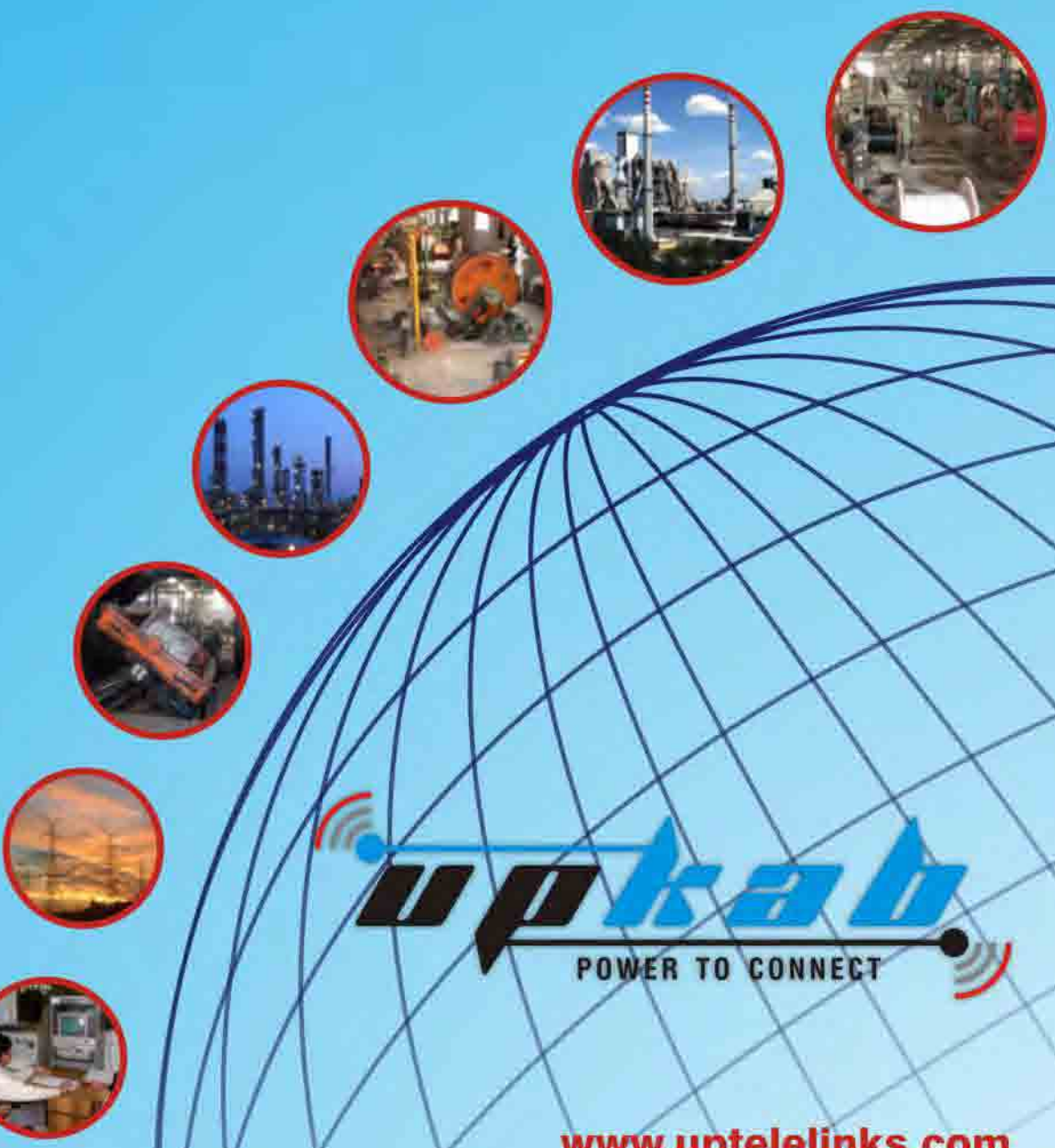
U. P. TELELINKS LIMITED

CABLE CATALOGUE

An ISO 9001:2008
EMS / ISO 14001:2004
OHSAS 1800 1:2007



uptab

POWER TO CONNECT

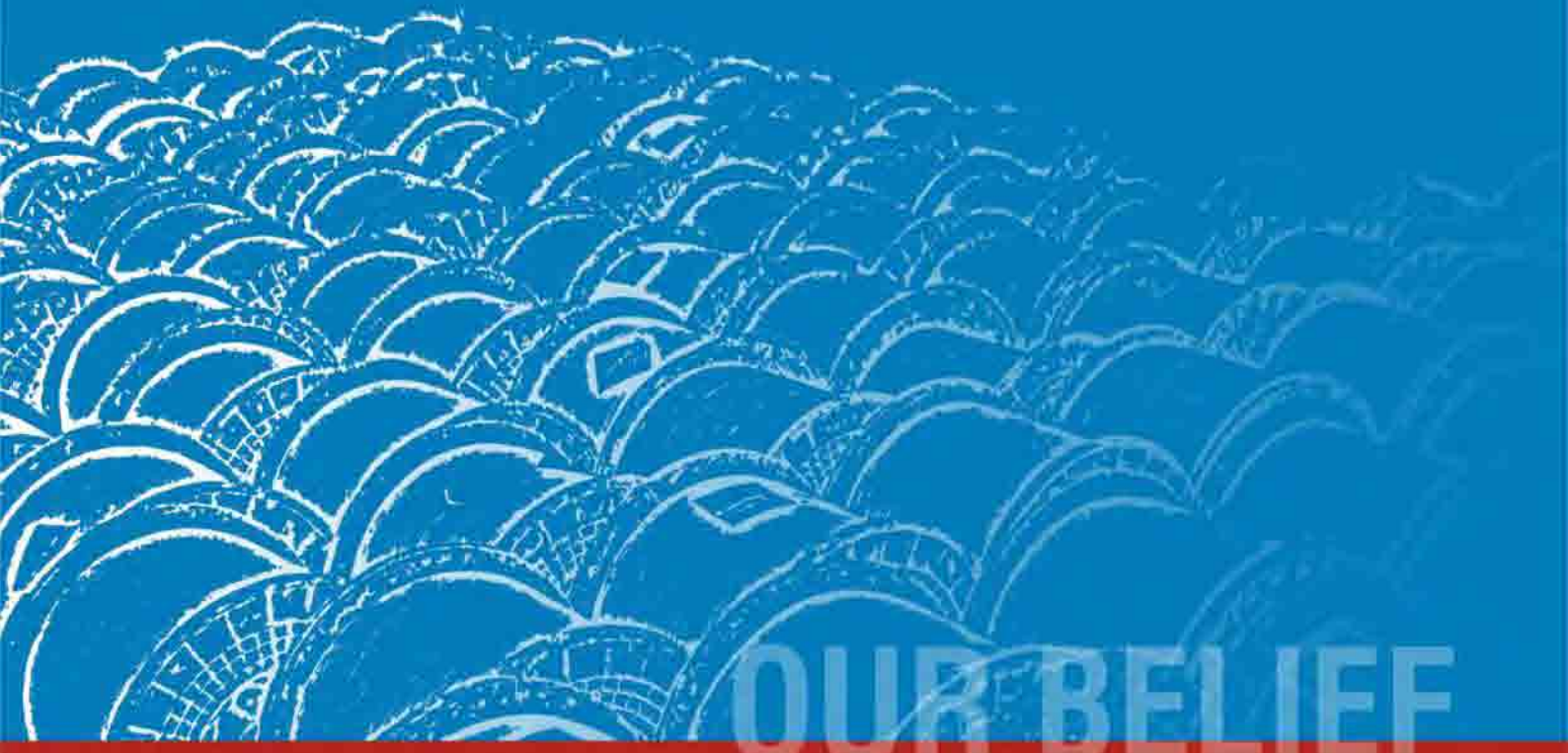
www.uptelelinks.com

OUR VISION

To achieve success by being competitive, market driven, efficient and profitable.

To develop, manufacture, market & service a range of products to exceed customer satisfaction / expectations.

To continually improve our Quality Management System through combined team work.



OUR BELIEF

"A Customer is the most important visitor on our premises. He is not dependent on us. We are dependent on him. He is not an interruption on our work. He is the purpose of it. He is not an outsider to our business. He is a part of it. We are not doing him a favour by serving him. He is doing us a favour by giving us an opportunity to do so."

-Mahatma Gandhi

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2nd edition 2010

Introduction

UP Telelinks Ltd was incorporated in 1985 by a group of individuals who have gone on to become successful entrepreneurs and the company, today is managed by a team of professionals.

UPTL is one of India's leading manufacturers of electric and telecom wires and cables. In the initial stages of the company, UPTL commenced operations manufacturing stainless steel wires, however, after receiving approval from Dept of Telecommunication (DOT) in the Telecom sector in 1999, successfully executed several orders for supply of Telecom Cables.

Further diversification plans have allowed the company to create Qualitative and Quantitative capacity to manufacture various types of cables and wires to Indian and International standards (product range enclosed).

Current turnover is approx. USD 20 million.

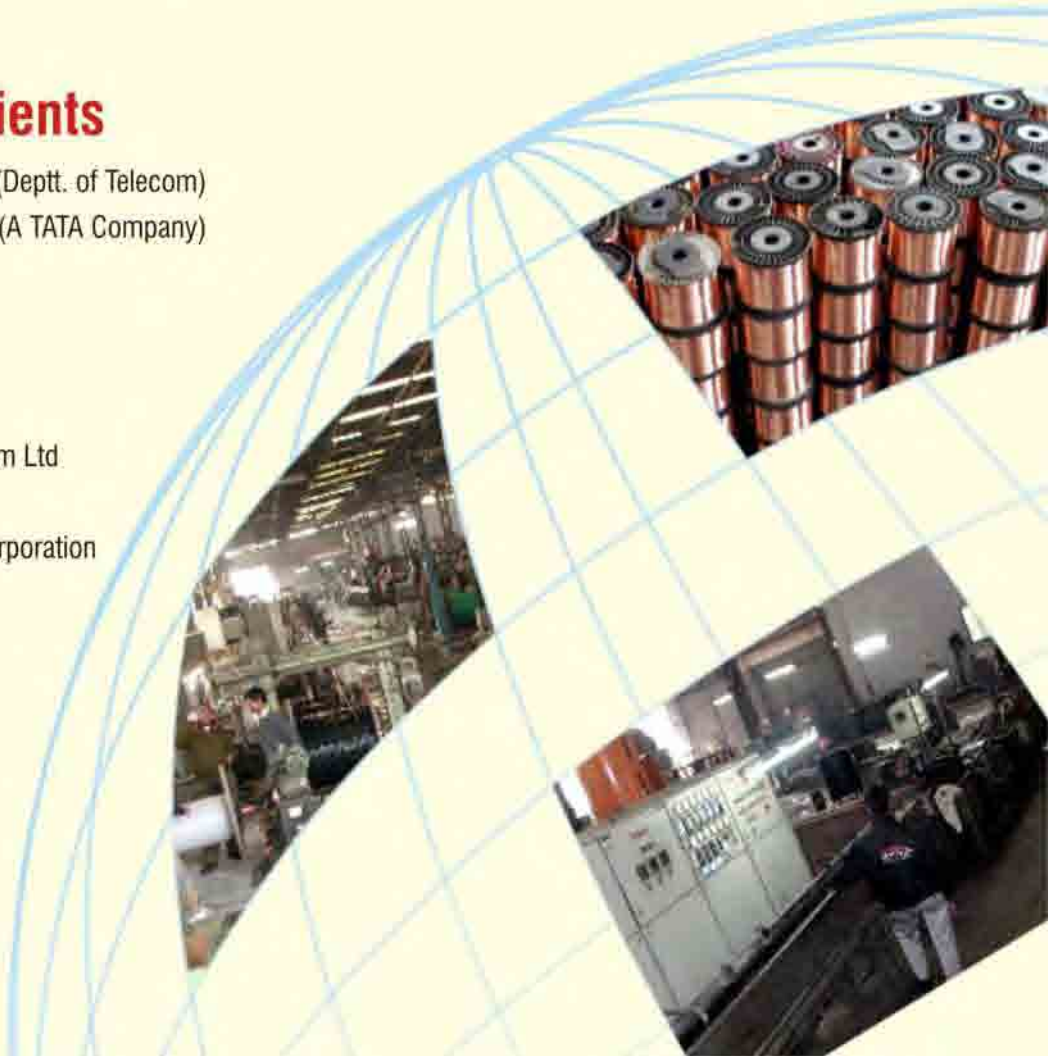
INFRASTRUCTURE

Situated in the recognised industrial sector, the plant is laid out over an area of 20,000 sq. mtrs and has a covered area of 100,000 sq. ft.

An exhaustive list of plant and equipment, attached, establishes the manufacturing capacity of the company, managed by a dedicated team, having over 20 years of experience in the Cable Industry along with a workforce of skilled workers who are trained over the years to manufacture a Quality Product.

Select list of clients

- Bharat Sanchar Nigam Ltd (Deptt. of Telecom)
- Videsh Sanchar Nigam Ltd (A TATA Company)
- Ericsson
- Bharti Airtel
- Bharti Infratel
- Bharti Hexacom Ltd
- Mahanagar Telephone Nigam Ltd
- Dishnet DSL Ltd
- National Thermal Power Corporation
- Instrumentation Ltd., Kota
- Ministry of Defence, India



Quality Objectives

The emphasis in the business is on providing solutions to customer requirements, cost saving and competitive advantage through continuous innovation.

To achieve and maintain consistent quality in our products and services through implementation of comprehensive quality system.

To enhance productivity through improved working methods, regular communication, information and training to motivate employees.

To achieve recognition within and outside the country as a reliable business enterprise.

The company strives towards manufacturing products which maximise safety and minimize environment hazards.

Quality Assurance

We have a complete in-house manufacturing and testing facilities as per leading international standards and follow a strict Quality Control System, which covers monitoring of Quality starting from raw material procurement, in-process quality and final testing of cables according to defined standards.

Investment in advanced measurement and test equipments/techniques provide product quality assurance. Highly sophisticated electrical, electronic, dimensional and mechanical test systems are installed to demonstrate the quality of company's wide range of cables.

Total quality monitoring systems are adopted to ensure that consistent, reliable, high quality products and services are provided cost effectively, through the optimum use of all resources.

Independent pre-shipment test inspection of products offers opportunity to our customers for evaluation of performance based on design parameters.

Testimonials

"Here quality is not an action, but is a habit."

Control Cables (600/1000V)

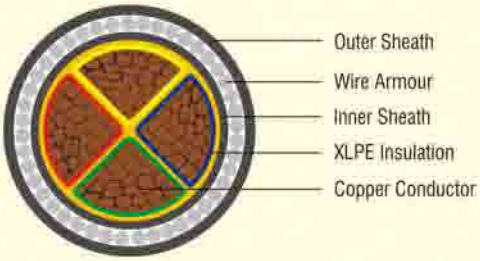
As per BS : 5467 / IEC : 60502

Application

Multicore XLPE Control Cables are specially designed for Power supply stations, in indoors and in cable ducts, outdoors, underground as well as for installations on cable trays for industries, switch-boards and power stations. XLPE Insulated cables offer higher current ratings, superior short circuit ratings and improved moisture resistance over equivalent PVC insulated cables.

Technical Details

- **Conductor** • Solid/stranded Plain/Tinned **Cu or Al conductor** as per BS :6360 & IEC 60228/ customer requirement.
- **Insulation** • Cross linked Polyethylene (XLPE).
- **Inner Sheathing** • PVC (70°C/90°C)/FRLS/LSOH compound as per customer requirement.
- **Armouring** • Galvanised round steel wire armour.
- **Jacketing** • PVC (70°C/90°C) / FRLS / LSOH compound as per customer requirement.
- **Drum Length** • 250/500/1000 Mtrs.



Physical Parameters

0.6/1 kV Single core
CU/XLPE/PVC/AL-WIRE/PVC

Nominal Cross Sectional Area (Sq. mm)	Nominal Thickness of Insulation mm	Thickness of bedding mm	Nominal AL wire armour dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
50	1.0	0.8	0.9	1.5	17.5	668	0.387
70	1.1	0.8	1.25	1.5	19.9	924	0.268
95	1.1	0.8	1.25	1.6	21.8	1201	0.193
120	1.2	0.8	1.25	1.6	23.5	1460	0.153
150	1.4	1.0	1.6	1.7	26.8	1840	0.124
185	1.6	1.0	1.6	1.8	29.1	2240	0.0991
240	1.7	1.0	1.6	1.8	31.6	2820	0.0754
300	1.8	1.0	1.6	1.9	34.2	3450	0.0601
400	2.0	1.2	2.0	2.0	39.3	4444	0.0470
500	2.2	1.2	2.0	2.1	44.2	5830	0.0366
630	2.4	1.2	2.0	2.2	46.7	6999	0.0283
800	2.6	1.4	2.5	2.4	55.4	9540	0.0221
1000	2.8	1.4	2.5	2.5	57.5	11061	0.0176

Physical Parameters

0.6/1 kV Two core
CU/XLPE/PVC/SWA/PVC

Nominal Cross Sectional Area (Sq. mm)	Nominal Thickness of Insulation mm	Thickness of bedding mm	Nominal Steel wire armour dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
1.5	0.6	0.8	0.9	1.3	12.1	280	12.1
2.5	0.7	0.8	0.9	1.4	13.6	340	7.41
4	0.7	0.8	0.9	1.4	14.7	416	4.61
6	0.7	0.8	0.9	1.4	15.8	494	3.08
10	0.7	0.8	0.9	1.5	17.9	653	1.83
16	0.7	0.8	1.25	1.5	19.6	807	1.15
25	0.9	0.8	1.25	1.6	22.8	1101	0.727
35	0.9	1.0	1.6	1.7	26.2	1518	0.524
50	1.0	1.0	1.6	1.8	29.4	1886	0.387
70	1.1	1.0	1.6	1.9	32.9	2417	0.268
95	1.1	1.2	2.0	2.0	37.5	3318	0.193
120	1.2	1.2	2.0	2.1	40.4	3912	0.153
150	1.4	1.2	2.0	2.2	44.3	4645	0.124
185	1.6	1.4	2.5	2.4	49.9	5994	0.0991
240	1.7	1.4	2.5	2.5	54.7	7357	0.0754
300	1.8	1.6	2.5	2.6	60.0	8876	0.0601
400	2.0	1.6	2.5	2.8	66.6	14880	0.0470

Physical Parameters

0.6/1 kV Three core
CU/XLPE/PVC/SWA/PVC

Nominal Cross Sectional Area (Sq. mm)	Nominal Thickness of Insulation mm	Thickness of bedding mm	Nominal Steel wire armour dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
1.5	0.6	0.8	0.9	1.3	12.6	305	12.1
2.5	0.7	0.8	0.9	1.4	14.1	375	7.41
4	0.7	0.8	0.9	1.4	15.1	438	4.61
6	0.7	0.8	0.9	1.4	16.3	524	3.08
10	0.7	0.8	1.25	1.5	19.2	797	1.83
16	0.7	0.8	1.25	1.6	20.4	994	1.15
25	0.9	1.0	1.6	1.7	24.9	1528	0.727
35	0.9	1.0	1.6	1.8	27.3	1902	0.524
50	1.0	1.0	1.6	1.8	30.5	2374	0.387
70	1.1	1.0	1.6	1.9	34.2	3115	0.268
95	1.1	1.2	2.0	2.1	39.1	4278	0.193
120	1.2	1.2	2.0	2.2	42.6	5135	0.153
150	1.4	1.4	2.5	2.3	48.2	6564	0.124
185	1.6	1.4	2.5	2.4	52.4	7854	0.0991
240	1.7	1.4	2.5	2.6	57.8	9816	0.0754
300	1.8	1.6	2.5	2.7	63.2	11874	0.0601
400	2.0	1.6	2.5	2.9	70.8	14707	0.0470

Physical Parameters

0.6/1 kV Four core
CU/XLPE/PVC/SWA/PVC

Nominal Cross Sectional Area (Sq. mm)	Nominal Thickness of Insulation mm	Thickness of bedding mm	Nominal Steel wire armour dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
1.5	0.6	0.8	0.9	1.3	13.8	348	12.1
2.5	0.7	0.8	0.9	1.4	15.0	419	7.41
4	0.7	0.8	0.9	1.4	16.3	514	4.61
6	0.7	0.8	1.25	1.5	18.6	723	3.08
10	0.7	0.8	1.25	1.5	20.8	954	1.83
16	0.7	0.8	1.25	1.6	21.4	1188	1.15
25	0.9	1.0	1.6	1.7	26.2	1836	0.727
35	0.9	1.0	1.6	1.8	28.8	2303	0.524
50	1.0	1.0	1.6	1.9	32.4	2930	0.387
70	1.1	1.2	2.0	2.1	37.8	4164	0.268
95	1.1	1.2	2.0	2.2	41.6	5324	0.193
120	1.2	1.4	2.5	2.3	46.8	6872	0.153
150	1.4	1.4	2.5	2.4	51.3	8185	0.124
185	1.6	1.4	2.5	2.6	56.1	9861	0.0991
240	1.7	1.6	2.5	2.7	62.1	12440	0.0754
300	1.8	1.6	2.5	2.9	67.6	15058	0.0601
400	2.0	1.8	3.15	3.2	78.1	20200	0.0470

Physical Parameters

0.6/1 kV Four core with reduced neutral
CU/XLPE/PVC/SWA/PVC

Nominal Cross Sectional Area (N) (Sq. mm)	Nominal Cross Sectional Area (N) (Sq. mm)	Nominal Thickness of Insulation (P) mm	Nominal Thickness of Insulation (N) mm	Thickness of bedding mm	Nominal armour wire dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
25	16	0.9	0.7	1.0	1.6	1.7	27.6	1782	0.727
35	16	0.9	0.7	1.0	1.6	1.8	29.6	2135	0.524
50	25	1.0	0.9	1.0	1.6	1.9	32.9	2713	0.387
70	35	1.1	0.9	1.2	2.0	2.0	37.5	3806	0.268
95	50	1.1	1.0	1.2	2.0	2.1	41.1	4814	0.193
120	70	1.2	1.1	1.2	2.0	2.2	44.7	5892	0.153
150	70	1.4	1.1	1.4	2.5	2.4	49.3	7294	0.124
185	95	1.6	1.1	1.4	2.5	2.5	53.3	8823	0.0991
240	120	1.7	1.2	1.6	2.5	2.6	58.5	11000	0.0754
300	150	1.8	1.4	1.6	2.5	2.8	63.5	13301	0.0601
400	185	2.0	1.6	1.6	2.5	3.0	73.8	17100	0.0470

Physical Parameters

0.6/1 kV Control Cables
CU/XLPE/PVC/SWA/PVC

Nominal Cross Sectional Area (Sq. mm)	No. of Cores	Nominal Thickness of Insulation mm	Thickness of bedding mm	Nominal AL wire armour dia. mm	Thickness of outer sheath mm	Approx. overall diameter mm	Approx. cable weight Kg/Km	Max DC Resistance at 200C Ohm/Km
1.5	7	0.6	0.8	0.9	1.4	15.9	461	12.1
1.5	12	0.6	0.8	1.25	1.5	20.3	757	12.1
1.5	19	0.6	0.8	1.25	1.6	23.2	982	12.1
1.5	27	0.6	1.0	1.6	1.7	28.0	1442	12.1
1.5	37	0.6	1.0	1.6	1.7	30.6	1733	12.1
1.5	48	0.6	1.0	1.6	1.8	34.4	2105	12.1
2.5	7	0.7	0.8	0.9	1.4	17.1	555	7.41
2.5	12	0.7	0.8	1.25	1.6	22.3	938	7.41
2.5	19	0.7	1.0	1.6	1.7	26.6	1411	7.41
2.5	27	0.7	1.0	1.6	1.8	30.8	1805	7.41
2.5	37	0.7	1.0	1.6	1.8	33.8	2210	7.41
2.5	48	0.7	1.2	2.0	2.0	39.4	2995	7.41
4	7	0.7	0.8	1.25	1.5	19.7	868	4.61
4	12	0.7	1.0	1.6	1.6	25.6	1397	4.61
4	19	0.7	1.0	1.6	1.7	29.3	1728	4.61
4	27	0.7	1.0	1.6	1.9	34.3	2266	4.61
4	37	0.7	1.2	2.0	2.0	39.2	3295	4.61
4	48	0.7	1.2	2.0	2.1	44.0	3792	4.61

Control Cables

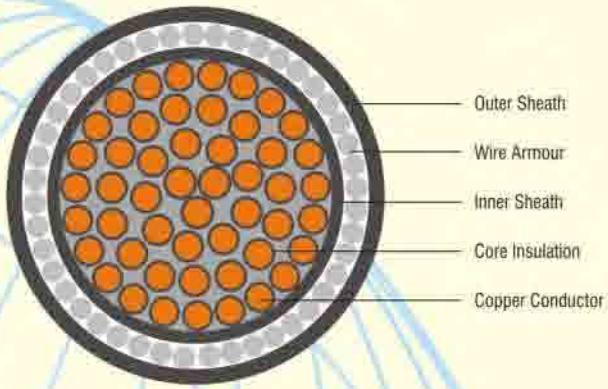
As per IS : 1554 (part 1)

Application

Multicore Control Cables are specially designed for communication & panel controls for transmission of DC or Low Frequency AC signals in telemetering, signalling, clock, personal paging system as well as control system. Armoured Cables can be laid under-ground directly.

Technical Details

Conductor	• Solid/stranded Annealed Bare/Tinned **Cu or Al conductor** as per customer requirement.
Insulation	• General purpose/Heat Resistant 70°C to 90°C PVC Insulation.
Screening (Optional)	• Al Mylar Tape screen with Copper drain wire or alternately with Copper wire braiding individual element or overall shielding as specified.
Inner Sheathing	• PVC (70°C/90°C) / FRLS / LSOH compound as per customer requirement.
Armouring	• Galvanised steel Wire/Strip armour.
Jacketing	• PVC (70°C/90°C) / FRLS / LSOH compound as per customer requirement.



Physical Parameters

1.1 KV, 1.5 sqmm Control Cables

No. of Core	Nominal Insulation Thickness (mm)	Approx. Inner Covering Thickness (mm)	Nominal Armour Wire Size (mm)	Nominal Outer Sheath Thickness (mm)	Approx. Overall Diameter (mm)	Overall Weight Approx. (Kgs/km)	Standard Drum length mts	Packing Dimensions Diameter x Width cm x cm
2	0.80	0.50	1.40	1.24	14	400	1000	94 x 70
3	0.80	0.50	1.40	1.24	15	450	1000	96 x 70
4	0.80	0.50	1.40	1.24	16	500	1000	100 x 80
5	0.80	0.50	1.40	1.24	17	525	1000	107 x 80
6	0.80	0.50	1.40	1.24	18	575	1000	100 x 80
7	0.80	0.50	1.40	1.24	18	600	1000	100 x 80
10	0.80	0.50	1.40	1.40	21	800	1000	105 x 80
12	0.80	0.50	1.60	1.40	22	900	1000	105 x 80
14	0.80	0.50	1.60	1.40	23	950	500	107 x 80
16	0.80	0.50	1.60	1.40	25	1200	500	110 x 80
19	0.80	0.50	1.60	1.40	26	1300	500	110 x 80
24	0.80	0.60	1.60	1.40	29	1600	500	116 x 80
27	0.80	0.60	1.60	1.40	30	1700	500	116 x 80
30	0.80	0.60	1.60	1.40	31	1800	500	130 x 80
37	0.80	0.60	1.60	1.40	33	2050	500	140 x 80
40	0.80	0.60	1.60	1.40	34	2150	500	140 x 80
48	0.80	0.60	2.00	1.56	37	2450	500	150 x 80
52	0.80	0.60	2.00	1.56	38	2600	500	150 x 80
61	0.80	0.60	2.00	1.56	41	3200	500	150 x 95

Physical Parameters

1.1 KV, 2.5 sqmm Control Cables

No. of Core	Nominal Insulation Thickness (mm)	Approx. Inner Covering Thickness (mm)	Nominal Armour Wire Size (mm)	Nominal Outer Sheath Thickness (mm)	Approx. Overall Diameter (mm)	Overall Weight Approx. (Kgs/km)	Standard Drum length mts	Packing Dimensions Diameter x Width cm x cm
2	0.90	0.50	1.40	1.24	15	450	1000	100 x 80
3	0.90	0.50	1.40	1.24	16	520	1000	100 x 80
4	0.90	0.50	1.40	1.24	17	550	1000	107 x 80
5	0.90	0.50	1.40	1.24	18	575	1000	107 x 80
6	0.90	0.50	1.40	1.24	19	650	1000	110 x 80
7	0.90	0.50	1.40	1.24	19	750	1000	110 x 80
10	0.90	0.60	1.60	1.40	24	1100	500	107 x 80
12	0.90	0.60	1.60	1.40	25	1200	500	110 x 80
14	0.90	0.60	1.60	1.40	26	1400	500	110 x 80
16	0.90	0.60	1.60	1.40	28	1520	500	116 x 80
19	0.90	0.60	1.60	1.40	30	1680	500	125 x 80
24	0.90	0.60	1.60	1.56	32	2050	500	137 x 80
27	0.90	0.60	1.60	1.56	33	2200	500	140 x 80
30	0.90	0.60	2.00	1.56	34	2300	500	140 x 80
37	0.90	0.80	2.00	1.56	35	2700	500	145 x 80
40	0.90	0.80	2.00	1.56	38	2850	500	150 x 95
48	0.90	0.80	2.00	1.72	40	3550	500	156 x 95
52	0.90	0.80	2.00	1.72	43	3800	500	165 x 100
61	0.90	0.80	2.00	1.72	47	4200	500	170 x 107

Control Cables (upto & including 1.1 KV)

As per IS : 1554 (part 1)

Cross Section Area mm²	Conductor Resistance at 20°C (Ohms/Km)
1.5	12.1
2.5	7.41
4	4.61
6	3.08
10	1.83
16	1.15
25	0.727

Parameter	Unit	Value
Volume Resistivity	Ohm Cm (Min.)	
At 27°C		1×10^{13}
At 70°C		1×10^{11}
At 85°C		1×10^{10}
High Voltage Test	Volts (rms)	3000
Core to Core		

Physical Parameters for Control Cables

1.5 mm² armoured Control Cable
Insulation thickness = 0.80 mm (Nom)

No. of Cores	Overall Diameter	Approx. Weight. (Kg/Km)
2	14	400
3	15	450
7	18	600
12	22	900
24	29	1600
30	31	1800
37	33	2050

2.5 mm² armoured Control Cable
Insulation thickness = 0.90 mm (Nom)

No. of Cores	Overall Diameter	Approx. Weight. (Kg/Km)
2	15	450
3	16	520
7	19	750
12	25	1200
24	32	2050
30	34	2300
37	35	2700

Conductor Nominal Cross Section Area (Sq. mm)	Insulation Thickness (Nom)	Outer Diameter (mm) (Approx.)			
		3 Core		4 Core	
		Unarmoured	Armoured	Unarmoured	Armoured
4	1.00		16.50		18.20
6	1.00		18.60		20.00
10	1.00	18.00	22.00	20.00	23.50
16	1.00	20.70	24.00	22.00	27.00
25	1.20	21.40	26.00	23.50	28.50
35	1.20	27.00	32.50	29.50	34.60
50	1.40	26.00	31.50	31.50	36.20
70	1.40	29.20	36.00	34.50	40.00
90	1.60	38.50	45.50	42.00	48.00

Available in Non-returnable reels of length -500m/1000 (+/-5%)

PVC Flexible Cables

As per BS : 6500

TYPE : H05VV-F (300/500 V)

Application

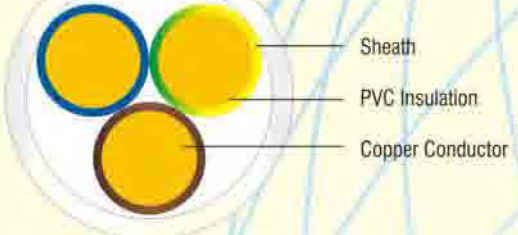
Specially designed cables for usage in home, kitchens, offices and in applications liable to moderate mechanical strain. Also suitable for domestic appliances in damp conditions (washing machines, hair dryers, refrigerators etc.).

Design

Stranded Flexible annealed bare Copper Conductor, General Purpose Soft PVC Insulation, Soft extruded PVC Black/White Sheath (or any other colour of customer's choice). Cables shall confirm to BS : 6500 Spec. Upon request, PVC rated 90°C or 105°C and LSOH can also be provided. Rubber insulated flexible cable with rubber insulations/sheathing can also be provided (H07RN-F).

Physical/ Dimensional Parameters

Size Nominal mm^2	No. of Cores	C.R. Ohms/Km Max.	Overall Diameter (mm) (Appx.)	Net Weight Kg/Km Approx.
1.5	2	13.3	9.0	95
	3		9.8	120
	4		11.0	150
	5		12.0	185
2.5	2	7.98	11.0	145
	3		12.0	160
	4		13.0	220
	5		14.0	270
4	2	4.95	12.0	200
	3		13.0	250
	4		14.0	310
	5		15.5	390



PVC Wires

As per BS : 6004, BS : 7211

TYPE: H05V-U (300/500 V)
H07V-U/R/K (450/750V)

Application

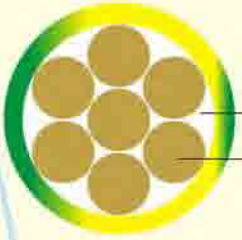
Specially designed cables for usage in building wiring, Earthing & Electrical Equipment wiring, Switching and distribution installations for power Supply purpose. These cables are available in PVC which imparts high degree of flexibility. PVC Insulation has good electrical properties.

Design

Annealed bare Copper Conductor, General purpose soft PVC Insulation, cables shall confirm to BS: 6004 spec. Upon request, PVC rated 90°C or 105°C and LSOH can also be provided.

Physical / Dimensional Parameters

Area Nominal mm^2	No. & nom. Dia	Insulation thickness Nom. (mm)	Overall Diameter Nom. (mm)	Net Weight Kg/Km Approx.
0.5	1/0.80	0.6	2.3	9
0.75	1/0.98	0.6	2.5	12
1	1/1.13	0.6	2.7	15
1.5	1/1.38	0.7	3.2	20
	7/0.53	0.7	3.3	20
2.5	1/1.78	0.8	3.9	32
	7/0.67	0.8	4.0	33
4	1/2.25	0.8	4.4	46
	7/0.85	0.8	4.6	48
6	1/2.76	0.8	4.9	66
	7/1.04	0.8	5.2	69
10	1/3.75	1.0	6.4	109
	7/1.35	1.0	6.7	115
16	7/1.70	1.0	7.8	173
25	7/2.14	1.2	9.7	270
35	7/2.52	1.2	10.9	360
50	19/1.78	1.4	12.8	513
70	19/2.14	1.4	14.6	710
95	19/2.52	1.6	16.8	970
120	37/2.04	1.6	18.5	1220
150	37/2.25	1.8	20.0	1500
185	37/2.52	2.0	22.5	1860
240	61/2.25	2.2	25.5	2420
300	61/2.52	2.4	29.5	3100
400	61/2.85	2.6	33.5	3950



Available in Non-returnable reels/coils of length -300m/500m/1000m (+/-5%)
Also available in coils of 100 yards and/or 100 mts.

Instrumentation Cables

As per specification : BS : 5308(1) / (2), IEC-189(I) / (II)

Application / Design

Instrumentation cable offers total interference free data transfer and is ideal for use as a signal and control cable in measuring , process-control and security systems. Instrumentation process in any industry is a very important factor for controlling various parameters during process. Microprocessor based control devices demand very low noise level and attenuation of signals in the cable. This calls for careful designing & manufacturing of Cables with stringent quality control. UPTL offers wide range of instrumentation cables both Al Mylar Tape or wire braid shielded for the purpose, ensuring very low levels of stored energy in these cables which are normally laid under hazardous conditions.

Range of Instrumentation Cables:

Conductor : 0.40 mm Dia. (0.126 Sq.mm to 2.50 Sq.mm), Electrolytic Copper Conductor Bare/ Tinned, Solid/Stranded.

Insulation : General purpose / Heat Resistant 70°C to 90°C PVC / Polythene compound Insulation.

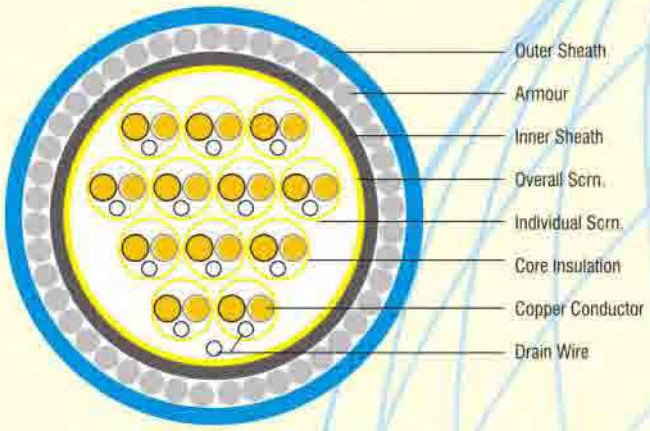
Elements : Pairs / Triads / Quads. Colour coded / Number printed.

Shields : Aluminium Polyester Tape Screen with Copper drain wire or alternately with Copper wire braiding individual element or overall shielding as specified.

Armouring : Galvanised steel wire / strip armour.

Sheathing : PVC 70°C / 90°C. F.R.L.S. / LSOH compound as per customer requirement.

Minimum Bending Radius : 8 x Overall Diameter.



Physical Parameters for Signal / Instrumentation Cables as per BS: 5308 (2)

300/500 V Voltage Grade, 0.75 Sq.mm, Multi Pair/ Multi Triad, Copper Conductor, PVC Insulated, Twisted, Individual & Overall Screened with Al.Mylar Tape, GI Wire Armoured, PVC Sheathed Instrumentation-Cables.

No. of Pairs Triads	Insulation Thickness mm (Nom)	Inner Sheath Thickness mm (Nom)	Armour Size mm (Nom)	Outer Sheath Thickness mm (Nom)	Overall Diameter mm Appx.	Approx. Weight (Kg/Km)
1P	0.60	0.80	0.90	1.40	11.80	270.00
6P	0.60	1.20	1.25	1.60	21.80	890.00
12P	0.60	1.30	1.60	1.80	28.30	1500.00
1T	0.60	0.80	0.90	1.40	12.00	290.00
4T	0.60	1.20	1.25	1.60	21.60	850.00
8T	0.60	1.30	1.60	1.80	28.30	1460.00

300/500 V Voltage Grade, 1.50 Sq.mm, Multi Pair Multi Triad, Copper Conductor, PVC Insulated, Twisted, Individual & Overall Screened with Al. Mylar Tape, GI Wire Armoured, PVC Sheathed Instrumentation Cables.

No. of Pairs Triads	Insulation Thickness mm (Nom)	Inner Sheath Thickness mm (Nom)	Armour Size mm (Nom)	Outer Sheath Thickness mm (Nom)	Overall Diameter mm Appx.	Approx. Weight (Kg/Km)
1P	0.60	0.80	0.90	1.40	12.7	328.00
6P	0.60	1.30	1.60	1.70	25.2	1230.00
12P	0.60	1.60	2.00	2.00	33.8	2160.00
1T	0.60	0.90	0.90	1.40	13.1	350.00
4T	0.60	1.30	1.60	1.70	24.8	1195.00
8T	0.60	1.60	1.60	1.90	32.2	1880.00

300/500 V, Instrumentation Cables

Nom. Area Sq.mm	Bunched Dia Nom. mm	Conductor Resistance Ohm / Km	Insulation Thickness mm (Nom)	Core Diameter mm (Max)
0.5	0.90	36.1	0.60	2.35
0.75	1.13	24.5	0.60	2.55
1.5	1.60	12.1	0.60	3.00

Electrical Characteristics

Parameter	Unit	PVC			Polythene		
	Area Sq. mm	0.50	0.75	1.50	0.50	1.00	1.50
Conductor Resistance	Ohms/Km (Max)	36.1	24.5	12.1	36.1	18.1	12.1
Insulation Resistance	Mohm/Km (Min)		100			5000	
Capacitance :							
Core to Core	pF/Mtr (Max)		250			75	
Core to Screen	pF/Mtr (Min)		450			150	
Mutual Inductance	mH/Km (Max)		1.4			0.90	
L/R Ratio	uH/Ohm (Max)	25	25	40	25	25	40
High Voltage Test							
Core to Core	Volts rms		1500			1500	
Core to Screen	Volts rms		1000			1000	
Screen to Armour	Volts rms		500			500	
Screen to Screen	Volts rms		125			25	

upkab POWER TO CONNECT

PVC Submersible Cables

As per BS : 6004

Application

Specially designed cables for submersible pump motors are meant to withstand abrasion, prevent ingress of water along the inside of the cables and be resistant to acidic fluids and other chemicals. These cables are available in PVC which imparts high degree of flexibility and water resistance.

Design

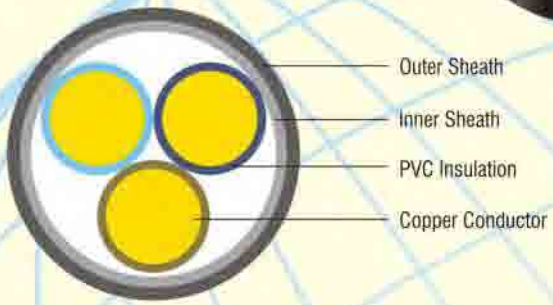
Cables shall generally confirm to BS:6004 stranded flexible annealed bare Copper conductor, general purpose soft PVC insulation, soft extruded PVC natural/black colour inner sheath (optional), soft extruded PVC black outer sheath (or any other colour of customer's choice). These cables can also be offered using thermoplastic rubber insulation and sheathing compound as per customer's requirement.

Mechanical Properties

High Tensile Strength : >1200 N
Bending Radius : >8 x D
High Compression Resistance : >1000 N
Stability over temperature range of -20°C to +70°C

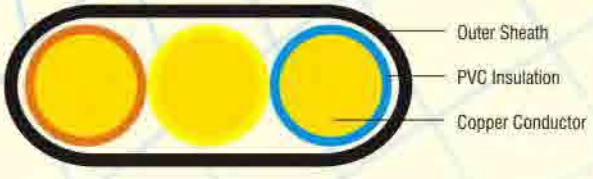
Physical/ Dimensional Parameters (Round)

No. of Cores	Area Nominal	Conductor Resistance at 20°C Ohms/km (Max)	Overall Diameter Max. (mm)
1	1	12.10	3.5
	2.5	7.41	4.2
3	1.5	12.10	9.5
	2.5	7.41	12.0
	4	4.61	13.0
	6	3.08	15.0
	10	1.83	18.3
	16	1.15	20.5
	25	0.727	25.0
	35	0.524	30.5
	50	0.387	35.9



Physical/ Dimensional Parameters (Flat)

No. of Cores	Area Nominal	Conductor Resistance at 20°C Ohms/km (Max)	Overall Diameter Max. (mm)
3	1	18.10	4.50 X 9.35
	1.5	12.10	4.90 X 10.70
	4	4.61	6.45 X 15.15
	10	1.83	8.75 X 21.05
	16	1.15	10.0 X 24.40



Available in Non-returnable reels of length -300m/500m/1000m (+/-5%)

PVC Insulated & Sheathed Twin Core Flat Cables

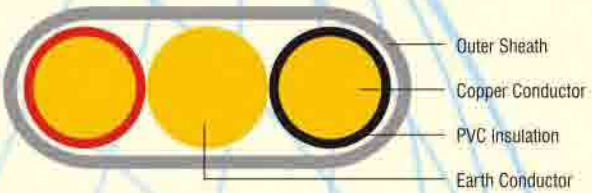
As per BS : 6004

Mechanical Properties

High Tensile Strength : >1200 N
Bending Radius : >8 x D
High Compression Resistance : >1000 N
Stability over temperature range of -20°C to +70°C

Physical/ Dimensional Parameters (Flat)

Nominal Conductor Area (mm^2)	Nominal Conductor Stranding (#/mm)	Average Insulation Thickness (mm)	Average Sheath Thickness (mm)	Maximum O/D (mm)	Approx. Cable Weight (Kg/Km)
Without Earth Conductor					
2 x 1.5	1/1.38	0.7	0.9	4.9 x 7.8	72
2 x 2.5	1/1.78	0.8	1	5.3 x 8.4	97
2 x 4	7/0.85	0.8	1	6.6 x 10.9	150
2 x 6	7/1.04	0.8	1.1	7.3 x 12.3	207
With Earth Conductor					
2 x 1.5 + 1	1/1.38	0.7	0.9	4.9 x 8.3	83
2 x 2.5 + 1	1/1.78	0.8	1	5.3 x 9.6	115
2 x 4 + 1.5	7/0.85	0.8	1	6.6 x 12.8	177
2 x 6 + 2.5	7/1.04	0.8	1.1	7.3 x 14.0	233



Fire Alarm Cables

As per IEC : 60332

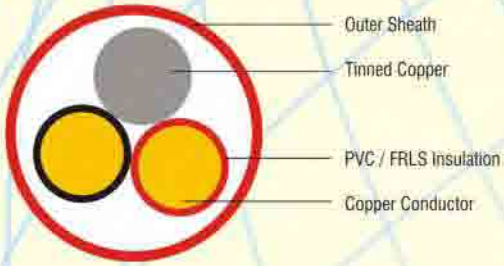
Mechanical Properties

Conductors	:	AWG 20 - AWG 18 - AWG 17 - AWG 16 - AWG 14
Insulation	:	PVC Flame Retardant
Screen	:	CAM (Collective aluminum mylar)
Drain Wire	:	Flexible Tinned Copper
Sheath	:	PVC Flame Retardant / HT 105°C
Colour	:	Red or Blue
Rating Voltage	:	300v
Temperature Range	:	- 40°C to + 105°C
Installation Temp	:	- 15°C to + 90°C

Solid Bare Copper, PVC Flame Retardant, Alu / PI Shield, Tinned Copper Drain Wire, PVC / HT 105°C, Core identification : 2 Cores : Black, Red, 3 Cores : Black, Blue, Brown, 4 Cores : Black, Red, Yellow, Blue.

Physical/ Dimensional Parameters

No. of Cores	AWG	(sqmm)	Conductor Size (mm)	Overall Diameter (mm)
2	20	0.50	1/0.8	5.1
	18	0.75	1/0.9	5.4
	17	1.00	1/1.1	6.2
	16	1.50	1/1.4	6.4
	14	2.50	1/1.8	8.4
3	20	0.50	1/0.8	5.4
	18	0.75	1/0.9	5.8
	17	1.00	1/1.1	6.4
	16	1.50	1/1.4	7.4
	14	2.50	1/1.8	8.8
4	20	0.50	1/0.8	6.1
	18	0.75	1/0.9	6.5
	17	1.00	1/1.1	6.9
	16	1.50	1/1.4	7.6
	14	2.50	1/1.8	9.6



Filled Telecommunication Cables

As per British Telecom spec. : CW 1128/1179/1198

Application Range

Jelly filled Cables are meant for inter exchange connection and local network use. UPTL is manufacturing cables with conductor size 04 / 0.5 /0.63/ 0.9 mm multipairs upto 100 Pair Armoured / Unarmoured, Screened Unscreened cables.

Construction

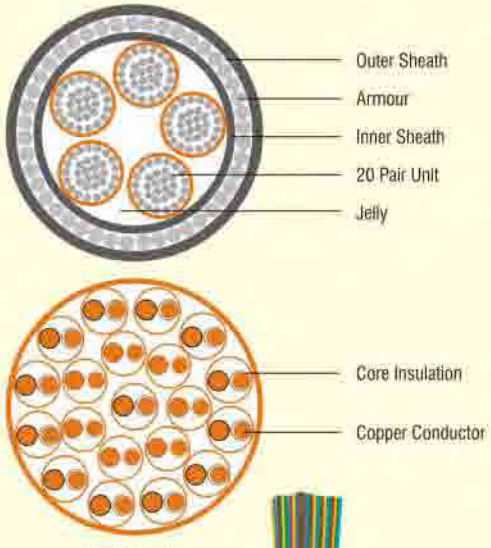
Solid Plain Annealed Copper Conductor Polythene Insulation Twisted into Pairs Stranded into units Units laidup, filled with Petroleum Jelly & Polyster taped Screen of Poly Al. Tape (optional) (CW : 1179) Polythene Sheathed Steel Wire Armoured Polythene Jacketed.

Electrical Characteristics at 20°C

Conductor Size	mm	Nom.	0.50	0.9
Conductor Resistance for 1km. loop	ms	Max.	184	60
Resistance Unbalance	%	Max.	2.5	2
Insulation Resistance	Mohm/Km	Max.	5000	5000
High Voltage for 3 Sec	DC KV	Min.	2.4	3.5
Mutual Capacitance at 1000 Hz Avg.	Pt/Mtr	52.5	52.5	52.5
Near and cross talk attenuation at 150 Khz min.	db/Km	Min.	55	55
Far and cross talk attenuation At 150 Khz min.	db/Km	Min	55	55
Attenuation Avg. Value at 1 Khz	db/Km	Max.	8.25	4.4
Capacitance Unbalance	Avg. Pf/Km	Max.	50	50
(Pair to Pair)	Ind.pf.Km	Max.	200	200
Capacitance Unbalance	Avg. pf/Km	Max.	750	750
(Pair to Ground)	Ind. pf.Km	Max.	3000	3000

100 Pair x 0.50 mm Jelly Filled Armoured Telephone Cable

CROSS-SECTIONAL VIEW



20 PAIR UNIT

Physical Characteristics

Size No. of Pairs		0.50 mm		0.63 mm		0.90 mm	
		O.D. mm Appx.	Weight Kg/Km Appx.	O.D. mm Appx.	Weight Kg/Km Appx.	O.D. mm Appx.	Weight Kg/Km Appx.
5	UA	10.0	81	10.5	100	15.2	175
	A	18.0	290	17.0	440	22.0	100
10	UA	11.0	125	12.5	165	16.5	200
	A	17.5	410	18.5	490	23.5	770
20	UA	13.5	205	15.5	280	21.0	530
	A	20.5	670	22.5	800	29.5	1430
50	UA	19.5	420	22.0	590	31.0	1220
	A	26.5	1200	30.0	1500	41.0	2810
100	UA	25.0	770	29.5	1110	42.0	2330
	A	33.5	1830	39.5	2630	53.0	4900

Available in Non-returnable drum lengths - 500m/1000m (+/-5%)

Telephone Cables

As per CW : 1308/1293//TEC GR/WIR-06/03

Application

Specially designed cables for Exchange interconnection and telephone systems. The cable is also suitable for some data transmission systems and is designed for use with connectors and colour scheme permits easy pair identification.

Design

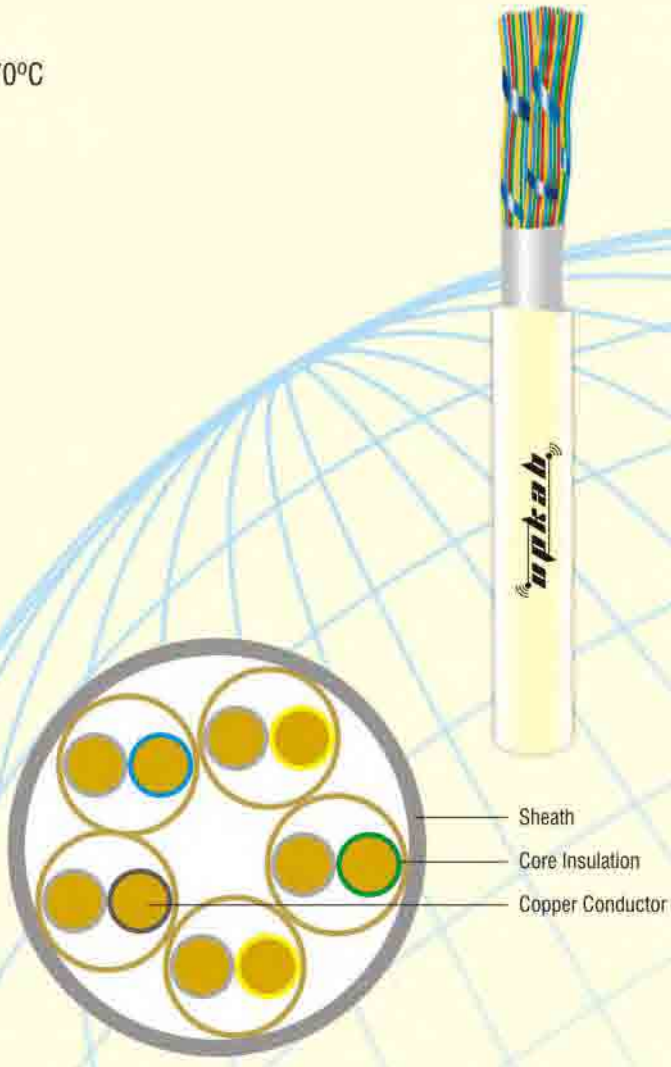
This specification details cables with 0.4mm and 0.5mm plain tinned copper conductors which are insulated with minimum 0.15mm thick PVC. The insulation is colour coded as shown on the chart to facilitate easy pair and core identification. The pairs are laid together and covered with a PVC sheath and fitted with a nylon ripcord for easy stripping. LSOH Sheathed Cables can also be supplied as per CW: 1308.

Mechanical Properties

High Tensile Strength (> 1000 N)
Bending Radius (>8 x Overall Diameter)
High Compression Resistance (>800 N)
Stability over temperature range of -20°C to + 70°C

Colour Scheme

No. of Pairs	A-WIRE	B-WIRE
1	White	Blue
2	White	Orange
3	White	Green
4	White	Brown
5	White	Grey
6	Red	Blue
7	Red	Orange
8	Red	Green
9	Red	Brown
10	Red	Grey
11	Black	Blue
12	Black	Orange
13	Black	Green
14	Black	Brown
15	Black	Grey
16	Yellow	Blue
17	Yellow	Orange
18	Yellow	Green
19	Yellow	Brown
20	Yellow	Grey



Physical / Electrical Characteristics

0.50 mm Solid Tinned Copper Wire as per CW: 1308

No. of Pairs	No. of Cores	Size mm^2	Insulation Thickness mm (Nom.)	Core Dia. mm	Sheath Thickness mm (Nom)	Overall Dia. mm (Appx.)	C. R. at 20°C Ohm / Km (Max.)	I. R. (Min.) Mohm / Km	Wt. Kg/Km (App.)
1	2	0.20	0.20	0.95	0.50	3.20	97.8	50	15
2	4	0.20	0.20	0.95	0.60	4.10	97.8	50	18
3	6	0.20	0.20	0.95	0.65	4.80	97.8	50	24
4	8	0.20	0.20	0.95	0.65	5.80	97.8	50	35
6	12	0.20	0.20	0.95	0.65	6.80	97.8	50	46
10	20	0.20	0.20	0.95	0.65	8.30	97.8	50	70
12	24	0.20	0.20	0.95	0.70	9.10	97.8	50	80
15	30	0.20	0.20	0.95	0.70	9.80	97.8	50	95
20	40	0.20	0.20	0.95	0.80	10.70	97.8	50	123
25	50	0.20	0.20	0.95	0.80	11.40	97.8	50	163
30	60	0.20	0.20	0.95	0.90	12.20	97.8	50	186

16 PAIR Construction Cables

32	64	0.20	0.20	0.95	0.80	12.40	97.8	50	190
64	128	0.20	0.20	0.95	1.10	16.50	97.8	50	388
128	256	0.20	0.20	0.95	1.60	25.40	97.8	50	681
256	512	0.20	0.20	0.95	2.00	32.20	97.8	50	1382

Physical / Electrical Characteristics

0.40 mm Solid Tinned Copper Wire

No. of Pairs	No. of Cores	Size mm^2	Insulation Thickness mm (Nom.)	Core Dia. mm	Sheath Thickness mm (Nom)	Overall Dia. mm (Appx.)	C. R. at 20°C Ohm / Km (Max.)	I. R. (Min.) Mohm / Km	Wt. Kg/Km (App.)
1	2	0.13	0.20	0.85			153	50	
2	4	0.13	0.20	0.85	0.40	3.90	153	50	15.0
3	6	0.13	0.20	0.85	0.50	5.30	153	50	20.5
4	8	0.13	0.20	0.85	0.50	5.80	153	50	28.3
6	12	0.13	0.20	0.85	0.60	6.80	153	50	40.1
10	20	0.13	0.20	0.85	0.60	8.30	153	50	58.6
12	24	0.13	0.20	0.85	0.70	8.90	153	50	63.6
20	40	0.13	0.20	0.85	0.70	10.4	153	50	105.4
25	50	0.13	0.20	0.85	0.80	11.1	153	50	130.8
30	60	0.13	0.20	0.85	0.80	12.0	153	50	145.8

16 PAIR Construction Cables

32	64	0.13	0.20	0.85	0.85	12.00	153	50	150.0
64	128	0.13	0.20	0.85	0.85	16.00	153	50	306.0

Available in Non-returnable reels of length -500m11000m (+/-5%)

Drop Wire

Dropwire no. 4, 6, 10

Application

Dropwire is mostly used for overhead outdoor installation. Dropwire is mainly installed between distribution points and telephone subscribers premises. UPTL manufactures drop wire which shall suffer no deterioration from sunlight or corrosive elements in the atmosphere, over a working temperature range of -20°C to + 80°C.

Construction

1. Typical Conductor for Dropwire no. 4 & 6 consists of Hard drawn Bare Copper/Cadmium/ CCSW.
2. Two conductors shall be laid up in parallel and insulated with PVC/PE simultaneously applied on both conductors to form a Double D cross-section.
3. Typical conductor for Drop Wire 10 consists of 2 Telephone Pairs of PVC Insulated tinned Cu wire together with 3 support wires, each consisting of 3 strands of brass plated steel with PVC insulation & complete cable is sheathed in black PE.

Physical Dimensional Parameters

Dropwire Cable Ref. No.	Conductor Diameter (mm)	Insulation Thickness Nom. (mm)	Overall Diameter Max. (mm)	Breaking Strain (kg)
4	1.14	1.65	9.45 x 4.45	223
6	0.81	0.85	5.4 x 2.5	112
10	2P/0.5	0.4	5.5	155
	3/0.25			

Available in Non-returnable reels of length -250m/500m/1000 (+/-5%)

Twin Jumper Wire

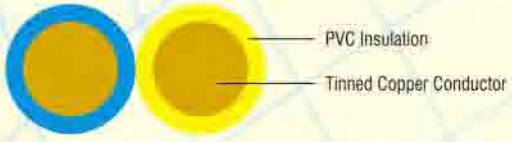
As per CW: 1109/1257

Application

Jumper Wire is mostly used for cross connection in cabinets & MDF's.

Construction

1. Each conductor shall consist of a solid tinned annealed Copper Conductor. Nominal diameter 0.40/0.50/0.60 mm.
2. Each conductor is PVC insulated.
3. Colour Scheme : Blue/Yellow, Red/White, Green/Black, Pink/Grey
4. The two conductors shall be uniformly twinned together to form a Twin Jumper Wire.
5. Max. Conductor Resistance at 20°C - 97.8 Ohm/Km for a 0.50mm Conductor
6. Minimum Bending Radius - 8x Overall Diameter
7. Max. Operating temperature - 105°C.



Available in Non-returnable reels of length -250m/500m/1000 (+/-5%)

Co-axial Cables

Application / Design

Special Cables include RF Coaxial Cables, Loudspeaker cables, Data processing cables etc. Coaxial cables are used in all areas of the high frequency transmission technology, for example in medicine, military or in communication sectors. Coaxial cable forms heart of any such system. These cables require critical designing and manufacturing skills. The products are tailor made to satisfy the need of every customer. Coaxial Cables are available in 50/75/93/120 Ohm impedance. Coaxial cables are used in high frequency transmission, especially for transmitters and receivers, computers, radio and TV transmissions. The Coaxial cables for satellite receivers and TV aerials as well as video cables are designed according to the specific customer requirement.

Range of Co-axial Cables

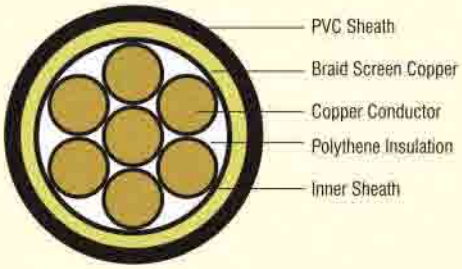
Conductor : Solid/ stranded, Bare/tinned Copper, Copper coated steel wire, Silver plated.
Insulation /Sheath : PVC / Polythene / Foam Polythene polymeric compound.
Shields : Aluminium Polyester Tape Screen with Copper drain wire or alternately with Copper wire braiding or both as specified.

Parameters of RF-Coaxial Cables

Item	Dielectric Insulation	Conductor Size mm	Dia. Over Di-electric mm (App.)	Overall Diameter mm (App.)	Impedance (Nom) Ohm
RG-174/U	Polythene	7/0.16 (P)	1.5	2.5	50
RG-122/U	Polythene	27/0127 (T)	2.4	4.1	50
RG-58/U	Polythene	0.81 (P)	2.95	5	53.5
RG-58C/U	Polythene	19/0.18 (T)	2.95	5	50
RG-55B/U	Polythene	0.18 (S)	2.95	5.2	53.5
RG-223/U	Polythene	0.90 (S)	2.95	5.5	50
RG-59/U	Polythene	1/0.82 (CCSW)	3.578	6.032	75
RG-212/U	Polythene	1.20 (S)	4.7	8.4	50
RG-11/U	Polythene	1/1 .62 (S)	7.1	10	75
RG-213/U	Polythene	7/0.75 (P)	7.25	10.3	50
RG-214/U	Polythene	7/0.75 (S)	7.25	10.8	50
RG-217/U	Polythene	2.70 (P)	9.4	13.8	50
RG-59B/U	Polythene	0.58 (P)	3.7	6.1	75
RG 59/U	Polythene	0.63 (P)	3.7	6.2	73
RG-11A/U	Polythene	7/0.41 (P)	7.25	10.3	75
RG-216/11	Polythene	7/0.41 (T)	7.25	10.8	75
RG-34B/U	Polythene	7/0.64 (P)	11.7	16	75
RG-62A/U	Polythene	0.64 (P)	3.7	6.1	93
RG-71B/U A	Polythene	0.64 (P)	3.7	6.4	93
RG-63B/U	Polythene	0.64 (P)	7.25	10.3	125
RG-22/U	Polythene	2x7/0.38 (P)	7.25	10.3	95
RG-57A/U	Polythene	2x7/0.12 (P)	12	15.9	95

P -Plain Copper / T -Tinned Copper / S -Silver Plated Copper / CCSW -Copper coated steel wire

Available in Non-returnable reels of length -500m/1000 (+/-5%)



Cable Care

Storage

A) The site chosen for storage of cable drums should be well-drained and should preferably have a concrete surface which will not cause the drums to sink and lead to flange rot causing extreme difficulty in moving the drums.

B) The drums should be stored in such a manner as to leave sufficient space between them for air circulation. It is desirable for the drums to stand on battens placed directly under the flanges.

C) In no case shall the drums be stored "on the flat side" i.e. With flanges horizontal.

D) For drums, overhead shade is not essential except in areas where the rainfall is heavy. The cables should however be protected from direct rays of Sun by leaving the battanes on or by providing some of sun shielding.

Handling

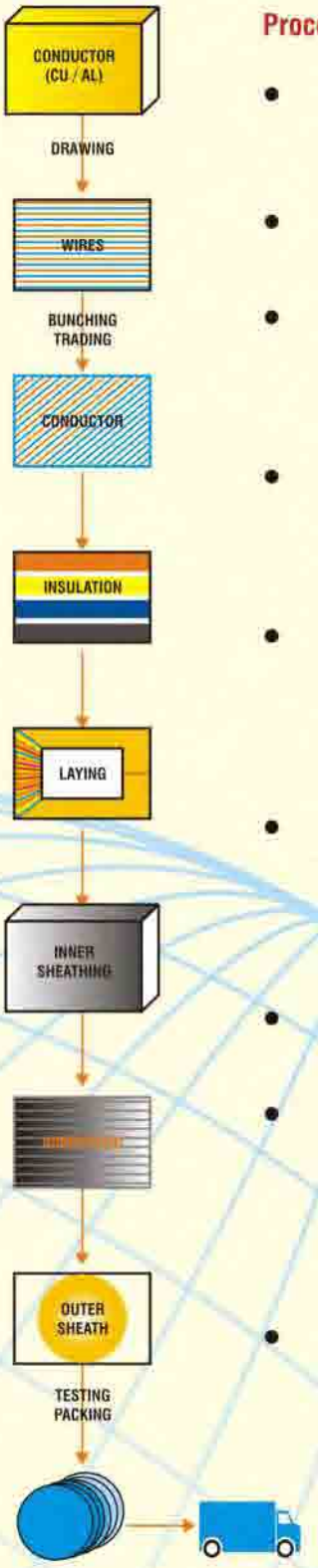
A) The drums should be rolled only in the direction of the arrow, indicated on them.

B) No cable drums shall be slung except by a bar through the centre bore. Also the cable drums shall be stored away from Boilers or Furnaces.

C) When unloading the drums from lorry, a crane should be used if available and the drums carefully lifted and deposited on the ground. If crane is not available then the drums should be carefully rolled down a suitably arranged ramp or rails. Under no circumstances should the drums be dropped to the ground, as the shock may cause serious, damage to the inner layers of the cables.

D) Transportation over long distance, from storage site to work spots - The drums should be counted on cable drum wheels strong enough to carry the weight of the drums, which are pulled by means of rope, or alternatively they may be mounted on trailer or vehicle with low loading platform for transportation to the destination.

Process Flow Chart

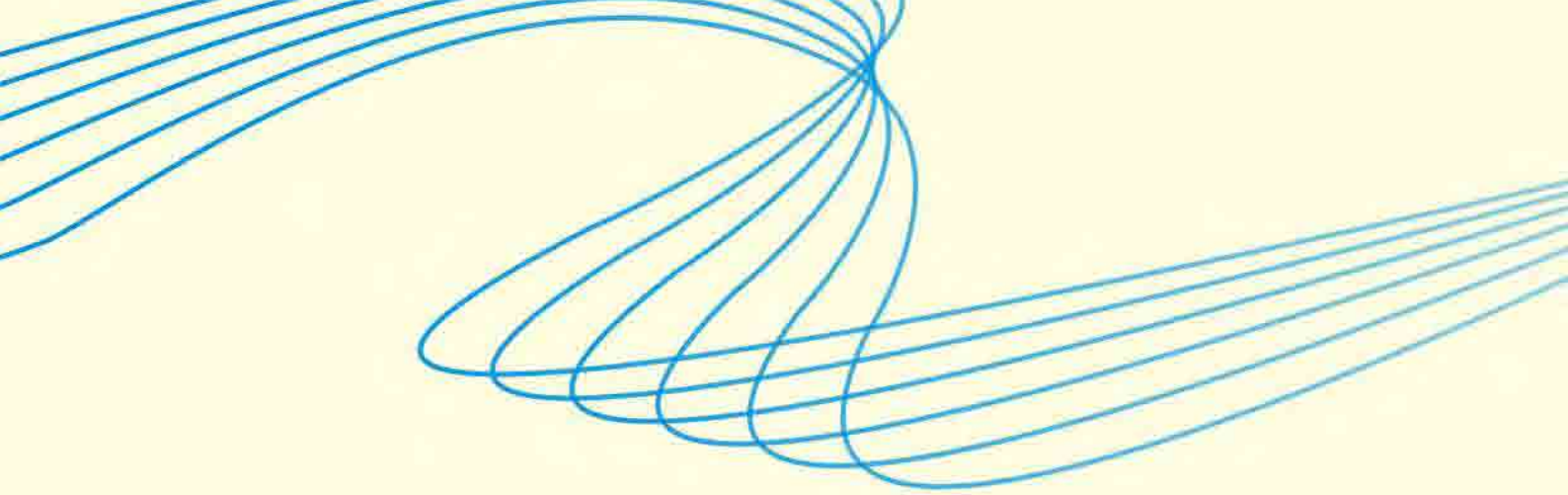


Process

- The finest electrolytic grade (E. C.) Grade pure copper or (E. C.) Grade aluminium is used for processing the conductor.
- The process begins from reducing the wire rod to desired diameter of wire (Wire Drawing).
- A pre determined number of wires (3-91) are then stranded together to form a conductor, in desired profile (Stranding). In case of flexible wires, this process of stranding is called Bunching.
- The conductor is then coated with uniform layer of PVC/PE compound or XLPE compound, with the specified thickness and colour as the case may be, which is called a core insulation.
- Required number of cores are then put together along with fillers and laid up to form a cable (cable-laying up) these number of cores vary from 2 -100 depending upon the type of cable being manufactured.
- Incase of single core cable, the insulated core is sent for sheathing directly. But in respect of multi core armoured cable, the laid up cable is given an extruded/taped coating of PVC/PE to cover the laid up cable, which is called inner sheath.
- The inner Sheathed cable is then armoured either with flat steel strip or with round steel wire.
- The armoured cable is then covered with PVC/PE compound of required quality and colour to give it what is called the outer sheath. Outer sheath is marked with the trade marks of the company, voltage grade, specification details & any other details as required by the customer.
- The finished cable is then wound on wooden drums and sent to the laboratory for pre-despatch testing. Exhaustive tests are done & then only cable is despatched.

Nomenclature of Symbols

A	**Aluminium conductor** When type designation does not contain 'A' in the beginning then the cable is with copper conductor
2X	**XLPE**
Y	**PVC insulation** When last in type designation, it stands PVC outer sheath.
N	Galvanized round steel wire armour
F	Galvanizes flat steel strip armour.
re	Circular solid conductor
rm	Circular, stranded conductor
sm	Sector shaped, stranded conductor.



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