mm | mm |
| 5 | 0.8 | 0.9 | 1.4 | 15.4 |
| 6 | 0.8 | 0.9 | 1.5 | 16.6 |
| 7 | 0.8 | 0.9 | 1.5 | 16.6 |
| 8 | 0.8 | 1.25 | 1.5 | 18.5 |
| 9 | 0.8 | 1.25 | 1.5 | 19.4 |
| 10 | 0.8 | 1.25 | 1.6 | 20.9 |
| 11 | 0.8 | 1.25 | 1.6 | 21.4 |
| 12 | 0.8 | 1.25 | 1.6 | 21.4 |
| 13 | 0.8 | 1.25 | 1.6 | 21.9 |
| 14 | 0.8 | 1.25 | 1.6 | 22.3 |
| 15 | 0.8 | 1.25 | 1.6 | 23.2 |
| 16 | 0.8 | 1.25 | 1.6 | 23.2 |
| 17 | 1.0 | 1.6 | 1.7 | 25.4 |
| 18 | 1.0 | 1.6 | 1.7 | 25.4 |
| 19 | 1.0 | 1.6 | 1.7 | 25.4 |
| 20 | 1.0 | 1.6 | 1.7 | 26.5 |
| 21 | 1.0 | 1.6 | 1.7 | 26.5 |
| 22 | 1.0 | 1.6 | 1.8 | 28.8 |
| 23 | 1.0 | 1.6 | 1.8 | 28.8 |
| 24 | 1.0 | 1.6 | 1.8 | 28.8 |
| 25 | 1.0 | 1.6 | 1.8 | 28.8 |
| 26 | 1.0 | 1.6 | 1.8 | 29.3 |
| 27 | 1.0 | 1.6 | 1.8 | 29.3 |
| 28 | 1.0 | 1.6 | 1.8 | 29.6 |
| 29 | 1.0 | 1.6 | 1.8 | 30.1 |
| 30 | 1.0 | 1.6 | 1.8 | 30.1 |
| 31 | 1.0 | 1.6 | 1.8 | 30.7 |
| 32 | 1.0 | 1.6 | 1.8 | 31.2 |
| 33 | 1.0 | 1.6 | 1.8 | 31.2 |
| 34 | 1.0 | 1.6 | 1.9 | 32.4 |
| 35 | 1.0 | 1.6 | 1.9 | 32.4 |
| 36 | 1.0 | 1.6 | 1.9 | 32.4 |
| 37 | 1.0 | 1.6 | 1.9 | 32.4 |
| 38 | 1.0 | 1.6 | 1.9 | 33.5 |
| 39 | 1.0 | 1.6 | 1.9 | 33.5 |
| 40 | 1.0 | 1.6 | 1.9 | 33.5 |
| 41 | 1.0 | 1.6 | 1.9 | 34.6 |
| 42 | 1.2 | 2.0 | 2.0 | 37.0 |
| 43 | 1.2 | 2.0 | 2.0 | 37.0 |
| 44 | 1.2 | 2.0 | 2.0 | 37.0 |
| 45 | 1.2 | 2.0 | 2.0 | 37.0 |
| 46 | 1.2 | 2.0 | 2.0 | 37.5 |
| 47 | 1.2 | 2.0 | 2.0 | 37.5 |
| 48 | 1.2 | 2.0 | 2.0 | 37.5 |

Control cables

## circular stranded conductor, PVC insulated, steel wire armoured, PVC sheathed 600 / 1000 V

2.5 mm² circular stranded copper(class-2)
Thickness of insulation (minimum average) : 0.7 mm
Max resistance at 20°C : 7.41 ohm / km.

Table-5

| Number of cores* | Thickness of extruded bedding | Nominal armour wire diameter | Thickness of oversheath | Approximate overall diameter |
|---|---|---|---|---|
| | mm | mm | mm | mm |
| 5 | 0.8 | 0.9 | 1.5 | 16.3 |
| 6 | 0.8 | 1.25 | 1.5 | 18.0 |
| 7 | 0.8 | 1.25 | 1.5 | 18.0 |
| 8 | 0.8 | 1.25 | 1.5 | 19.2 |
| 9 | 0.8 | 1.25 | 1.6 | 20.5 |
| 10 | 0.8 | 1.25 | 1.6 | 21.9 |
| 11 | 0.8 | 1.25 | 1.6 | 22.4 |
| 12 | 0.8 | 1.25 | 1.6 | 22.4 |
| 13 | 0.8 | 1.25 | 1.6 | 22.9 |
| 14 | 1.0 | 1.6 | 1.7 | 24.6 |
| 15 | 1.0 | 1.6 | 1.7 | 25.5 |
| 16 | 1.0 | 1.6 | 1.7 | 25.5 |
| 17 | 1.0 | 1.6 | 1.7 | 26.6 |
| 18 | 1.0 | 1.6 | 1.7 | 26.6 |
| 19 | 1.0 | 1.6 | 1.7 | 26.6 |
| 20 | 1.0 | 1.6 | 1.8 | 27.9 |
| 21 | 1.0 | 1.6 | 1.8 | 27.9 |
| 22 | 1.0 | 1.6 | 1.8 | 30.2 |
| 23 | 1.0 | 1.6 | 1.8 | 30.2 |
| 24 | 1.0 | 1.6 | 1.8 | 30.2 |
| 25 | 1.0 | 1.6 | 1.8 | 30.2 |
| 26 | 1.0 | 1.6 | 1.8 | 30.7 |
| 27 | 1.0 | 1.6 | 1.8 | 30.7 |
| 28 | 1.0 | 1.6 | 1.8 | 31.2 |
| 29 | 1.0 | 1.6 | 1.9 | 32.0 |
| 30 | 1.0 | 1.6 | 1.9 | 32.0 |
| 31 | 1.0 | 1.6 | 1.9 | 32.8 |
| 32 | 1.0 | 1.6 | 1.9 | 33.0 |
| 33 | 1.0 | 1.6 | 1.9 | 33.0 |
| 34 | 1.0 | 1.6 | 1.9 | 34.0 |
| 35 | 1.0 | 1.6 | 1.9 | 34.0 |
| 36 | 1.0 | 1.6 | 1.9 | 34.0 |
| 37 | 1.0 | 1.6 | 1.9 | 34.0 |
| 38 | 1.2 | 2.0 | 2.0 | 36.6 |
| 39 | 1.2 | 2.0 | 2.0 | 36.6 |
| 40 | 1.2 | 2.0 | 2.0 | 36.6 |
| 41 | 1.2 | 2.0 | 2.0 | 37.8 |
| 42 | 1.2 | 2.0 | 2.0 | 38.8 |
| 43 | 1.2 | 2.0 | 2.0 | 38.8 |
| 44 | 1.2 | 2.0 | 2.0 | 38.8 |
| 45 | 1.2 | 2.0 | 2.0 | 38.8 |
| 46 | 1.2 | 2.0 | 2.1 | 39.5 |
| 47 | 1.2 | 2.0 | 2.1 | 39.5 |
| 48 | 1.2 | 2.0 | 2.1 | 39.5 |

## CONTROL CABLES continued.....

**Control cables Flexible conductors class-5**
**copper conductor, PVC insulated and PVC sheathed 600 / 1000 V** Table-6

| Number of core | Nominal cross sectional area | Mean value of insulation thickness | Mean value of sheath thickness | Approx. overall diameter | Maximum conductor resistance at 20°C | Minimum insulation resistance at 60°C |
|---|---|---|---|---|---|---|
| | mm² | mm | mm | mm | ohm/km | Mohm/km |
| 6 | 0.5 | 0.6 | 1.2 | 9.5 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.2 | 10.0 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.2 | 10.0 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.2 | 11.0 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.4 | 13.5 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.4 | 15.5 | 4.95 | 0.015 |
| 7 | 0.5 | 0.6 | 1.2 | 10.0 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.2 | 10.5 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.2 | 11.0 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.2 | 12.0 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.4 | 14.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.4 | 17.0 | 4.95 | 0.015 |
| 10 | 0.5 | 0.6 | 1.2 | 12.0 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.2 | 13.5 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.2 | 14.0 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.4 | 15.5 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.4 | 18.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.4 | 21.0 | 4.95 | 0.015 |
| 12 | 0.5 | 0.6 | 1.2 | 12.5 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.2 | 14.0 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.4 | 14.5 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.4 | 16.0 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.4 | 19.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.4 | 22.0 | 4.95 | 0.015 |
| 19 | 0.5 | 0.6 | 1.4 | 15.0 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.4 | 16.0 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.4 | 17.0 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.4 | 18.5 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.4 | 22.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.8 | 27.0 | 4.95 | 0.015 |
| 24 | 0.5 | 0.6 | 1.4 | 17.0 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.4 | 18.5 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.4 | 19.5 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.4 | 21.0 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.8 | 26.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.8 | 31.0 | 4.95 | 0.015 |
| 27 | 0.5 | 0.6 | 1.4 | 17.5 | 39.0 | 0.026 |
| | 0.75 | 0.6 | 1.4 | 19.0 | 26.4 | 0.023 |
| | 1 | 0.6 | 1.4 | 20.0 | 19.5 | 0.021 |
| | 1.5 | 0.6 | 1.4 | 22.0 | 13.3 | 0.018 |
| | 2.5 | 0.7 | 1.8 | 27.0 | 7.98 | 0.016 |
| | 4 | 0.8 | 1.8 | 32.0 | 4.95 | 0.015 |

**Note:** The cross sectional area of cables specific to customer's requirement can also be manufactured.

## MULTIPAIR TELEPHONE CABLE SCREENED OR UN-SCREENED

### SPECIFICATION:

| | |
|---|---|
| **Conductor** | Plain or tinned copper |
| **Conductor size** | 0.5, 0.6, 0.8 and 0.9 mm diameter |
| **Insulation** | Polyethylene |
| **Screening** | Polyester laminated aluminium foil |
| **Sheath** | PVC or polyethylene |
| **Colour** | Grey, black |
| **Insulation resistance** | Min. 100 M ohm. km |
| **Bending radius** | 15 x Cable dia |

### CABLE MAKEUP:

Conductor Polyethylene Insulated. Core twisted to form pairs. Pairs twisted together in case of screened cables, polyester laminated, aluminium foiled with drain wire, PVC or Polyethylene Sheathed.

### APPLICATION:

These Cables are intended for telephone communication equipment protected against external noise disturbances with particular signal transmission efficiency. Suitable for fixed installation in dry and damp places, also in the open air on outside walls.

### AVAILABLE SIZE:

Up to 100 pairs

### NOTE:

1. Special variation available on request.
2. Data sheets for each conductor size can be provided specific to cable design

## MULTIPAIR TELEPHONE CABLES NON-ARMOURED, ARMOURED AND SCREENED

### SPECIFICATION:

| | |
|---|---|
| **Conductor** | Plain or tinned copper |
| **Conductor Size** | 0.5, 0.6, 0.8 and 0.9 mm diameter |
| **Insulation** | Polyethylene |
| **Screening** | Polyester laminated aluminium foil |
| **Bedding** | PVC or polyethylene |
| **Armouring** | Galvanized steel wire or galvanized steel tape |
| **Sheath** | PVC or polyethylene |
| **Colour** | Black |

### CABLE MAKEUP:

Conductor Polyethylene insulated. Core twisted to form pairs. Pairs twisted together. In case of screened cables, polyester laminated, Aluminium taped with drain wire, PVC or Polyethylene bedded, Steel wire armoured. PVC or Polyethylene Sheathed.

### APPLICATION:

Installation underground indoor, in duct and in open areas where better mechanical protection is required.

### AVAILABLE SIZE:

Up to 100 pairs

### NOTE:

1. Special variation available on request.
2. Data sheets for each conductor size can be provided specific to cable design

## DROP WIRE

| | | |
|---|---|---|
| **Specifiction** | : | Pak telecom specification #. LW – 40A |
| **Conductor** | : | Copper clad / copper plated steel wire of 1.0 ± 0.02 mm diameter having breaking load of approx. 90 kgs. |
| **Insulation** | : | Polyethylene |
| **Insulation thickness** | : | 1 mm |
| **Insulation resistance** | : | 5000 M ohm.km ( Min. ) at 500 V d.c. applied for 1 minute |
| **Colour** | : | Black |

**CABLE MAKEUP:**

Two conductors forming a pair running in parallel shall be covered with weather resistant, black high density solid polyethylene.

**APPLICATION:**

For connection of subscribers' distribution points to the external, overhead distribution point.

## LOW VOLTAGE CABLES FOR AUTOMOBILE, JAPANESE INDUSTRIAL STANDARD (JIS) C3406

### SPECIFICATION:

**Conductor** Stranded or bunched annealed plain copper wire.
**Insulation** Flame retardant thermoplastic
**Temperature Rating** –5 °C to + 105 °C

### APPLICATION:

Used particularly in Automobile sector for cable harnesses. Most varied colour versions available to simplify the wiring and harness process to save valuable time. The counter striped colour combinations ensures quick recognition and help avoid misconnection in installation and maintenance.

### FEATURES:

General purpose wires for automobile; these are used in low voltage circuit such as charging lighting, signal and instrument panel circuitl

### AVAILABLE COLOURS:

Available in many colours plain and counter striped to suit most automobiles harness colour coding systems.

### TYPE : AV

Current limit (conductor temprature 80°)

TABLE-1

| AVFF Nominal Size (mm Sq.) | Conductor (Annealed Copper Stranded Conductors) | | | Insulation (PVC) | | | Conductor Resistance (20ºC) (Ohm / m) | Current Limit (A)for max 40 C ambient | UCIL Standard length (m) coil |
|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated Area (mm ) | Outer Diameter (mm) | Radial Thickness (mm) | Overall Diameter (mm) | | | | |
| | | | | | Max. | | | | |
| 0.5f | 20/0.18 | 0.5087 | 1.0 | 0.6 | 2.2 | 2.4 | 0.0367 | 12 | 500 |
| 0.5 | 7/0.32 | 0.5629 | 1.0 | 0.6 | 2.2 | 2.4 | 0.0327 | 12 | 500 |
| 0.75f | 30/0.18 | 0.7630 | 1.2 | 0.6 | 2.4 | 2.6 | 0.0244 | 15 | 500 |
| 0.85 | 11/0.32 | 0.8846 | 1.2 | 0.6 | 2.4 | 2.6 | 0.0208 | 16 | 500 |
| 1.25f | 50/0.18 | 1.273 | 1.5 | 0.6 | 2.7 | 2.9 | 0.0147 | 21 | 500 |
| 1.25 | 16/0.32 | 1.287 | 1.5 | 0.6 | 2.7 | 2.9 | 0.0143 | 21 | 500 |
| 2f | 37/0.26 | 1.964 | 1.8 | 0.6 | 3.0 | 3.3 | 0.00950 | 27 | 500 |
| 2 | 26/0.32 | 2.091 | 1.9 | 0.6 | 3.1 | 3.4 | 0.00881 | 28 | 500 |
| 3f | 61/0.26 | 3.239 | 2.4 | 0.7 | 3.8 | 4.1 | 0.00576 | 37 | 300 |
| 3 | 41/0.32 | 3.297 | 2.4 | 0.7 | 3.8 | 4.1 | 0.00559 | 38 | 300 |
| 5 | 65/0.32 | 5.228 | 3.0 | 0.8 | 4.6 | 4.9 | 0.00352 | 51 | 200 |
| 8 | 50/0.45 | 7.952 | 3.7 | 0.9 | 5.5 | 5.8 | 0.00232 | 67 | 200 |
| 15 | 84/0.45 | 13.36 | 4.8 | 1.1 | 7.0 | 7.4 | 0.00138 | 91 | 100 |
| 20 | 41/0.80 | 20.61 | 6.0 | 1.1 | 8.2 | 8.8 | 0.000867 | 132 | 100 |
| 30 | 70/0.80 | 30.19 | 8.0 | 1.4 | 10.8 | 11.5 | 0.000520 | 170 | 100 |
| 40 | 85/0.80 | 42.73 | 8.6 | 1.4 | 11.4 | 12.1 | 0.000428 | 190 | 100 |
| 50 | 108/0.80 | 54.29 | 9.8 | 1.6 | 13.0 | 13.8 | 0.000337 | 219 | 100 |
| 60 | 127/0.80 | 83.84 | 10.4 | 1.6 | 13.6 | 14.4 | 0.000287 | 240 | 100 |
| 85 | 169/0.80 | 84.96 | 12.0 | 2.0 | 16.0 | 17.0 | 0.000215 | 284 | 50 |
| 100 | 217/0.80 | 109.1 | 13.6 | 2.0 | 17.6 | 18.6 | 0.000168 | 356 | 50 |

## TYPE : AVS

**Application :**

Wire used in low voltage circuit in automobiles (vehicles & motorcyles)

**Features :**

Thinner then AV wires, for light and smaller dialled instruments.

**Standard JASO D611** **TABLE-2**

| AVS Nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Conductor resistance (20°C) (Ohm / m) | Current limit (A)for max 40°C ambient | UCIL Standard length (m) coil |
|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | | |
| | | | | | Standard | Max. | | | |
| 0.2 | 7/0.20 | 0.2199 | 0.6 | 0.4 | 1.5 | 1.6 | 0.134 | 6 | 500 |
| 0.3f | 15/0.18 | 0.3817 | 0.8 | 0.4 | 1.8 | 1.9 | 0.0489 | 9 | 500 |
| 0.3 | 7/0.26 | 0.3716 | 0.8 | 0.4 | 1.8 | 1.9 | 0.0502 | 9 | 500 |
| 0.5 | 7/0.32 | 0.5629 | 1.0 | 0.4 | 2.0 | 2.1 | 0.0327 | 12 | 500 |
| 0.85 | 11/0.32 | 0.8846 | 1.2 | 0.4 | 2.2 | 2.3 | 0.0208 | 16 | 500 |
| 1.25 | 16/0.32 | 1.287 | 1.5 | 0.4 | 2.5 | 2.6 | 0.0143 | 21 | 500 |
| 2 | 26/0.32 | 2.091 | 1.9 | 0.4 | 2.9 | 3.1 | 0.00881 | 28 | 500 |
| 3 | 41/0.32 | 3.297 | 2.4 | 0.5 | 3.6 | 3.8 | 0.00559 | 38 | 300 |
| 5 | 65/0.32 | 5.228 | 3.0 | 0.6 | 4.4 | 4.6 | 0.00352 | 51 | 200 |

## Type : AVSS conductor/f type

**Application :**

Low voltage circuit in automobiles (vehicles & motorcycles) standard JASO D611

**Features :**

Type AVSS wire are still thinner than type AVS wires and these are best for wiring harnesses standard JASO D611.

**TABLE-3**

| AVSS Nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Conductor resistance (20°C) (Ohm / m) | Current limit (A) for max 40°C ambient | UCIL Standard length (m) coil |
|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | | |
| | | | | | Standard | Max. | | | |
| 0.3 | 7/0.26 | 0.3716 | 0.8 | 0.3 | 1.4 | 1.5 | 0.0502 | 8 | 500 |
| 0.5 | 7/0.32 | 0.5629 | 1.0 | 0.3 | 1.6 | 1.7 | 0.0327 | 11 | 500 |
| 0.85 | 19/0.24 | 0.8595 | 1.2 | 0.3 | 1.8 | 1.9 | 0.0217 | 14 | 500 |
| 1.25 | 19/0.29 | 1.2550 | 1.5 | 0.3 | 2.1 | 2.2 | 0.0149 | 18 | 500 |
| 2.0 | 37/0.26 | 1.9644 | 1.8 | 0.4 | 2.6 | 2.7 | 0.0095 | 25 | 500 |

Note : SS-2 identification marking for "f" type of wire

The current limit data is for temperature 80°C (maximum allowed temprature) at temperature 40°C

**AVSSC<AVSS(f)>**  **TABLE-3a**

| AVSS Nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Identification marking | Conductor resistance (20°C) | Current limit (A) *2 |
|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | | |
| | | | | | Standard | Max. | | | |
| 0.3f | 19/0.16 | 0.3821 | 0.8 | 0.3 | 1.4 | 1.5 | *4 | 48.8 | 8 |
| 0.5f | 19/0.19 | 0.5387 | 1.0 | 0.3 | 1.6 | 1.7 | vss0.5f | 34.6 | 11 |
| 0.75f | 19/0.23 | 0.7894 | 1.2 | 0.3 | 1.8 | 1.9 | vss0.75f | 23.6 | 14 |
| 1.25f | 37/0.21 | 1.282 | 1.5 | 0.3 | 2.1 | 2.2 | vss1.25f | 14.6 | 19 |

Note : SS-2 identification marking for "f" type of wire
The current limit data is for temprature 80°C (maximum allowed temprature) at temprature 40°C

## Ultra thin low-Voltage wires for automobiles CAVUS

C: Compacted conductor A: Low-Voltage wires for automobiles V:Vinyl US: Ultra thin type

**Application :**
Wire used in low voltage circuits in automobiles (vehicles and motorcycles)

**Features :**
Type AVSS wire are still thinner than type AVS wires while ensuring equivalent performance
Light weight and small diameter type CAVUS wires are best for wiring harness

Standard : JASO D611 (excluding size of 0.22)

**CAVUS**  **TABLE-3b**

| CAVUS Nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Identification marking | Current limit (A) *2 |
|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | |
| | | | | | Standard | Max. | | |
| 0.22 | 7/SB*5 | 0.2199 | 0.6 | 0.2 | 1.0 | 1.1 | 84.4 | 5 |
| 0.3 | 7/SB*5 | 0.3716 | 0.7 | 0.2 | 1.1 | 1.2 | 50.2 | 8 |
| 0.5 | 7/SB*5 | 0.5629 | 0.9 | 0.2 | 1.3 | 1.4 | 32.7 | 10 |
| 0.85 | 7/SB*5 | 0.8846 | 1.1 | 0.2 | 1.5 | 1.6 | 20.8 | 14 |
| 0.125 | 16/SB*5 | 1.2870 | 1.4 | 0.2 | 1.8 | 1.9 | 14.3 | 18 |

The current limit data is for temperature 80°C (maximum allowed temprature) at temperature 40°C

## Low-Voltage wires for Batteries

E:Grounding B:Bond HD: Heavy Duty

**Application :**

Two types of wires are used in low voltage circuit of battery for automobiles (vehicles & motor cycles)

**Features :**

EB wires for grounding (-side)

Complex strandard conductors (flexible type) and HDEB wires are thicker type then EB wires to provide increase mechanical strength

**TYPE : HDAV**

**TABLE-4**

| HDAV Nominal Size (mm Sq.) | Conductor (Annealed Copper Stranded Conductors) | | | Insulation (PVC) | | | Conductor Resistance (20°C) (Ohm / m) | Current Limit (A) | Approx Weight (g/m) | UCL Standard length (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated Area (mm Sq.) | Outer Diameter (mm) | Thickness (mm) | Overall Diameter (mm) | | | | | |
| | | | | | Standard | Max. | | | | |
| 0.5 | 7 / 0.32 | 0.5629 | 1.0 | 1.0 | 3.0 | 3.2 | 0.0327 | - | 14 | 500 |
| 0.85 | 11 / 0.32 | 0.8846 | 1.2 | 1.0 | 3.2 | 3.4 | 0.0208 | - | 18 | 500 |
| 1.25 | 16 / 0.32 | 1.287 | 1.5 | 1.1 | 3.7 | 3.9 | 0.0143 | - | 24 | 500 |
| 2 | 26 / 0.32 | 2.091 | 1.9 | 1.1 | 4.1 | 4.4 | 0.00881 | - | 33 | 500 |
| 3 | 41 / 0.32 | 3.297 | 2.4 | 1.2 | 4.8 | 5.1 | 0.00559 | - | 51 | 300 |

**TYPE : EB**

**TABLE-4a**

| EB Nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Conduc-tor resistance 20°C ohm/m | Current limit (A) | Approx weight (g/m) | UCIL standard length (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Construction (No./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | | | |
| | | | | | Standard | Max. | | | | |
| 5 | 7/9/0.32 | 5.06 | 3.1 | 0.6 | 4.3 | 4.7 | 00358 | - | 57 | 200 |
| 10 | 19/6/0.32 | 9.16 | 4.2 | 0.6 | 5.4 | 5.8 | 0.00196 | - | 99 | 100 |
| 15 | 19/9/0.32 | 13.75 | 5.3 | 0.6 | 6.5 | 6.9 | 0.00132 | - | 146 | 100 |
| 20 | 19/13/0.32 | 19.86 | 6.5 | 0.6 | 7.7 | 8.0 | 0.000915 | - | 206 | 100 |
| 30 | 19/19/0.32 | 29.02 | 7.8 | 0.6 | 9.0 | 9.4 | 0.000625 | - | 300 | 100 |
| 40 | 19/26/0.32 | 39.72 | 9.1 | 0.6 | 10.3 | 10.8 | 0.000457 | - | 406 | 100 |
| 50 | 19/32/0.32 | 48.88 | 10.1 | 0.6 | 11.3 | 11.9 | 0.000371 | - | 496 | 100 |
| 60 | 19/39/0.32 | 59.58 | 11.1 | 0.6 | 12.3 | 12.9 | 0.000304 | - | 601 | 100 |

**HDEB**

**Table-4-b**

| HDAV nominal size ($mm^2$) | Conductor (annealed copper stranded conductors) | | | Insulation (PVC) | | | Conductor resistance (20°C) (ohm / m) | Current limit (A) |
|---|---|---|---|---|---|---|---|---|
| | Construction (no./mm) | Calculated area ($mm^2$) | Outer diameter (mm) | Thickness (mm) | Overall diameter (mm) | | | |
| | | | | | Standard | Max. | | |
| 9 | 7/16/0.32 | 9.0100 | 4.2 | 1.0 | 6.2 | 6.5 | 2.00 | 109 |
| 15 | 19/9/0.32 | 13.7500 | 5.3 | 1.1 | 7.5 | 8.0 | 1.32 | 160 |
| 20 | 19/13/0.32 | 19.8600 | 6.5 | 1.1 | 8.7 | 9.3 | 0.915 | 220 |
| 30 | 19/19/0.32 | 29.0200 | 7.8 | 1.4 | 10.6 | 11.3 | 0.625 | 320 |
| 40 | 19/26/0.32 | 39.7200 | 9.1 | 1.4 | 11.9 | 12.6 | 0.457 | 425 |
| 60 | 19/39/0.32 | 59.5800 | 11.1 | 1.6 | 14.3 | 15.1 | 0.304 | 630 |

## VEHICLE WIRING SYSTEM (excluding high tension circuits)

Super thin, low voltage high temperature wires.
Thin wall single core heat resistance PVC insulated, automobile cable for use in 12 & 24 volts.

**CLASSIFICATION:**

-40°C to 100°C for 3000 hours.

**APPLICATION:**

Wire used in low voltage circuits in automobile and general harness cable in both frame and engine areas.

**FEATURES:**

Type resistex range wires are still thinner than type AVSS wires while while ensuring equivalent light weight and small diameter type AVSS wires are best for wiring harnesses.

**CONSTRUCTION AND PERFORMANCE:**

RESISTEX 310 & 510 RANGE suitable for conductor temperature of 100°C (maximum allowable temperature) at temperature of 40°C

**RISTEX**

**Table-5**

| Nominal size | Number of wire & diameter | O/d of conductor | Insulation thickness | Overall diameter. | Conductor resistance | Approx. weight |
|---|---|---|---|---|---|---|
| $mm^2$ | $mm^2$ | mm | mm | mm | m ohm/m at 20°C | gm/m |
| 0.30 | 7/0.23 | 0.70 | 0.30 | 1.40 | 64.10 | 3.40 |
| 0.50 | 19/0.19 | 1.00 | 0.30 | 1.60 | 37.10 | 5.80 |
| 0.75 | 19/0.23 | 1.20 | 0.30 | 1.90 | 24.70 | 8.20 |
| 1.00 | 19/0.26 | 1.30 | 0.30 | 2.10 | 18.50 | 11.00 |
| 1.50 | 19/0.32 | 1.60 | 0.30 | 2.40 | 12.70 | 16.00 |
| 2.00 | 19/0.37 | 1.85 | 0.30 | 2.70 | 8.95 | 20.10 |
| 2.50 | 19/0.41 | 2.05 | 0.35 | 3.00 | 7.60 | 26.00 |
| 4.00 | 37/0.37 | 2.60 | 0.40 | 3.70 | 4.70 | 40.00 |
| 6.00 | 84/0.31 | 3.60 | 0.40 | 4.30 | 3.10 | 59.00 |
| 8.50 | 120/0.30 | 4.30 | 0.50 | 5.50 | 2.20 | 84.00 |
| 10.00 | 80/0.40 | 4.70 | 0.60 | 5.90 | 1.82 | 101.20 |

# INSTRUMENTATION CABLES

## BS - 5308

## Constructional Requirement

| DESCRIPTION | PART 1 | PART 2 |
|---|---|---|
| **1. Type of Cables** | Type-1 ABC/PE/PVC<br>Type-2 ABC/PE/PE/SWA/PVC<br>Type-3 (Not included lead alloy sheathed) | Type-1 ABC/PVC/PVC<br>Type-2 ABC/PVC/PVC/ SWA/PVC |
| **2.Conductor & Insulation (Material & Dimention)** | Plain annealed copper wire.<br>Ref: Table 1-1<br>Polyethylene type 03 (BS6234) | Plain annealed copper wire.<br>Ref: 1-2<br>PVC compound Type 1 BS : 6755 |
| **3. Pairs (Part 1 & 2)** | Two insulated conductors shall be uniformly twisted together to form a pair. The lengths of lay used shall be such that the two wires forming each pair are not dissociated by normal handling.Two-pair cables(four cores) laid in quad formation around a central dummy.(without individual pair screens)The length of lay of any pair shall not exceed 100 mm. | |
| **4. Pair Identification by means of coloured insulation in the sequence starting from center** | Two pair unscreened cables shall be in quad formation in clockwise direction.<br>BS 5308: Part 1 black,blue,green,brown.<br>BS 5308: Part 2 blue,green,orange,brown.<br>All other cables upto 50 pair in a-wire, b- wire colour coding scheme in accordance with appendix A, BS 5308 part-1<br>Note: Pair identification for BS 5308 part-2. It shall be different colours,for detai l contact Technical Suppor t (Sales & Marketing Deptt.) | |
| **5. Pair screens (Part 1 & 2)** | When individual pairs screening is required, each pair shall have a laminated screening tape applied with the metallic side down, in electrical contact with one or more tinned annealed copper wires (drain wire) of a total cross section of not less than 0.5 mm². The minimum overlap shall be 25%.The laminated tape shall be aluminium bonded to polyester having a minimum thickness of aluminium of 0.008 mm and a minimum thickness of polyester of 0.010 mm. Over the screening tape, either two laps of 0.05mm thick polyester tape shall be applied with a minimum overlap of 25% or one tape with a minimum overlap of 50% shall be applied. | |
| **6. Cabling (Part 1 & 2)** | The required number of pairs shall be assembled together using the reverse layer or reciprocating lay technique. The cable shall be so constructed that the pairs are in concentric layers.<br>NOTE 1 : Non-hygroscopic fillers may be used to maintain a circular formation<br>NOTE 2 : The number of pairs should preferably be 1, 2, 5,10, 15, 20, 30 or 50 and number of cores upto 80 (BS 5308 part-2) | |

| DESCRIPTION | PART 1 | PART 2 |
|---|---|---|
| **7. Binder tape without and with collective screen** | In accordance with clause 11 and its s/clauses of BS : 5308 (Both Part 1 & Part 2) BS 5308 Part -2 -Including six cores or more than six cores as applicable. | |
| **8.a) Collective screen & drain wire cables other than one pairs** | In accordance with clause 12 and sub/clause 12.2 and 12.3 of BS: 5308 | |
| **8.b) One Pair Cable** | Ref: clause 12.3<br>a) Cables where binder tape has been applied. Laminated screening tape shall be applied as per clause 12.2 (a).<br>b) Cables where no binder tape has been applied a laminated screening tape shall be applied with a minimum overlap of 25% with metallic side down in electrical contact with drain wire. | |
| **9. Outer sheath & dimension** | Type-1 cables PVC Type TM-1 or type 6 shall be applied over binder tape or the collective screen as per clause 11 & 12 of BS 5308. Part-1 and dimensions & testing as per table 2-9 and table 10 of BS 5308. Part-1 (table-10 list of tests)<br><br>Type -2 Cables<br>**Bedding** : 2C or 03 black polyethylene compound (BS : 6234) over binder (Clause-11) of BS 5308. Part-1 or the collective screen (Class 12) of BS 5308. Part-1 to the dimensions specified in tables 2 to 9 BS 5308. Part-1<br><br>**Armouring:** A single layer of galvanized wire (BS:1442) of size as per appropriate table to be applied on PE bedding<br><br>**Over sheath:** PVC type TM1 shall be applied over SWA as per dimensions specified in table-2 to 9 BS:5308 of 1 and testing as listed in table 10(BS 5308 Part 1 | Type-1 cables Type TM-1 or type 6 PVC compound shall be applied as per clause 11 & 12 of BS5308 Part 2 and dimensions and testing in accordance with table 2 to 10 and testing as per appendix B BS 5308.Part 2<br><br>Type-2 cable<br>**Bedding**:TM1 black PVC shall be over binder tape or collective screen dimension & testing in compliance with tables 2 to 10 and appendex B respectively of BS 5308. Part-2<br><br>**Armouring:**A single layer of SWA (BS:1442) of size as per appropriate table shall be applied on PVC bedding.<br>**Over sheath:**PVC type TM1 shall be applied over SWA to the dimensions and compliance in accordance with table 2 to 10 and appendix B of BS:5308 part 2 respectively |
| **9a) Minimum thickness of bedding and outer sheath measurement**<br>**9b) Dimensions of completed cables** | In accordance with relevant clause of BS:6346 :<br>Tables 2 to 9 BS:5308 Part-1 | In accordance with relevant clause of BS:6346 :<br>Tables 2 to 10 BS:5308 Part-2 |
| **9c) Minimum thickness of bedding** | Shall not fall below the values in table by 15% to 0.1 mm | Shall not fall below the values in table by 15% to 0.1mm |
| **Thickness of sheath Cable type-1** | as above | as above |
| **Thickness of sheath Cable type-2** | Shall not fall below the nominal given in the appropriate table by 20% + .2mm | Shall not fall below the nominal given in the appropriate table by 20% + .2mm |
| **10 Electrical Requirements**<br>**a: Spark Cores Sheath/screen and/or armour** | 4 kV ac (r.m.s) min.<br>as per BS : 5099 | 4 kV ac (r.m.s) min.<br>as per BS : 5099 |

| DESCRIPTION | PART 1 | PART 2 |
|---|---|---|
| **b : Voltage** | When tested in accordance with appendix C BS : 5308 part-1 no breakdown shall occur | When tested in accordance with appendix D BS : 5308 part-2 no breakdown shall occur |
| **c : Minimum insulation resistance** | Individual Conductor. 5 G ohm 1 km for 1 minute @ 20°C at 500V dc Ref.: clause 16.1 and 16.2 of BS : 5308 part-1<br>(Individual screen)<br>1 M ohm for 1 kv @ 20°C at ±5°C 500 V dc for 1 minute between individual screens as per clause 16 .2 of BS : 5308 | Individual Conductor. 25 M ohm for 1 km @ 20°C at 500V dc for 1minute Ref.: clause 16.1 and 16.2 of BS : 5308 part-2<br>b- Individual screens 1 M ohm for 1 km @ 20°C ±5°C (500V dc for 1 minute) |
| **d : Conductor resistance** | The DC resistance of each conductor @ 20°C shall not exceed the values Table 1-1 | Table 1-2 |
| **e : Capacitance** | a)Mutual Capacitance Bet pair or /adjacent core shall be not exceed the values specified in b)Table-11 (BS:5308 part-1) at 1 KHz | a) Mutual Capacitance Pair or adjacent core shall be not exceed 250 pF/m at 1 kHz<br>b)The capacitance between any core and all other cores connected to any other metallic elements present and earth shall not exceed 400 *p*F/m at a frequency of 1 kHz |
| **Capacitance unbalanced** | The maximum pair to pair capacitance unbalanced at 1 kHz shall be 250 *p* F in length 250m | |
| **L/R ratio Ref : Clause 19 BS : 5308 part 1 & 2** | L/R ratio for adjacent core shall in exceed the following conductor maximum L/R ratio<br>0.5 mm² 25μH/Ω<br>1.0 mm² 25μH/Ω<br>1.5 mm² 40μH/Ω | 0.5 mm² 25μH/Ω<br>0.75 mm² 25μH/Ω<br>1.5 mm² 40μH/Ω |
| **Manufacturer's identification** | A mean of identification shall be provided through the cable length. | |
| **Cable identification embossing of over sheath** | General : The cable shall be identified by one of the methods specified in 21.2 and 21.3 (BS:5308 Part-1 & Part-2)<br>21.2 : Embossing of oversheath The external surface of the oversheath shall be embossed with the number of this British Standard (i.e.BS BS:5308 Part-1 or Part-2 as applicable)<br>(a) Tabulated overall diameters above 15 mm : at least two lines of embossing approximately equally spaced around the circumference.<br>(b) Tabulated overall diameter 15 mm and smaller: at least one line of embossing. | |

## TABLE-1-1 Details of conductors and insulation thickness (Polythene compound Type-03 BS:6234)

| Conductor | | | | Insulation Thickness (PE) | | Core diameter maximum |
|---|---|---|---|---|---|---|
| Nominal area | Conductor class (BS:6360) | Conductor details | Resistance at 20°C maximimum | Nominal | Minimum | |
| mm² | | mm | Ωkm | mm | mm | mm |
| 0.50 | 1 | 1/0.80 | 36.8 | 0.50 | 0.45 | 1.90 |
| 1.00 | 1 | 1/1.13 | 18.4 | 0.60 | 0.50 | 2.45 |
| 0.50 | 5 | 16/0.2 | 13.7 | 0.60 | 0.50 | 2.35 |
| 1.50 | 2 | 7/0.53 | 12.3 | 0.60 | 0.50 | 3.00 |

NOTE : As BS:6360 resistance values only allow for multicore cables, an additional 2% of the maximum resistance has been allowed for cables of multipair construction.

## TABLE-1-2 Details of conductors and insulation thickness (PVC type TI1 BS 7655)

| Conductor | | | | | Insulation thickness (PE) | | Core diameter maximum |
|---|---|---|---|---|---|---|---|
| Nominal area | Conductor class (BS:6360) | Conductor details | Resistance at 20°C maximum | | Nominal | Minimum | |
| | | | Multicore | Multipair | | | |
| mm² | | mm | Ωkm | Ωkm | mm | mm | mm |
| 0.50 | 5 | 16/0.2 | 39.0 | 39.7 | 0.60 | 0.50 | 2.35 |
| 0.75 | 5 | 24/0.2 | 26.0 | 26.5 | 0.60 | 0.50 | 2.55 |
| 1.50 | 2 | 7/0.53 | 12.1 | 12.3 | 0.60 | 0.50 | 3.00 |

NOTE : As BS:6360 resistance values only allow for multicore cables, an additional 2% of the maximum resistance has been allowed for cables of multipair construction.

## MAIN CONSTRUCTIONAL FEATURES

### All Multipair construction (up to 50 pairs)

#### BS 5308 PART 1

| | | Ref. Table # |
|---|---|---|
| 0.5 mm² 1/0 .80mm -solid | Without individual screen | 2 |
| | With individual screen | 3 |
| 1.0 mm² 1/1.13 mm - solid | Without individual screen | 4 |
| | With individual screen | 5 |
| 0.5 mm² 16/0 .2 mm Flexible | Without individual screen | 6 |
| | With individual screen | 7 |
| 1.5 mm² 7/0.53mm Stranded | Without individual screen | 8 |
| | With individual screen | 9 |

**Cable Type - 1** ABC / PE / PVC (not recomm. for underground)
**Cable Type - 2** ABC / PE / PE / SWA /PVC
**Cable Type - 3** Lead alloy sheathed not included here.

**Note:1** All above constructions can be provided with collective screen when specified.

**Note:2** Two pair unscreened cables and collectively screened cables shall be laid up in quad formation black,blue,green,brown (clockwise)

**Note:3** All Other Cables up to 50 Pairs shall be of different colour coding, for more detail. contact UCIL Technical Support (Sales & Marketing Deptt.)

### Multicore & Multipair construction

#### BS 5308 PART 2

**A-multicore Construction (1-40 & 41-80)**

| | | Ref. Table # |
|---|---|---|
| 0.5 mm² 16/0 .2mm flex. | Without individual screen | 2 |
| 0.75 mm² 24/02 mm flex. | Without individual screen | 3 |
| 1.50 mm² 7/0.53 mm stranded | Without individual screen | 6 |

**B-Multipair Construction (upto 50 pair)**

| | | |
|---|---|---|
| 0.5 mm² 16/0 .2mm flex. | Without individual screen | 4 |
| 0.75 mm² 24/02 mm flex. | Without individual screen | 5 |
| 1.50 mm² 7/0.53 mm str. | Without individual screen | 7 |
| 0.5 mm² 16/0 .2mm flex. | With individual screen | 8 |
| 0.75 mm² 24/02 mm flex. | With individual screen | 9 |
| 1.50 mm² 7/0.53 mm str. | With individual screen | 10 |

**Cable Type - 1** ABC / PVC / PVC (not recomm. for underground)
**Cable Type - 2** ABC / PVC / PVC / SWA /PVC

**Note:1** All above constructions can be provided with collective screen where specified.

**Note:2** Two pair unscreened cables and collectively screened cables shall be laid up as quad - blue,green,orange & brown (clockwise)

**Note:3** Identification of Cores
Printed number & written number as explained for 1-40 & 41-80 cores in appendix A-1 BS 5308 Part-2

**Note:4** Identification of Pairs
It will be in different colour coding for more detail contact UCIL Technical Support (Sales & Marketing Deptt.)

### Mechanical Properties

NOTE : The tests applicable to the insulation and sheath of cables, in accordance with BS 5308 part 1 or BS 5308 part 2 as relevant

## STEREO AND MICROPHONE CABLE LOUDSPEAKER CABLES

**Conductor** : Solid ABC
**Insulation** : Polyethylene
**Sheath** : Polyvinyl chloride

**Identification:**

**Insulation** : Single pair yellow, green
Two pair (quad) yellow, grey, green, blue

**Sheath** :

| | | |
|---|---|---|
| Flat cable | grey | H 1091 |
| Circular cable | black (Long Lay) | H 1093 |
| | grey (Medium Lay) | H 1094 |
| | red (Short Lay) | H 1095 |

**CIRCUIT APPLICATION:**

Loud speaker cables are used as fixed or temporary leads to loud speakers in mono, stereophonic, quadraphonic, hi-fi & other types of private or public addresses audio systems, Cable configurations available are flat (single pair) & circular (two pair star-quad) for single or two program circuits respectively.

Star-quad cables are available with different lay lengths for multi program system.

**RANGE AND DIMENSIONS:**

| Reference | Number of pair | Nominal conductor Size mm | Nominal overall dimension mm |
|---|---|---|---|
| H 1091 | 1 | 1 / 0.90 | 2.8 x 4.6 Flat |
| H 1092 | 1 | 1 / 0.90 | 3.6 x 5.7 Flat |
| H 1093 | 2 | 1 / 0.75 | 5.4 Circular |
| H 1094 | 2 | 1 / 0.75 | 5.4 Circular |
| H 1095 | 2 | 1 / 0.75 | 5.4 Circular |

**PERFORMANCE CHARACTERISTICS:**

Star-quad cables allow two circuits (two programes) to be carried by each cable. The star-quad formation minimizes mutual interference between circuits by the use of opposite core for each circuit pair. For multi-program systems where two or three cables are run together, cables with dissimilar lays should be used to prevent interference between them.
Star-quad are available with short, medium or long lays: For single runs, long lay cables are generally used.

| Reference | Conductor size mm | Nominal capacitance pF / m | Lay of core |
|---|---|---|---|
| H 1091 | 1 / 0.09 | 50 | ——— |
| H 1092 | 1 / 0.25 | 91 | ——— |
| H 1093 | 1 / 0.75 | 36 | long |
| H 1094 | 1 / 0.75 | 36 | medium |
| H 1095 | 1 / 0.75 | 36 | short |

Capacitance values are taken between conductors of pairs and between opposite core of quad cables.

## ELECTRONIC MINIATURE CABLES

| | |
|---|---|
| **Conductor** | Plain or tinned coated copper (multi bunched) |
| **Conductor size** | 0.14, 0.22, 0.25 and 0.34 mm² |
| **Insulation** | PVC or polyethylene |
| **Sheath** | Polyvinyl chloride (flame retardant) |
| **Insulation resistance** | Min. 20 M-ohm.km |
| **Nominal voltage** | 250 Volt |
| **Test voltage** | 1500 Volt |
| **Temperature rating** | –5 °C to + 80 °C |
| **Core colour** | Grey |

| SIZE | CURRENT RATING 25 °C MAX. | | CAPACITANCE |
|---|---|---|---|
| 0.14 mm Sq | 1.5 | Amp. | 120 nF / km |
| 0.22 mm Sq | 2.75 | Amp. | 150 nF / km |
| 0.25 mm Sq | 3.0 | Amp. | 150 nF / km |
| 0.34 mm Sq | 4.5 | Amp. | 150 nF / km |

**CABLE MAKEUP:**

Cable of individual layers may be either concentric or bunched, laid up cables polyester taped, PVC sheathed.

**APPLICATION:**

Flexible connection cable for use in measuring control and regulating equipments, particularly where small dimensions are required.

**AVAILABLE SIZES:**

Upto 100 Core

**COLOURS OF CORE:**

Different colours non-repeating

**NOTE:**

Special variations available on request.

Cables also available in oil & fuel resistant & zero halogen compound.

## CO-AXIAL CABLE (TYPE RG - 8U)

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | 7 / 0.724 ( plain annealed copper ) |
| **Insulation** | Solid polyethylene |
| **Insulation O.D** | 7.25 mm approx |
| **Braid** | Plain annealed copper |
| **Sheath** | Polyvinyl chloride ( flame retardant ) |
| **Overall dia** | 10:30 mm approx. |
| **Impedence** | 52 ohm ± 2 |
| **Nominal capacitance** | 96.8 pF / m |
| **Maximum attenuation** | 19.68 dB / 100 m ( At 400 MHz ) |
| **Maximum voltage** | 7.0 kV Peak |
| **Core colour** | Black |

**APPLICATION:**

Mostly used for closed circuit TV system. Cable can eliminate the outside interference and low signal attenuation. Recommended for trouble free transmission of high frequency signals in many fields of high technology such as computer equipments, air industry, marine, traffic control, industrial electronics and many more where high-tech signaling is required.

**NOTE:**

Also available with special PVC non-contaminating type ( RG - 8AU )

While every care has been taken to ensure that the information contained in this data is correct. However no legal responsibility can be accepted for technical information.

We reserve the right to alter or modify the construction in the light of technical or other development.

## CO-AXIAL CABLE (TYPE RG - 11 AU)

### SPECIFICATION:

| | |
|---|---|
| **Conductor** | 7 / 0.404 mm silver coated |
| **Insulation** | Solid polyethylene |
| **Insulation O.D** | 7.20 mm approx. |
| **Braid** | Plain annealed copper |
| **Outer sheath** | Non – migratory black PVC |
| **Over all dia** | 10.30 mm approx. |

### ELECTRICAL PROPERTIES:

| | |
|---|---|
| **Impedence** | 75 ± 3 ohms |
| **Capacitance** | 67.5 pF / m |

### MASS ATTENUATION:

| | | | |
|---|---|---|---|
| dB / 100 m | 5 MHz | = | 1.5 |
| dB / 100 m | 10 MHz | = | 2.2 |
| dB / 100 m | 100 MHz | = | 7.5 |
| dB / 100 m | 200 MHz | = | 10.8 |
| dB / 100 m | 500 MHz | = | 17.5 |
| dB / 100 m | 1000 MHz | = | 25.6 |
| Velocity Ratio | | = | 0.66 |
| D.C Resistance | | | |
| (Inner Conductor at 20 Deg. C) | | = | 21 ohm / km |

### MECHANICAL PROPERTIES:

Min. bending radius 50 mm for indoor installation.

## CO-AXIAL CABLE (TYPE UNIRADIO - M 67)

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | 7 / 0.77mm (plain annealed copper) |
| **Insulation** | Polyethylene |
| **Insulation O.D** | 7.25 mm approx. |
| **Braid** | Plain annealed copper |
| **Sheath** | Polyvinyl chloride (flame retardant) |
| **Overall Dia** | 10.30 mm approx. |
| **Impedence** | 50 ohms |
| **Nominal capacitance** | 100 pF / m |
| **Nominal velocity ratio** | 0.666 |
| **Nominal attenuation** | dB / 100 m MHz |

| | | |
|---|---|---|
| 100 | – | 6.8 |
| 200 | – | 9.9 |
| 300 | – | 12.5 |
| 600 | – | 18.6 |
| 1000 | – | 25.2 |

**APPLICATION:**

Mostly used for closed circuit TV system. Cable can eliminate the outside interference and Low signal attenuation. Recommended for trouble free transmission of high frequency signals in many fields of high technology such as computer equipments, air industry, marine, traffic control, industrial electronics and many more where high-tech signaling is required.

## DATA TRANSMISSION CABLE

### Data Transmission Cables

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | Annealed tinned coated copper |
| **Insulation** | Polyethylene |
| **Screen** | Polyester coated aluminium foil |
| **Core colour** | Black - White (two core) |
| **Sheath** | Highly flexible PVC ( flame retardant) |
| **Test voltage** | 1500 Volt |
| **Peak working voltage** | 500 Volt |
| (Not for power purpose) | 1500 Volt |
| **Inductance** | Approx. 0.8 mH / km |
| **Impedence** | Approx. 0.95 ohm / km |
| **Mutual capacitance** | Core to core approx. 90 nF / km |
| | Core to sheath approx. 160 nF / km |
| **Insulation Resistance** | 2 G ohm / km |
| **Temperature Rating** | –5 °C to + 8 °C |
| **Core Colour** | Grey |

**CABLE MAKEUP:**

Multi wire strands of tinned coated copper wire polyethylene insulated, core twisted together, electrostatic screen of polyester-coated aluminium foil with tinned coated copper drain wire, PVC outer sheathed.

**APPLICATION:**

Data transmission cables are ideally suited for the transmission of most minute measurement and control signals.

Aluminium foil screening provides 100% coverage and gives optimum protection against external electrical influences at intermediate and high frequency. Cable provides high flexibility and screening.

**AVAILABLE SIZES:**

0.5 $mm^2$ , 0.8 $mm^2$

**NOTE:**

For your special requirements variations in the standard range e.g. core, outer sheath for size special screening techniques and extended temperature range please consult our technical department.

## DATA TRANSMISSION CABLE

### Transmission cables with copper screening

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | Annealed tinned coated copper |
| **Insulation** | Polyethylene |
| **Screen** | Annealed tinned coated copper braid |
| **Core colour** | Different core colour |
| **Sheath** | PVC flame retardant |
| **Test voltage** | 1500 Volt |
| **Peak working voltage** (Not for power purpose) | 500 Volt |
| **Inductance** | 0.67 mH / km |
| **Impedence** | Approx. 80 ohm |
| **Mutual capacitance** | Core to core approx. 120 nF / km<br>Core to sheath approx. 155 nF / km |

**CABLE MAKEUP:**

Multi wires strands of tinned coated copper wire polyethylene insulated,core twisted together, polyester taped screened with tinned-coated copper wire PVC outer sheathed.

**APPLICATION:**

Braid screen cable suitable for transmitting signals over great distance and is used where screening is required in addition to low capacitance provides protection against electro magnetic interferences.

**AVAILABLE SIZES:**

0.5 $mm^2$, 0.8 $mm^2$

**NOTE:**

For your special requirements variations in the standard range e.g. core, outer sheath for size special screening techniques and extended temperature range please, consult our technical department.

## CATENARY CABLES

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | Plain Cu. Conductor ( Soild ) |
| **Conductor Size** | 0.6 mm - 1 mm |
| **Insulation** | PE or PVC |
| **Screening** | Aluminium Tape or Copper Wire Braid |
| **Armouring** | Steel Tape or Steel Wire |
| **Bending Radius** | 12 x Cable |
| **Sheath** | PVC or PE |
| **Catenary** | Galvanized Steel Wire |
| **Temperature Rating** | -5°C TO 80°C |

**APPLICATION:**

Catenary cables are used as aerial cable being suspended from poles or other elevated structure. The principal load and tension is borne by the steel wite thus leaving the live cable free from load.

**Note:** For specific catenary support for different types of cables **UCIL** Technical Support (Sales & Marketing) will provide the required information to meet a specific requirement.

## COPPER WIRE FLAT TAPE BRAID

**SPECIFICATION:**

| | |
|---|---|
| **Conductor** | Plain or tinned coated copper |
| **Conductor size** | 1.5 mm ² – 300 mm² |

**APPLICATION:**

Flexible Copper Braid provide an excellent means of making electrical connection between components subject to relative movement, vibration or displacement caused by thermal expansion. They are particularly useful as connection to moving contacts or brushes. They are widely used as earthing or grounding straps and due to their flexibility they are easy to install in situation involving multiple bends.

# INSPECTION AND TESTS

## INSPECTION

The quality control inspection is carried out on three key stages as explained hereunder:

**In - coming inspection**
**In - process inspection**
**Final inspection and testing**

The acceptance criteria are specified, based on internal standards, customer's specification and international utilities as relevant.

## TESTS

The test procedure for materials, semi finished and finished products are established and performed by qualified personnel. All dimensional, physical, electrical and transmission parameters are checked as applicable and data is recorded for future reference.

### UCIL Laboratory Test Equipment

Our test facilities are equipped with state of the art equipment to carry out testing in accordance with applicable specifications.

# Certificates & Memberships

ISO 9001:2008

## Certification Under Process
## ISO 14001:2015

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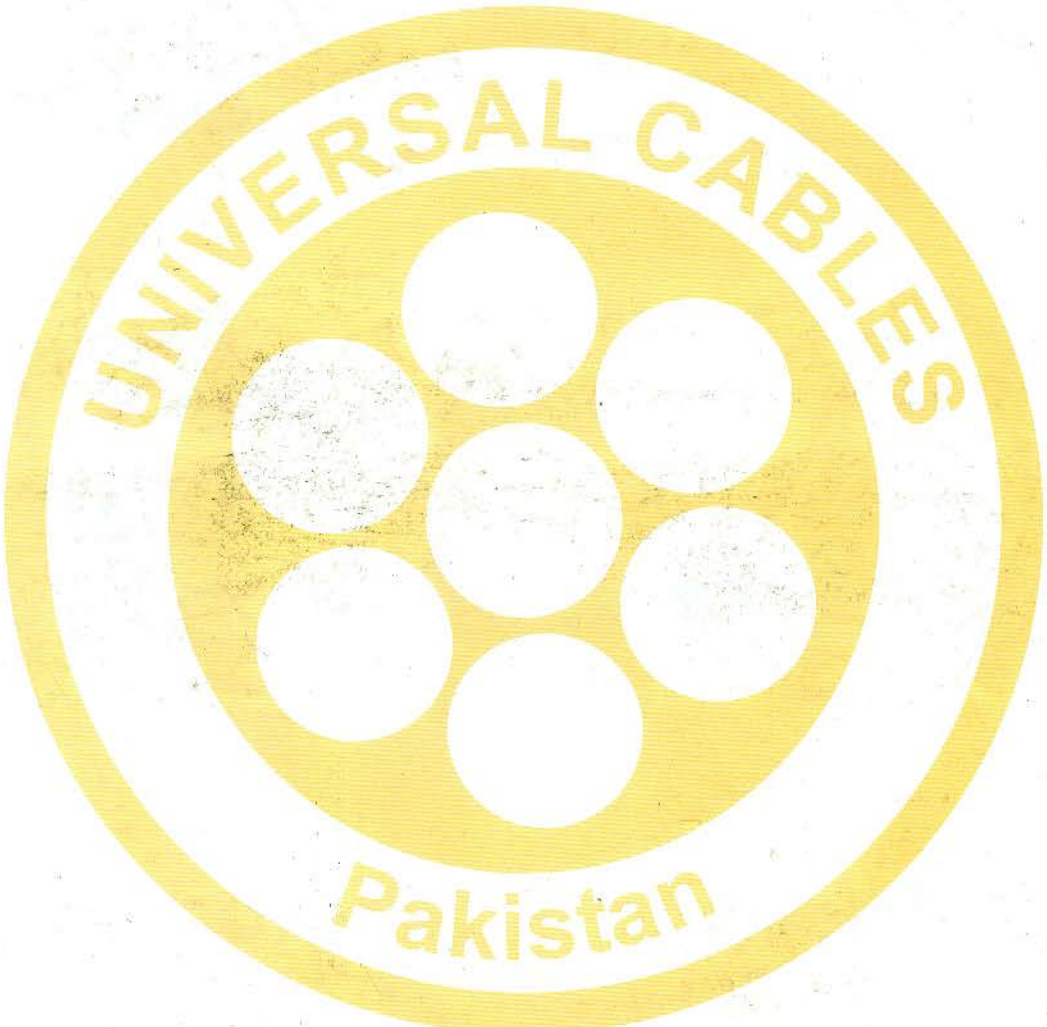
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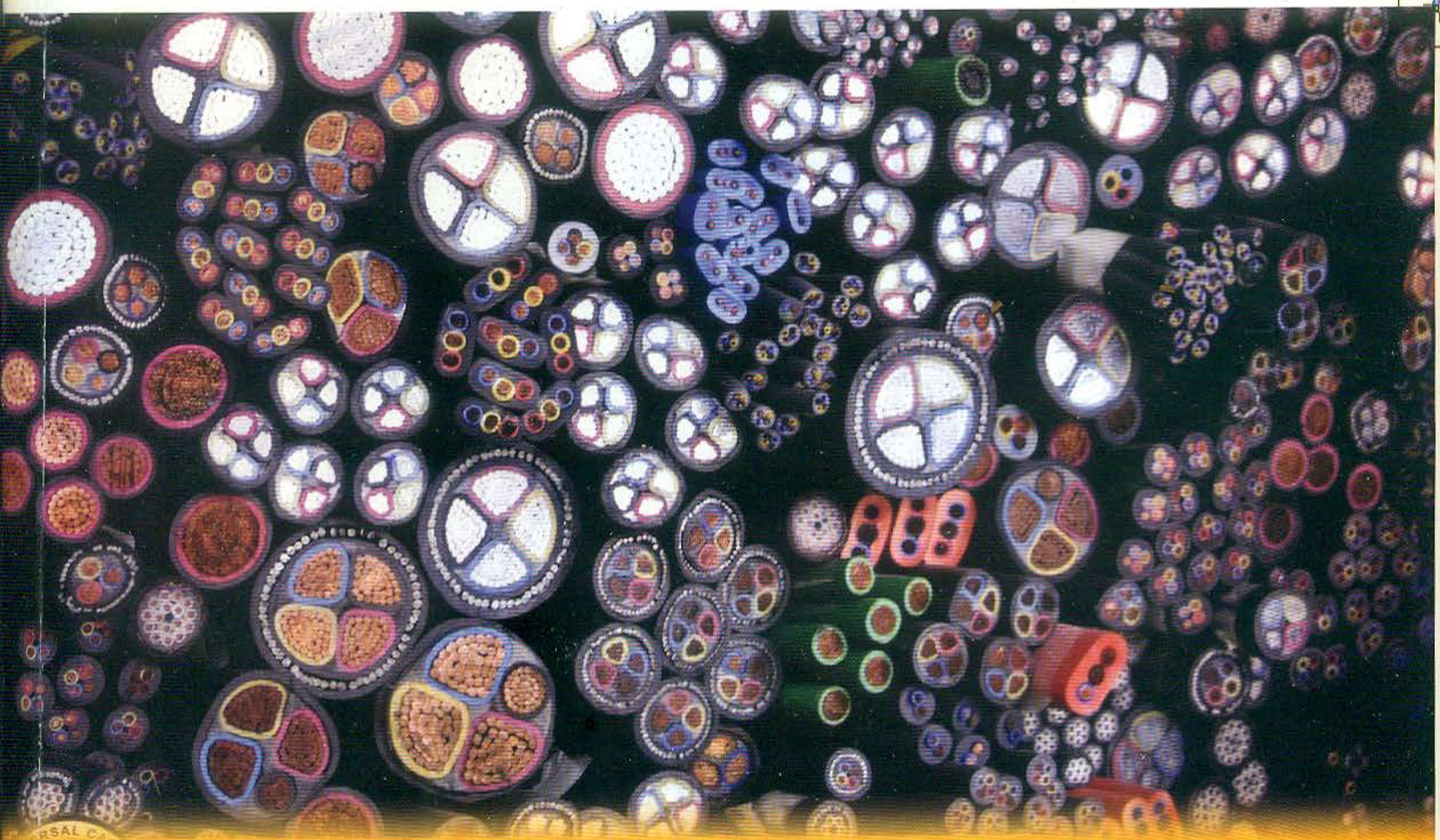

## Range of Products

**L.T POWER CABLES**
- Armoured & Un-Armoured
- PVC & XLPE Insulated

**CONDUCTORS (COPPER & ALUMINIUM)**
- Hard & Soft Drawn Bare Copper Conductor
- As per WAPDA & K-Electric Specifications

**FLEXIBLE CABLES**
- Flexible L.T. Power & General Wiring Cables
- Flat Type (Submerssible Cables)

**CONTROL CABLES**
- Solid, Stranded & Flexible Conductors
- Armoured & Un-Armoured

**GENERAL WIRING**
- Solid, Stranded & Flexible Conductors
- Imperial Sizes

**INSTRUMENTATION CABLES**
- Armoured & Un-Armoured
- Collective Aluminium Foil Shielded
- Individual & Collective Aluminium Foil Shielded

**COPPER BRAID SHIELDED CABLES**
- Solid, Stranded & Flexible Conductors

**COPPER TAPE SCREENING CABLES**
- As per Wapda, BS & IEC Specifications

**H.T CABLES (IMPORTED)**
- As per K-Electric & IEC Specifications

**COPPER ROD 8 MM AS PER ASTM B49**

**Aluminium ROD 9.5 MM AS PER ASTM 233/97**

**AERIAL BUNDLE CABLES**

**TELEPHONE CABLES**

**AUTOMOTIVE CABLES**

**FLAT BRAID CABLES**

**JUMPER WIRES**

**BINDING WIRES**

LOW SMOKE ZERO HALOGEN CABLES
**CUSTOMIZED CABLES**
**AS PER CUSTOMER SPECIFICATIONS.**

UNIVERSAL CABLES Pakistan

# UNIVERSAL CABLES INDUSTRIES LTD.

# THE POWERLINE OF PAKISTAN


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