



VINAMRA
Cable Industries

PRODUCT CATLOGUE



ABOUT US

At Vinamra, we specialize in the design and production of high-quality cables that power industries, homes, and businesses around the world.

OUR PRODUCTS

- HT CABLE
- LT POWER CABLE
- AREAL BUNCHED CABLE



At **Vinamra Cable Industries**, we specialize in the design and production of high-quality cables that power industries, homes, and businesses around the world. With over 25 years of expertise, our mission is to deliver innovative and reliable cable solutions that meet the growing needs of our clients. We pride ourselves on using state-of-the-art technology and the best raw materials to create cables that ensure safety, durability, and optimal performance

Overview:

The rapid industrialization and global competition have placed significant responsibilities on Indian manufacturers to adopt strategic initiatives that foster the development of infrastructure and enhance work culture. With over two decades of experience in various cable manufacturing processes and a substantial market share, the group company has swiftly recognized these challenges and has committed to consolidating its manufacturing capabilities under one cohesive roof.

Business Mission:

The company is led by a highly competent, dynamic, and progressive management team that possesses a modern outlook and is dedicated to delivering exceptional value to its customers. Vinamra Cable Industries is committed to executing its business mission with unwavering dedication and zeal.

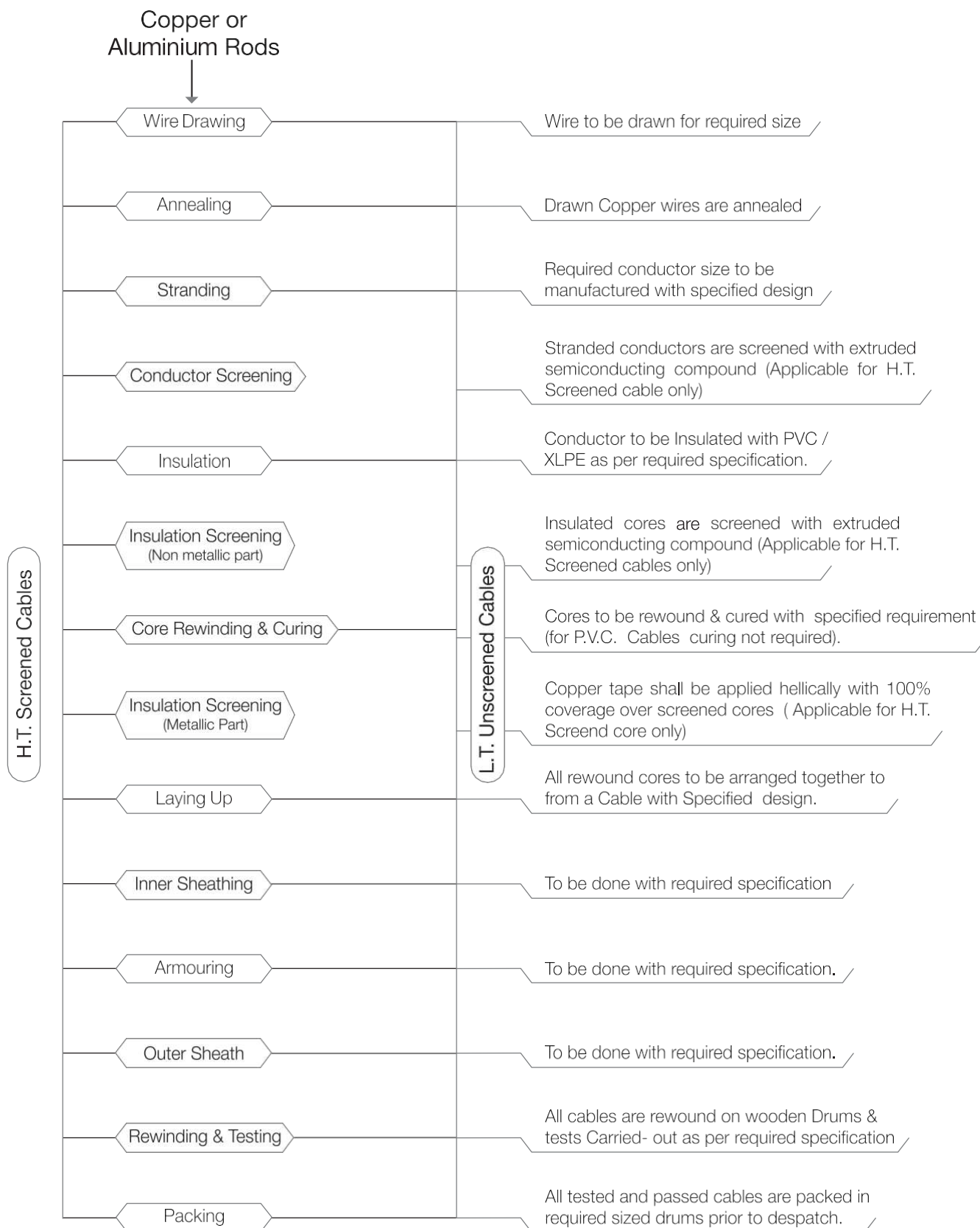


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Details for BIS Licences		
For PVC Cables	For XLPE Cables	For PVC Cable
IS:1554 (Part-1), 1988	IS:7098 (Part-1), 1988	IS:694 (Part-1), 1988
	IS:14255(Part-1)	

Manufacturing Process



Manufacturing of Cables

Cables with Aluminium and Copper conductor and polymer insulation are manufactured at Vinamra Cable Industries. Delhi. Essentially cables comprise of conductors, insulation, inner-sheath, armour and outersheath. The brief description of the process is mentioned as under:

CONDUCTOR

VINAMRA Cables are available with both aluminum and copper conductors. It is manufactured with solid/Stranded Circular/ Shaped Aluminium / CopperConductor. Stranding makes Cables flexible and easy to handle while shaping makes them compact.

Compaction is provided to all stranded conductor constructions as under:

1. Circular Conductor With one wire in the centre conductor contains 6, 12, 18, 24, 30... wire layers in either unilay or opposite helical directions. The conductor is sized upto 92% compaction.
2. Shaped Conductors In all multicore cables from 16 Sq. mm size, conductors are "shaped". Compaction degree in multicore power cables is upto 92%.
3. Segmental Conductor As a special case VINAMRA cables of 1600 sq. mm are made up of segmental conductors.

The conductor is manufactured in equal segments and compacted, then laid together. This reduces A.C. losses in the large sized conductor, which are due to skin and proximity effects.

VINAMRA has special construction of conductor to suggest to its customer for meeting their specific need.

VINAMRA copper conductor cables are of the same construction that of cables with Aluminium conductor except for high tensile strength, superior conductivity, better flexibility and ease of jointing, copper cables are used in control, instrumentation, winding, submarine, mining and ship wiring etc. etc applications.

All conductors for VINAMRA cables are manufactured strictly in accordance with National and International specifications.

National specifications IS:8130

International specification IEC:60228 / BS:6360

DIELECTRIC INSULATION

Insulation for VINAMRA cables is strictly as per National and International specifications.

VINAMRA cables are designed and manufactured with polymer dielectrics to bear thermal and thermomechanical stresses safely at continuous normal and short circuit temperature conditions.

VINAMRA cables are available with both thermoplastic & thermo setting insulations.

- PVC Cables Thermoplastic dielectric

- XLPE Cables Thermo setting dielectric

VINAMRA PVC cables use PVC compounds that take care of over load and short circuit current with both coarse & fine protection systems.

VINAMRA XLPE cables use XLPE compound with anti oxidant stabilizers and traces of aromatic polynuclear hydrocarbon. Thus improving electrical treeing characteristics and mechanical strength of insulation.

VINAMRA cables are friendly during continuous, emergency and short circuit conditions.

Though there is no change in basic design of VINAMRA cables yet the latest manufacturing process gives improved reliability and compactness to cables. The relative thermal expansion during short circuit between dielectric and conductor is therefore limited to minimum both in PVC & XLPE, thus limiting displacement of cores in cables during short circuit.

Insulation for VINAMRA Cables are strictly manufactured and applied over conductor in accordance with National and International specifications:

National Specification IS:5831/IS:7098

International Specifications BS:6746/BS:5467/IEC:60502

SCREENING

XLPE Cables with rated voltage over 3300V shall be provided with conductor and insulation screening as follows:

Conductor Conductor shall be screened with extruded

Screen Semiconducting compound as per IS:7098 part 2.

Insulation Screen

Insulation screening shall consist of non-metallic

Part in combination with metallic part. Non metallic part shall consist of either semi conducting compound tape applied hellically or extruded layer of semi conducting compound, applied directly over insulation. Over this, metallic part (copper tape) shall be applied hellically with overlap as per IS:7098 part 2.

To avoid the cavities and voids formation in dielectric particularly on bending operation of cable, perfect bonding of insulation and screening is required. To ensure this VINAMRA applying conductor screen, insulation and insulation screen (non-metallic part) in one operation through tripple extrusion.

LAYING UP

Cores are tested on line during production both for physical and electrical characteristics. Control is observed within tight tolerance limits for dimensions in case of PVC/XLPE insulation. For multicore cables cores are laid up on our latest laying up machine equipped with sector correction equipment. In case of XLPE insulated cores the same are cured so as to impart the requisite characteristics both electrical and mechanical and then are laid up.

INNERSHEATH

Laid up cables are provided with inner sheath with high quality of PVC which acts as bedding for steel wire / strip armouring. Wherever required, filler cords are provided to maintain the circularity to laid up cables.

In VINAMRA Cable-polymers used for inner sheath are softer than insulation or outer sheath & are compatible with temperature ratings of cables & do not have deleterious effect on any other component of cable.

Inner sheath is applied either with extrusion or by wrapping. In VINAMRA Cable though the inner sheath is closely applied on the laid up cores, same can be stripped with ease without damaging insulation.

The inner sheath dimensions are maintained strictly in accordance with laid down specification .

Specification	For PVC Cables	IS:1554 (Part-I & II)
	For XLPE Cables	IS:7098 (Part-I & II)

ARMOURING

Mechanical protection to the cable is provided with armouring. VINAMRA single core cables are armoured with Aluminium or Aluminium alloy wire/strips, thus avoiding magnetic hysteresis losses on A. C. System.

Multicore cables are provided with galvanised steel wire/strips.

VINAMRA cables are provided with galvanised wire armouring, where cables are run vertically and are subjected to stresses.

VINAMRA Mining cables are armoured with steel wire and tinned copper wires, so as to provide conductivity of armour more than 75% of main conductor of cable.

VINAMRA cables armour wires/strips are of low resistivity material and meet the requirements of IS:3975.

VINAMRA armoured cables are with almost 95% armour coverage.

OUTER SHEATH

All VINAMRA Cables are provided with PVC/polymer outer sheath.

VINAMRA Cables are manufactured with various characteristics of sheathing compounds.

General purpose sheathing Compound	ST1
Heat resistant Compound for sheath (H.R.)	ST2
Fire Retardant Low	IEC 754 Part I
Smoke Compound (FRLS)	IEC 60332 Part I & III
	IEEE-383
	ASTM-2843
	ASTM-2863
Flame Retardant Compound (FR)	to EIL Specn.

Ultra Violet Radiations Resistance Compound to ASTM G-53.

Anti Rodent and Anti Termite Compound.

PVC compounds used for VINAMRA Cables are of various grades to meet specifications IS: 5831.

Advantage

In order to be identified, VINAMRA Cables have their name embossed/printed/ indented on outersheath at regular intervals on the outer sheath of VINAMRA Cables, Voltage Grade, cable size, trade name & year of manufacture are embossed, as desired.

Cables are sequentially marked for length at every metre throughout its length.

FINAL TESTING

Each VINAMRA Cable is tested for all applicable Routine Tests.

From a lot of Cable one cable of each type is tested for Type tests, as per relevant specifications.

VINAMRA conduct its testing at Vinamra India Ltd. cable plant at Alwar for acceptance test as per specification.

Testing of VINAMRA Cables are carried out as per VINAMRA Work Standards for testing, besides applicable standards.

ADVANTAGES OF PVC CABLES

1. A non-hygroscopic insulation almost unaffected by moisture.
2. Non-migration of compound permitting vertical installation.
3. Complete protection against most forms of electrolytic and chemical corrosion.
4. A tough and resilient sheath with excellent fire - resisting qualities.
5. Good ageing characteristics.

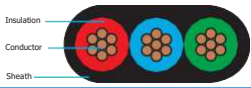
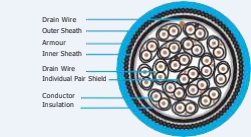
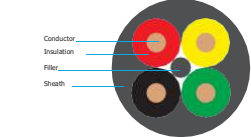
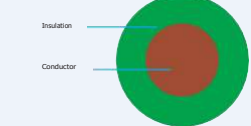
ADVANTAGES OF XLPE CABLES

1. Higher Current Rating.
2. Higher Short Circuit Rating.
3. Longer Service Life.
4. For a short time it can withstand maximum 130°C and is favourable to endure short circuit stresses.
5. It is less sensitive to the setting of the network protection.
6. Because of the thermosetting process taking place due to the effect of cross linking, the crack resistance is increased.
7. Due to the chemical cross-linking internal stresses are reduced. Consequently the material is less sensitive during manufacturing process to the setting of the cooling gradient.
8. The thermal resistivity of cross-linked material is favourably low, compared to thermoplastic material.
9. The low dielectric loss is a significant advantage.
10. The excellent mechanical features of the insulation improves the protection against external effects.
11. The resistance of the XLPE to acids, alkalies is outstanding and is often compensating the adverse environmental influences.

Cable range at a glance

Application	Type & Size	Options	Cross Sectional View
Cables for Power Supply to Residential, Commercial & Industrial units	PVC/XLPE Power cables for 1.1 & 3.3 kv for Electrical Substations as per IS:1554-I & 2/ IS 7098-1 & 2 Sizes: Single Core 10-1000 sq. mm Multicore 6-630 sq. mm	Conductor - Stranded / Solid, Circular / Shaped Aluminium / Copper Insulation - PVC / HR PVC Inner Sheath - PVC / HR PVC / FRLS / PVC Unarmoured / Armoured - G.S. Round Wire/ Flat Strip or Aluminum Wire / Flat Strip Outer Sheath - PVC/ HR PVC/ FRLS PVC	
Cables for Power Supply to Residential, Commercial & Industrial units	PVC/XLPE Power cables for 1.1 & 3.3 kv for Electrical Substations as per IS:1554-I & 2/ IS 7098-1 & 2 Sizes: Single Core 10-1000 sq. mm Multicore 6-630 sq. mm	Conductor - Stranded / Solid, Circular / Shaped Aluminium / Copper Insulation - PVC / HR PVC Inner Sheath - PVC / HR PVC / FRLS / PVC Unarmoured / Armoured - G.S. Round Wire/ Flat Strip or Aluminum Wire / Flat Strip Outer Sheath - LSZH Compound	
Arial Bunched / Bundled required for over head power distribution	PE/XLPE insulated 1.1 kv to 3.3 kvas per IS:14255 & IS:7098-I	Conductor - Stranded Circular compacted Aluminium Insulation - PE/XLPE Messenger conductor - All Aluminium Alloy-Bare/ Insulated Street Light Cond. - Stranded Circular Compacted Aluminium, Bare/Insulated	
Fire Survival Cables for fire hazardous/ prone areas	Annealed electrolytic copper conductor, heat barrier, XLPE, LSZH inner sheath G.S. wire and LSZH outer sheath as per IS 7098-I/ BS 7846 testing as per IEC 331 & BS 6387	Conductor - Solid/Stranded, Plain /Tinned Heat Barrier - Mica Tape Insulation - XLPE Innersheath - LSZH Compound Armoured - G.S. Round Wire/ Flat Strip Outersheath - LSZH Compound	
Solar cable for Solar plant	Trinned cooper XLPO insulated & LSZH sheathed 1100V AC/ 1800V DC as per TUV specifications 2PFG - 1169/08-2007	Conductor - Flexible trinned copper Insulation - Cross linked polyolefin compound Sheath - XLPO/ LSZH Compound	
Copper Control Cables for Power Switch yard Control / Relay Equipment	Annealed electrolytic copper conductor, PVC/XLPE insulated, PVC sheathed 650/ 1100V grade as per IS: 1554-I & IS: 7098-I Sizes : 1.5 / 2.5 sq. mm upto 61 core 4 & 6 Sq. mm upto 4 core	Conductor - Solid/Stranded, Plain /Tinned Insulation - PVC/HR PVC/XLPE Innersheath - PVC/HR PVC/FRLS/Zero Halogen Unarmoured / Armoured - G.S. Round Wire / Flat Strip Outersheath - PVC/HR PVC/FRLS/Zero Halogen Additional Option : Overall shielding with Aluminum mylar tape with 100% coverage & 25% overlap on laid up cores for static noise rejection.	
Telecom / Switch board cables for Indoor Telephones	Annealed Copper conductor, PVC Insulated as per DOT TEC Spec No: G/WIR-06/02 Sizes : 0.4 / 0.5 / 0.6 / 0.7 / 0.9 mm	Conductor - Tinned / Plain Insulation - PVC / HR PVC / Nylon Innersheath - PVC/ HR PVC/ FRLS Unarmoured / Armoured - G.S. round wire / Flat Strip Outer sheath - PVC/HR PVC/FRLS Additional Option - Individual / Overall pair/ Shielding / Screening	
Coaxial cables for Telcom / icrowave / CATV / MATV industry	Available in specified RG & UR Series as per MIL-C-17 / BS: 2316 / IS: 5608 / IS: 11967 Sizes : Suitable for Impedance of 50 / 75 / 100 / 125 ohms	Conductor - Plain / Tinned / Copper Clad Steel / Silver Plated Insulation - Solid / Foam / Semi air spaced Screen - Single / Double braid Sheath - PVC / HR PVC / FRLS / P.E	

Cable range at a glance

Application	Type & Size	Options	Cross Sectional View
Flat cables for Submersible Pumps & Motors	Stranded Plain copper, PVC insulated & PVC sheathed of 1.1kV grade as per IS: 694 Sizes : 3 core - 1.5 to 50 sq. mm	Insulation - PVC / HR PVC Sheathing - PVC / HR PV	
Instrumentation Signal Cables for Process control & Instrumentation	PVC Sheathed 225/650/ 1100 V grade cables as per BS: 5308 / DIN VDE 0815 & 816 / IS: 1554 / IEC: 189 Sizes: 0.5/0.75/1.0/1.5 sq. mm	Conductor - Standed / Solid, plain / tinned Insulation - PVC / HR PVC / P.E / Zero Halogen Shielding - Individual Pair / over all pairs Drain wire - Solid Stranded Innersheath - PVC / HR PVC Zero Halogen Unarmoured/Armoured-G.S. Round Wire, Flat Strip Outersheath - PVC / HR PVC/ FRLS / Zero Halogen Compound	
Flexible & Cord Cables for appliances, Machine Tools & Equipment Wiring	Multistrand, flexible, bright annealed electrolytic copper conductor, PVC insulated and sheathed upto 1100V as per IS:694 Sizes : Single, Two, Three or Four core upto 25 sq. mm	Insulation - PVC / HR PVC / FRLS / Zero Halogen Unsheathed /Sheathed - PVC / HR PVC / FRLS	
Wiring Cables for electrical industry	Multistrand Flexible, upto 1100V grade PVC Cables as per IS: 694 Sizes : Single core 1.0 - 630 sq. mm	Conductor - Bright Annealed Copper Insulation - PVC/ HR PVC/ FRLS PVC / Zero Halogen	

LT POWER & CONTROL CABLE



FEATURES

XLPE INSULATED CABLE

- HIGHER CURRENT RATING AND EMERGENCY OVERLOAD RATING
- SUPERIOR SHORT CIRCUIT RATING
- LOW DIELECTRIC LOSS
- MUCH BETTER INSULATION RESISTANCE
- RESISTANT TO CHEMICAL & CORROSSIVE GASES ETC.BETTER RESISTANCE TO SURGE CURRENTS
- MUCH LONGER LIFE OF THE CABLES

INSULATED MATERIAL

- XLPE
- PVC

PVC INSULATED CABLE

- HIGH DIELECTRIC STRENGTH & RESISTANCE TO S.C. VOLTAGE EFFECTS
- HIGH MECHANICAL STRENGTH & RESISTANCE TO ABRASION, VIBRATION & AGEINGRESISTANT TO MOST ACIDS, ALKALIES, TO TEMPORARY CONTACT WITH SOLVENTS, OILS AND LIQUID FLUIDS
- FLAME RETARDANT, DOES NOT SUPPORT COMBUSTION AND SELF EXTINGUISHING

APPLICABLE STANDARD

- 7098 PART-1
- 1554 PART-1



Table - 1

TECHNICAL DETAILS FOR VINAMRA 1.1

SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, UN-ARMOURED CABLES

Cable Code : AYY/YY

Physical Parameters

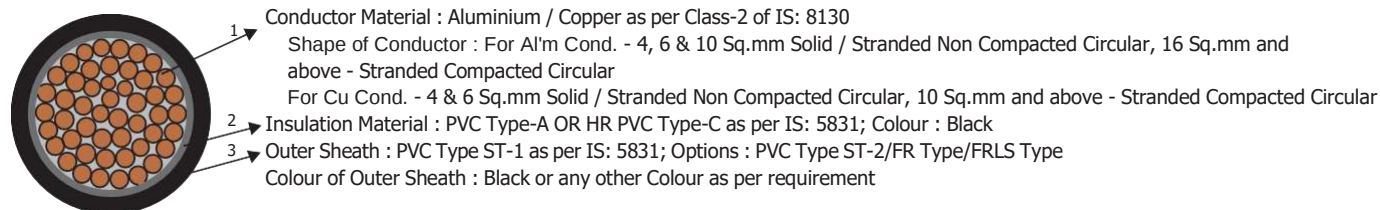
Ref Specification : IS 1554 Part-1

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Nominal Outer Sheath Thickness	Approx. Over- all Dia of Cable	Approx. Weight of Cable	
						With Al'm Cond.	With Al'm Cond.
	Aluminium	Copper				AYY	YY
Sqmm	No's	No's	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	1.80	8	80	100
6	1/3	1/3	1.00	1.80	9	90	120
10	1/7	6	1.00	1.80	10	110	170
16	6	6	1.00	1.80	10	150	250
25	6	6	1.20	1.80	12	200	350
35	6	6	1.20	1.80	13	250	450
50	6	6	1.40	1.80	15	300	600
70	12	12	1.40	1.80	16	400	800
95	15	15	1.60	1.80	18	500	1050
120	15	18	1.60	2.00	20	600	1300
150	15	18	1.80	2.00	22	700	1600
185	30	30	2.00	2.00	24	850	1950
240	30	34	2.20	2.00	27	1100	2500
300	30	34	2.40	2.00	30	1300	3100
400	53	53	2.60	2.20	34	1700	3950
500	53	53	3.00	2.20	37	2100	5000
630	53	53	3.40	2.40	42	2700	6450
800	53	53	3.40	2.40	46	3250	8050
1000	53	53	3.40	2.60	50	3950	9950

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.140	0.58	—	—	—	39	38	35	0.304	0.460
6	4.61	3.08	5.53	3.70	0.127	0.68	39	37	35	49	48	44	0.456	0.690
10	3.08	1.83	3.70	2.20	0.118	0.83	51	51	47	65	64	60	0.760	1.15
16	1.91	1.15	2.29	1.38	0.110	1.01	66	65	64	85	83	82	1.22	1.84
25	1.20	0.727	1.44	0.87	0.105	1.05	86	84	84	110	110	110	1.90	2.88
35	0.868	0.524	1.04	0.63	0.100	1.22	100	100	105	130	125	130	2.66	4.03
50	0.641	0.387	0.769	0.464	0.098	1.22	120	115	130	155	150	165	3.80	5.75
70	0.443	0.268	0.532	0.322	0.091	1.43	140	135	155	190	175	205	5.32	8.05
95	0.320	0.193	0.384	0.232	0.088	1.47	175	155	190	220	200	245	7.22	10.90
120	0.253	0.153	0.304	0.184	0.086	1.62	195	170	220	250	220	280	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.085	1.62	220	190	250	280	245	320	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.084	1.62	240	210	290	305	260	370	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.082	1.72	270	225	335	345	285	425	18.20	27.30
300	0.100	0.0601	0.122	0.0733	0.080	1.74	295	245	380	375	310	475	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.080	1.81	325	275	435	400	335	550	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.079	1.86	345	295	480	425	355	590	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.077	1.87	390	320	550	470	375	660	47.90	72.50
800	0.0367	0.0221	0.0503	0.0303	0.077	1.98	450	380	610	530	425	725	60.80	92.00
1000	0.0291	0.0176	0.0422	0.0255	0.076	2.20	500	415	680	590	740	870	76.00	115.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 2

TECHNICAL DETAILS FOR VINAMRA 1.1

TWO CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, UN-ARMOURED CABLES

Cable Code : AYY/YY

Ref Specification : IS 1554 Part-1

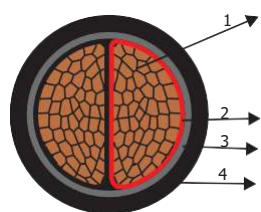
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
							With Al'm Cond.	With Cu Cond.
	Aluminium	Copper					AYY	YY
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	1.80	13	230	280
6	1/3	1/3	1.00	0.30	1.80	15	270	350
10	1/7	6	1.00	0.30	1.80	16	330	480
16	6	6	1.00	0.30	1.80	16	350	500
25	6	6	1.20	0.30	2.00	19	450	750
35	6	6	1.20	0.30	2.00	20	550	950
50	6	6	1.40	0.30	2.00	23	700	1250
70	12	12	1.40	0.30	2.00	25	850	1650
95	15	15	1.60	0.40	2.20	29	1150	2250
120	15	18	1.60	0.40	2.20	31	1300	2700
150	15	18	1.80	0.40	2.40	33	1600	3300
185	30	30	2.00	0.50	2.40	36	1900	4100
240	30	34	2.20	0.50	2.60	42	2450	5250
300	30	34	2.40	0.60	2.80	45	2950	6500
400	53	53	2.60	0.70	3.20	51	3800	8300
500	53	53	3.00	0.70	3.40	57	4750	10550
630	53	53	3.40	0.70	3.80	64	6000	13500

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular,
16 Sq.mm and above - Stranded Compacted Shaped
For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular,
16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : PVC Type-A OR HR PVC Type-C as per IS: 5831; Colour : Red & Black

Inner Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type

Outer Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	32	27	27	41	35	35	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	40	34	35	50	44	45	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	55	45	47	70	58	60	0.760	1.15
16	1.91	1.15	2.29	1.38	0.085	0.40	70	58	59	90	75	78	1.22	1.84
25	1.20	0.727	1.44	0.87	0.083	0.42	90	76	78	115	97	105	1.90	2.88
35	0.868	0.524	1.04	0.63	0.082	0.48	110	92	99	140	120	125	2.66	4.03
50	0.641	0.387	0.769	0.464	0.082	0.49	135	115	125	165	145	155	3.80	5.75
70	0.443	0.268	0.532	0.322	0.076	0.56	160	140	150	205	180	195	5.32	8.05
95	0.320	0.193	0.384	0.232	0.076	0.58	190	170	185	240	215	230	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	210	190	210	275	235	265	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	240	210	240	310	270	305	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	275	240	275	350	300	350	14.10	21.28
240	0.125	0.0754	0.151	0.0912	0.073	0.67	320	275	325	405	345	410	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	355	305	365	450	385	465	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	385	345	420	490	485	530	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.072	0.70	425	380	475	540	460	605	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	465	415	540	640	550	785	47.90	72.55

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 3

TECHNICAL DETAILS FOR VINAMRA 1.1 KV THREE CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, UN-ARMoured CABLES

Cable Code : AYYYY

Physical Parameters

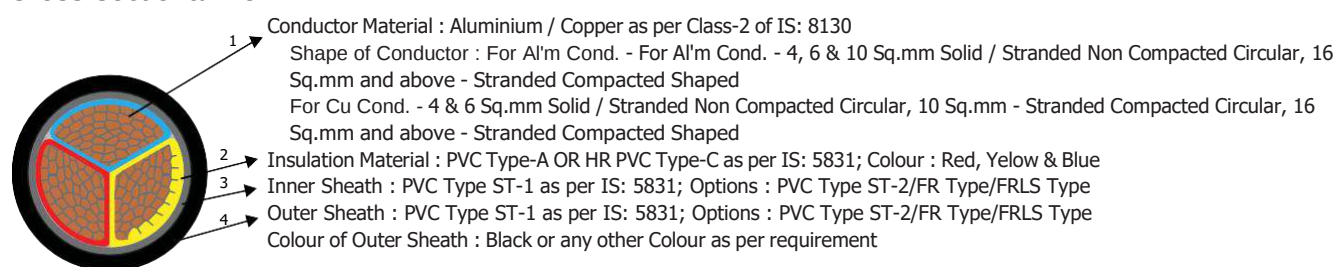
Ref Specification : IS 1554 Part-1

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
							With Al'm Cond.	With Cu Cond.
	Aluminium	Copper					AYY	YY
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	1.80	14	250	330
6	1/3	1/3	1.00	0.30	1.80	15	310	420
10	1/7	6	1.00	0.30	1.80	17	370	580
16	6	6	1.00	0.30	1.80	18	450	700
25	6	6	1.20	0.30	2.00	21	600	1050
35	6	6	1.20	0.30	2.00	23	700	1350
50	6	6	1.40	0.30	2.00	26	900	1750
70	12	12	1.40	0.40	2.20	29	1200	2400
95	15	15	1.60	0.40	2.20	33	1500	3200
120	15	18	1.60	0.40	2.20	36	1800	3900
150	15	18	1.80	0.50	2.40	40	2200	4800
185	30	30	2.00	0.50	2.60	43	2700	5950
240	30	34	2.20	0.60	2.80	49	3550	7750
300	30	34	2.40	0.60	3.00	54	4200	9600
400	53	53	2.60	0.70	3.40	61	5350	12200
500	53	53	3.00	0.70	3.60	69	6750	15500
630	53	53	3.40	0.70	4.00	77	8550	19900

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	28	23	23	36	30	30	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	35	30	30	45	38	39	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	46	39	40	60	50	52	0.760	1.15
16	1.91	1.15	2.29	1.38	0.085	0.40	60	50	51	77	64	66	1.22	1.84
25	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
35	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
50	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
70	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
95	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
500	0.0605	0.0366	0.759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 4

TECHNICAL DETAILS FOR VINAMRA 1.1 KV, THREE & HALF CORE ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, UN-ARMOURED CABLES

Cable Code : AYY/YY

Ref Specification : IS 1554 Part-1

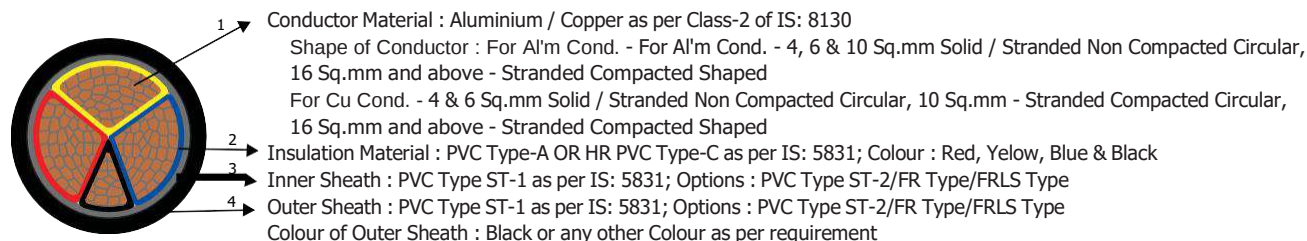
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
							With Al'm Cond.	With Cu Cond.
	Aluminium	Copper					AYY	YY
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km
3X 25+16	6/6	6/6	1.20/1.00	0.30	2.00	23	700	1250
3X35+16	6/6	6/6	1.20/1.00	0.30	2.00	25	800	1550
3X 50+25	6/6	6/6	1.40/1.20	0.30	2.20	28	1050	2050
3X70+35	12/6	12/6	1.40/1.20	0.40	2.20	32	1400	2800
3X95 +50	15/6	15/6	1.60/1.40	0.40	2.20	36	1800	3700
3X120+70	15/12	18/12	1.60/1.40	0.50	2.40	39	2200	4700
3X150+70	15/12	18/12	1.80/1.40	0.50	2.40	43	2550	5550
3X 185+95	30/15	30/15	2.00/1.60	0.50	2.40	47	3150	6900
3X240+120	30/15	34/18	2.20/1.60	0.60	3.00	53	4050	8950
3X300+150	30/15	34/18	2.40/1.80	0.60	3.20	58	4900	11100
3X400+185	53/30	53/30	2.60/2.00	0.70	3.40	64	6150	14000
3X500+240	53/30	53/34	3.00/2.20	0.70	3.80	76	7900	18050
3X630+300	53/30	53/34	3.40/2.40	0.70	4.00	84	9900	22950

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
3X25+16	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
3X35+16	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
3X50+25	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
3X70+35	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
3X95+50	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
3X120+70	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
3X150+70	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
3X185+95	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
3X240+120	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
3X300+150	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
3X400+185	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
3X500+240	0.0605	0.0366	0.0759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
3X630+300	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 5

TECHNICAL DETAILS FOR VINAMRA 1.1 FOUR CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, UN-ARMOURED CABLES

Cable Code : AYY/YY

Physical Parameters

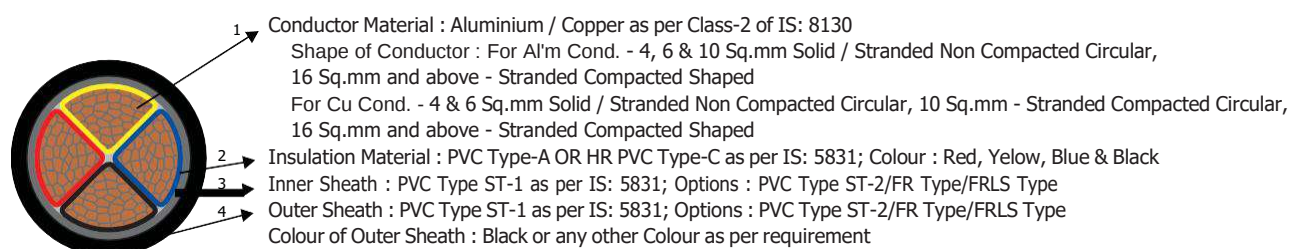
Ref Specification : IS 1554 Part-1

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
							With Al'm Cond.	With Cu Cond.
	Aluminium	Copper					AYY	YY
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	1.80	15	290	400
6	1/3	1/3	1.00	0.30	1.80	17	350	510
10	1/7	6	1.00	0.30	1.80	19	440	710
16	6	6	1.00	0.30	2.00	21	550	950
25	6	6	1.20	0.30	2.00	23	750	1350
35	6	6	1.20	0.30	2.00	26	900	1700
50	6	6	1.40	0.40	2.20	29	1200	2300
70	12	12	1.40	0.40	2.20	32	1500	3100
95	15	15	1.60	0.40	2.40	37	2000	4200
120	15	18	1.60	0.50	2.40	41	2400	5150
150	15	18	1.80	0.50	2.60	45	2900	6350
185	30	30	2.00	0.60	2.80	50	3600	7900
240	30	34	2.20	0.60	3.00	56	4550	10200
300	30	34	2.40	0.70	3.40	64	5650	12750
400	53	53	2.60	0.70	3.60	70	7000	16100
500	53	53	3.00	0.70	4.00	79	8950	20550
630	53	53	3.40	0.70	4.00	89	11200	26250

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	28	23	23	36	30	30	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	35	30	30	45	38	39	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	46	39	40	60	50	52	0.760	1.15
16	1.91	1.15	2.29	1.38	0.085	0.40	60	50	51	77	64	66	1.22	1.84
25	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
35	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
50	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
70	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
95	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 6

TECHNICAL DETAILS FOR VINAMRA 1.1

SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, ARMoured CABLES

Ref Specification : IS 1554 Part-1

Cable Code : AYFaY/YFaY, AYWaY/YWaY

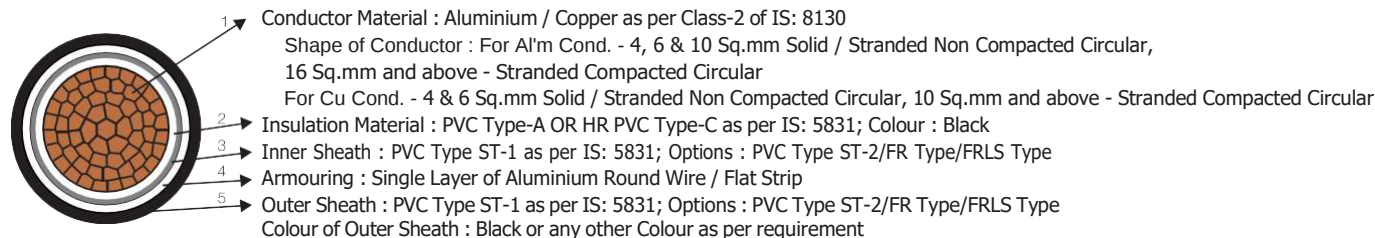
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Flat Strip Armoured (AYFaY/YFaY)					Round Wire Armoured (AYWaY/YWaY)				
				Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper					With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	11	130	160
6	1/3	1/3	1.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	12	150	190
10	1/7	6	1.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	170	240
16	6	6	1.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	250	300
25	6	6	1.50	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	300	450
35	6	6	1.50	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	350	550
50	6	6	1.70	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	400	700
70	12	12	1.70	N/A	N/A	N/A	N/A	N/A	1.40	1.40	19	500	900
95	15	15	1.90	4 X 0.80	1.40	20	600	1150	1.60	1.40	22	700	1250
120	15	18	1.90	4 X 0.80	1.40	22	700	1400	1.60	1.40	23	800	1450
150	15	18	2.10	4 X 0.80	1.40	23	800	1700	1.60	1.40	25	900	1750
185	30	30	2.30	4 X 0.80	1.40	25	1000	2050	1.60	1.40	27	1050	2150
240	30	34	2.50	4 X 0.80	1.40	28	1200	2600	1.60	1.56	30	1350	2750
300	30	34	2.70	4 X 0.80	1.56	31	1500	3250	1.60	1.56	33	1600	3350
400	53	53	3.00	4 X 0.80	1.56	35	1850	4100	2.00	1.56	38	2050	4300
500	53	53	3.40	4 X 0.80	1.56	39	2300	5150	2.00	1.72	42	2550	5400
630	53	53	3.90	4 X 0.80	1.72	44	2900	6650	2.00	1.88	46	3200	6950
800	53	53	3.90	4 X 0.80	1.88	48	3550	8350	2.00	1.88	51	3800	8600
1000	53	53	3.90	4 X 0.80	2.04	51	4250	10250	2.50	2.04	55	4700	10700

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
							For Aluminium Conductor			For Copper Conductor				
	Aluminium	Copper	Aluminium	Copper			Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.157	0.48	31	30	27	39	38	35	0.304	0.460
6	4.61	3.08	5.53	3.70	0.148	0.56	39	37	35	49	48	44	0.456	0.690
10	3.08	1.83	3.70	2.20	0.138	0.67	51	51	47	65	64	60	0.760	1.15
16	1.91	1.15	2.29	1.38	0.128	0.81	66	65	64	85	83	82	1.22	1.84
25	1.20	0.727	1.44	0.87	0.120	0.87	86	84	84	110	110	110	1.90	2.88
35	0.868	0.524	1.04	0.63	0.114	1.00	100	100	105	130	125	130	2.66	4.03
50	0.641	0.387	0.769	0.464	0.110	1.03	120	115	130	155	150	165	3.80	5.75
70	0.443	0.268	0.532	0.322	0.103	1.21	140	135	155	190	175	205	5.32	8.05
95	0.320	0.193	0.384	0.232	0.101	1.27	175	155	190	220	200	245	7.22	10.90
120	0.253	0.153	0.304	0.184	0.096	1.42	195	170	220	250	220	280	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.094	1.42	220	190	250	280	245	320	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.092	1.44	240	210	290	305	260	370	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.090	1.53	270	225	335	345	285	425	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.088	1.56	295	245	380	375	310	475	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.088	1.59	325	275	435	400	335	550	30.40	46.00
500	0.0605	0.0366	0.076	0.0459	0.087	1.67	345	295	480	425	355	590	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.086	1.67	390	320	550	470	375	660	47.88	72.50
800	0.0367	0.0221	0.0503	0.0303	0.083	1.75	450	380	610	530	423	725	60.80	92.00
1000	0.0291	0.0176	0.0422	0.0255	0.082	1.94	500	414	680	590	471	870	76.00	115.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 7

TECHNICAL DETAILS FOR VINAMRA 1.1

TWO CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, ARMoured CABLE

Ref Specification : IS 1554 Part-1

Physical Parameters

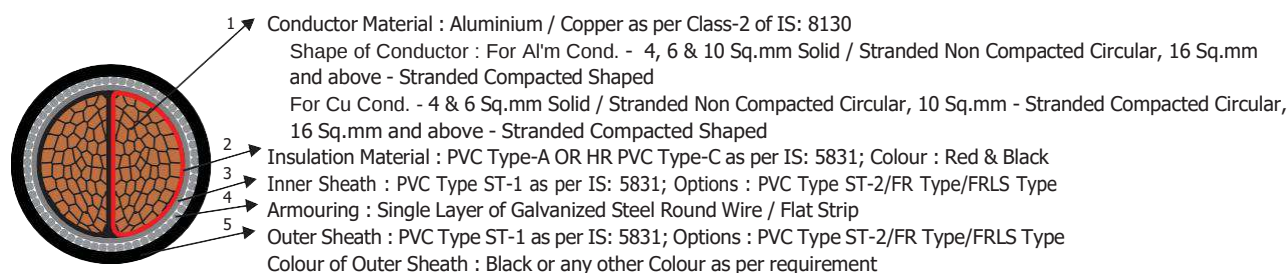
Cable Code : AYFY/YFY, AYWY/YWY

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (AYFY/YFY)					Round Wire Armoured (AYWY/YWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	460	520
6	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	530	620
10	1/7	6	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	18	620	780
16	6	6	1.00	0.30	4 X 0.80	1.40	17	500	700.0	1.60	1.40	18	700	850
25	6	6	1.20	0.30	4 X 0.80	1.40	19	600	950.0	1.60	1.40	21	850	1150
35	6	6	1.20	0.30	4 X 0.80	1.40	21	750	1150.0	1.60	1.40	22	950	1350
50	6	6	1.40	0.30	4 X 0.80	1.40	23	900	1450.0	1.60	1.56	25	1200	1750
70	12	12	1.40	0.30	4 X 0.80	1.56	26	1100	1900.0	1.60	1.56	27	1400	2200
95	15	15	1.60	0.40	4 X 0.80	1.56	29	1400	2500.0	2.00	1.56	32	1900	3000
120	15	18	1.60	0.40	4 X 0.80	1.56	31	1600	3000.0	2.00	1.72	34	2150	3550
150	15	18	1.80	0.40	4 X 0.80	1.72	34	1900	3650.0	2.00	1.72	36	2500	4200
185	30	30	2.00	0.50	4 X 0.80	1.88	37	2300	4450.0	2.00	1.88	40	2950	5100
240	30	34	2.20	0.50	4 X 0.80	2.04	42	2850	5700.0	2.50	2.04	46	3850	6700
300	30	34	2.40	0.60	4 X 0.80	2.20	46	3400	6950.0	2.50	2.20	49	4550	8100
400	53	53	2.60	0.70	4 X 0.80	2.36	51	4200	8750.0	3.15	2.52	56	6050	10600
500	53	53	3.00	0.70	4 X 0.80	2.68	57	5250	11050.0	3.15	2.84	62	7350	13150
630	53	53	3.40	0.70	4 X 0.80	2.84	64	6550	14050.0	4.00	3.00	70	9750	17250

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	32	27	27	41	35	35	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	40	34	35	50	44	45	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	55	45	47	70	58	60	0.760	1.150
16	1.91	1.15	2.29	1.38	0.085	0.40	70	58	59	90	75	78	1.22	1.840
25	1.20	0.727	1.44	0.870	0.083	0.42	90	76	78	115	97	105	1.90	2.880
35	0.868	0.524	1.04	0.630	0.082	0.48	110	92	99	140	120	125	2.66	4.030
50	0.641	0.387	0.769	0.464	0.082	0.49	135	115	125	165	145	155	3.80	5.750
70	0.443	0.268	0.532	0.322	0.076	0.56	160	140	150	205	180	195	5.32	8.050
95	0.320	0.193	0.384	0.232	0.076	0.58	190	170	185	240	215	230	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	210	190	210	275	235	265	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	240	210	240	310	270	305	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	275	240	275	350	300	350	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.073	0.67	320	275	325	405	345	410	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	355	305	365	450	385	465	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	385	345	420	490	485	530	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.072	0.70	425	380	475	540	460	605	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	465	415	540	640	550	785	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 8

TECHNICAL DETAILS FOR VINAMRA 1.1

THREE CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, ARMoured CABLE

Ref Specification : IS 1554 Part-1

Physical Parameters

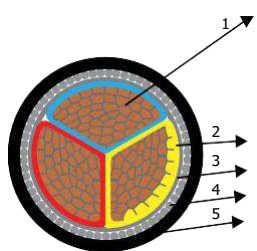
Cable Code : AYFY/YFY, AYWY/YWY

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (AYFY/YFY)					Round Wire Armoured (AYWY/YWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	460	540
6	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	530	650
10	1/7	6	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.40	19	620	840
16	6	6	1.00	0.30	4 X 0.80	1.40	19	600	900.0	1.60	1.40	21	850	1100
25	6	6	1.20	0.30	4 X 0.80	1.40	22	800	1250.0	1.60	1.40	23	1050	1500
35	6	6	1.20	0.30	4 X 0.80	1.40	23	950	1550.0	1.60	1.40	25	1200	1800
50	6	6	1.40	0.30	4 X 0.80	1.56	27	1200	2050.0	1.60	1.56	28	1500	2300
70	12	12	1.40	0.40	4 X 0.80	1.56	30	1500	2700.0	2.00	1.56	32	2000	3200
95	15	15	1.60	0.40	4 X 0.80	1.56	33	1850	3550.0	2.00	1.72	36	2450	4150
120	15	18	1.60	0.40	4 X 0.80	1.72	36	2200	4300.0	2.00	1.72	39	2800	4900
150	15	18	1.80	0.50	4 X 0.80	1.88	40	2650	5250.0	2.00	1.88	43	3350	5900
185	30	30	2.00	0.50	4 X 0.80	1.88	44	3150	6400.0	2.50	2.04	48	4300	7500
240	30	34	2.20	0.60	4 X 0.80	2.20	50	4000	8250.0	2.50	2.20	53	5250	9450
300	30	34	2.40	0.60	4 X 0.80	2.36	55	4800	10150.0	2.50	2.36	58	6150	11450
400	53	53	2.60	0.70	4 X 0.80	2.52	61	5950	12750.0	3.15	2.68	66	8200	14950
500	53	53	3.00	0.70	4 X 0.80	2.84	69	7450	16200.0	3.15	3.00	74	10000	18700
630	53	53	3.40	0.70	4 X 0.80	3.00	77	9300	20600.0	4.00	3.00	84	13150	24400

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular, 16 Sq.mm and above - Stranded Compacted Shaped

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular, 16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : PVC Type-A OR HR PVC Type-C as per IS: 5831; Colour : Red, Yellow & Blue

Inner Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type

Armouring : Single Layer of Galvanized Steel Round Wire / Flat Strip

Outer Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	28	23	23	36	30	30	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	35	30	30	45	38	39	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	46	39	40	60	50	52	0.760	1.15
16	1.91	1.15	2.29	1.38	0.085	0.40	60	50	51	77	64	66	1.22	1.84
25	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
35	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
50	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
70	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
95	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 9

TECHNICAL DETAILS FOR VINAMRA 1.1 KV, THREE & HALF CORE ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, ARMoured CABLE

Ref Specification : IS 1554 Part-1

Physical Parameters

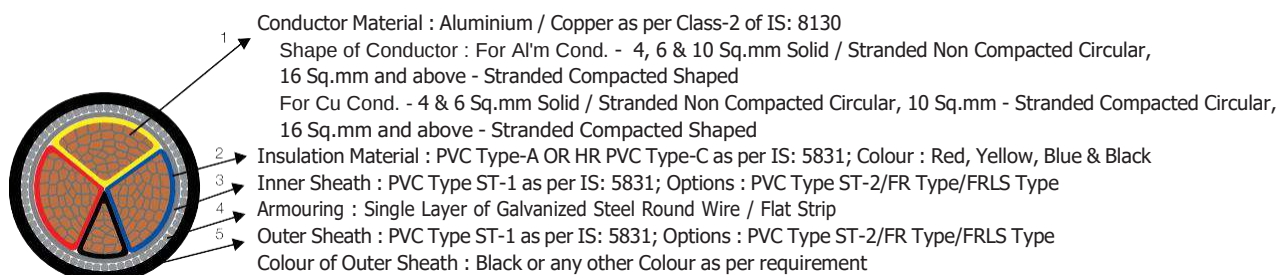
Cable Code : AYFY/YFY, AYWY/YWY

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (AYFY/YFY)					Round Wire Armoured (AYWY/YWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
3X 25 +16	6/6	6/6	1.20/1.00	0.30	4 X 0.80	1.40	23	900	1450	1.60	1.40	25	1150	1700
3X35 +16	6/6	6/6	1.20/1.00	0.30	4 X 0.80	1.40	25	1050	1800	1.60	1.40	27	1350	2050
3X 50+25	6/6	6/6	1.40/1.20	0.30	4 X 0.80	1.56	29	1350	2350	2.00	1.56	30	1650	2600
3X70+35	12/6	12/6	1.40/1.20	0.40	4 X 0.80	1.56	32	1700	3100	2.00	1.56	34	2200	3600
3X95 +50	15/6	15/6	1.60/1.40	0.40	4 X 0.80	1.56	36	2150	4050	2.00	1.72	39	2800	4750
3X120+70	15/12	18/12	1.60/1.40	0.50	4 X 0.80	1.72	40	2550	5050	2.00	1.88	42	3300	5750
3X150+70	15/12	18/12	1.80/1.40	0.50	4 X 0.80	1.88	44	3000	6000	2.00	1.88	46	3750	6700
3X 185+95	30/15	30/15	2.00/1.60	0.50	4 X 0.80	2.04	48	3650	7400	2.50	2.04	51	4850	8650
3X240+120	30/15	34/18	2.20/1.60	0.60	4 X 0.80	2.2	53	4500	9400	2.50	2.36	57	5850	10800
3X300+150	30/15	34/18	2.40/1.80	0.60	4 X 0.80	2.36	58	5450	11650	3.15	2.52	63	7600	13800
3X400+185	53/30	53/30	2.60/2.00	0.70	4 X 0.80	2.68	64	6750	14600	3.15	2.68	69	9000	16850
3X500+240	53/30	53/34	3.00/2.20	0.70	4 X 0.80	2.84	76	8550	18700	4	3.00	83	12400	22500
3X630+300	53/30	53/34	3.40/2.40	0.70	4 X 0.80	3.00	84	10600	23700	4	3.00	91	14750	27800

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
							For Aluminium Conductor			For Copper Conductor				
	Aluminium	Copper	Aluminium	Copper			Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
3X25+16	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
3X35+16	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
3X50+25	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
3X70+35	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
3X95+50	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
3X120+70	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
3X150+70	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
3X185+95	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
3X240+120	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
3X300+150	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
3X400+185	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
3X500+240	0.0605	0.0366	0.0759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
3X630+300	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 10

TECHNICAL DETAILS FOR VINAMRA 1.1 KV FOUR CORE, ALUMINIUM/COPPER CONDUCTOR, PVC INSULATED, ARMoured CABLES

Ref Specification : IS 1554 Part-1

Cable Code : AYFY/YFY, AYWY/YWY

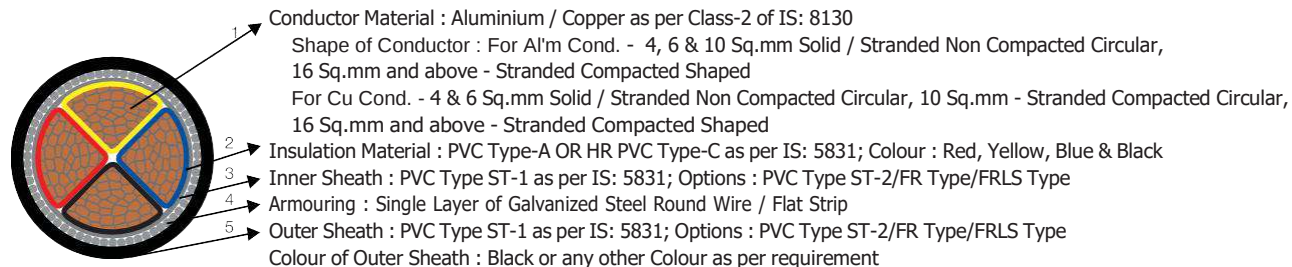
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (AYFY/YFY)					Round Wire Armoured (AYWaY/YWaY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	520	620
6	1/3	1/3	1.00	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	19	610	770
10	1/7	6	1.00	0.30	4 X 0.80	1.40	19	600	850	1.60	1.40	21	790	1060
16	6	6	1.00	0.30	4 X 0.80	1.40	21	750	1100.0	1.60	1.40	23	950	1350
25	6	6	1.20	0.30	4 X 0.80	1.40	24	950	1550.0	1.60	1.40	25	1200	1800
35	6	6	1.20	0.30	4 X 0.80	1.40	26	1150	2000.0	1.60	1.56	28	1450	2300
50	6	6	1.40	0.40	4 X 0.80	1.56	30	1450	2550.0	2.00	1.56	32	2000	3100
70	12	12	1.40	0.40	4 X 0.80	1.56	33	1850	3450.0	2.00	1.56	35	2400	4000
95	15	15	1.60	0.40	4 X 0.80	1.72	38	2350	4600.0	2.00	1.72	40	3000	5250
120	15	18	1.60	0.50	4 X 0.80	1.88	41	2800	5650.0	2.00	1.88	44	3500	6350
150	15	18	1.80	0.50	4 X 0.80	1.88	45	3300	6800.0	2.50	2.04	49	4500	7950
185	30	30	2.00	0.60	4 X 0.80	2.04	50	4000	8350.0	2.50	2.20	54	5350	9700
240	30	34	2.20	0.60	4 X 0.80	2.36	57	5100	10800.0	2.50	2.36	60	6500	12250
300	30	34	2.40	0.70	4 X 0.80	2.52	64	6200	13300.0	3.15	2.68	69	8500	15700
400	53	53	2.60	0.70	4 X 0.80	2.84	71	7650	16750.0	3.15	2.84	75	10200	19350
500	53	53	3.00	0.70	4 X 0.80	3.00	79	9600	21300.0	4.00	3.00	85	13550	25300
630	53	53	3.40	0.70	4 X 0.80	3.00	89	11700	27050.0	4.00	3.00	95	16350	31450

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 70 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	8.89	5.53	0.098	0.23	28	23	23	36	30	30	0.304	0.460
6	4.61	3.08	5.53	3.70	0.096	0.28	35	30	30	45	38	39	0.456	0.690
10	3.08	1.83	3.70	2.20	0.091	0.34	46	39	40	60	50	52	0.760	1.15
16	1.91	1.15	2.29	1.38	0.085	0.40	60	50	51	77	64	66	1.22	1.84
25	1.20	0.727	1.44	0.87	0.083	0.42	76	63	70	99	81	90	1.90	2.88
35	0.868	0.524	1.04	0.63	0.082	0.48	92	77	86	120	99	110	2.66	4.03
50	0.641	0.387	0.769	0.464	0.082	0.49	110	95	105	145	125	135	3.80	5.75
70	0.443	0.268	0.532	0.322	0.076	0.56	135	115	130	175	150	165	5.32	8.05
95	0.320	0.193	0.384	0.232	0.076	0.58	165	140	155	210	175	200	7.22	10.90
120	0.253	0.153	0.304	0.184	0.075	0.63	185	155	180	240	195	230	9.12	13.80
150	0.206	0.1240	0.247	0.1488	0.074	0.63	210	175	205	270	225	265	11.40	17.30
185	0.164	0.0991	0.197	0.1189	0.074	0.64	235	200	240	300	255	305	14.10	21.30
240	0.125	0.0754	0.151	0.0912	0.073	0.67	275	235	280	345	295	355	18.20	27.60
300	0.100	0.0601	0.122	0.0733	0.073	0.68	305	260	315	385	335	400	22.80	34.50
400	0.0778	0.0470	0.0961	0.0580	0.072	0.70	335	290	375	425	360	435	30.40	46.00
500	0.0605	0.0366	0.0759	0.0459	0.072	0.70	370	320	425	470	390	520	38.00	57.50
630	0.0469	0.0283	0.0610	0.0368	0.072	0.70	405	350	480	555	470	675	47.90	72.50

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 11

TECHNICAL DETAILS FOR VINAMRA 1.1 KV 1.5 SQMM COPPER CONDUCTOR, PVC INSULATED, ARMoured / UNARMoured CONTROL CABLES

Ref Specification : IS 1554 Part-1

Physical Parameters

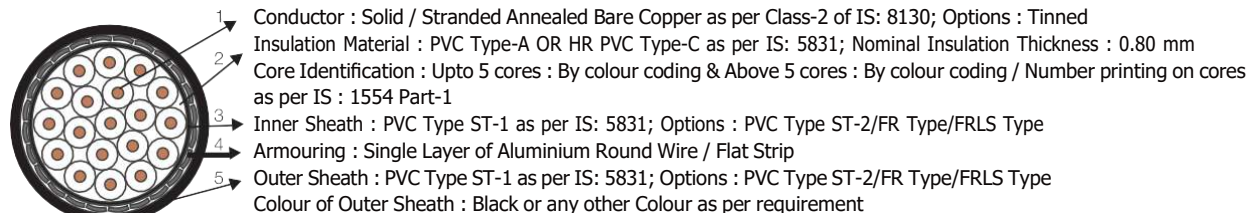
Cable Code : YY/YFY/YWY

No. of Cores	Minimum Inner Sheath Thickness	Unarmoured (YY)					Flat Strip Armoured (YFY)						Round Wire Armoured (YWY)					
		Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Dimension of Armour Strip	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Nominal Dia of Armour Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable	
			Solid Cond.	Std. cond.	Soild Cond	Std. cond.			Soild Cond	Std. cond.	Soild Cond	Std. cond.			Solid Cond	Std. cond.	Soild Cond	Std. cond.
No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km
2	0.30	1.80	11	11	160	170	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	13	340	360
3	0.30	1.80	11	12	190	200	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	14	360	380
4	0.30	1.80	12	13	220	230	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	14	400	420
5	0.30	1.80	13	14	260	270	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	15	460	480
6	0.30	1.80	14	15	300	310	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	16	510	530
7	0.30	1.80	14	15	280	300	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	16	530	550
10	0.30	1.80	17	18	380	400	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.40	19	20	700	740
12	0.30	1.80	18	18	430	450	4x0.8	1.24	18	19	620	640	1.60	1.40	20	21	810	850
14	0.30	1.80	18	19	490	500	4x0.8	1.40	19	20	680	730	1.60	1.40	21	22	880	940
16	0.30	1.80	19	20	540	560	4x0.8	1.40	20	21	760	780	1.60	1.40	22	23	970	1000
19	0.30	2.00	20	21	630	660	4x0.8	1.40	21	22	830	880	1.60	1.40	23	24	1060	1110
24	0.30	2.00	23	25	780	820	4x0.8	1.40	24	25	1020	1070	1.60	1.40	25	27	1220	1340
27	0.30	2.00	24	25	850	890	4x0.8	1.40	24	26	1110	1150	1.60	1.40	26	27	1360	1430
30	0.30	2.00	25	26	930	970	4x0.8	1.40	25	27	1180	1250	1.60	1.40	27	28	1450	1520
37	0.30	2.00	27	28	1100	1150	4x0.8	1.40	27	28	1380	1450	1.60	1.40	29	30	1690	1740
40	0.30	2.00	27	29	1170	1220	4x0.8	1.40	28	29	1460	1530	1.60	1.56	30	31	1780	1870
44	0.30	2.00	30	31	1290	1350	4x0.8	1.56	30	32	1630	1710	1.60	1.56	32	34	1950	2040
52	0.40	2.20	31	33	1520	1590	4x0.8	1.56	32	33	1850	1940	2.00	1.56	34	36	2390	2510
61	0.40	2.20	33	35	1740	1820	4x0.8	1.56	34	35	2090	2210	2.00	1.56	36	38	2660	2780

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

No. of Cores	Max. Conductor D.C.Resistance at 20 °C	Approx. Conductor A.C.Resistance		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
						For General Purpose Insulation			For Heat Resisting Insulation				
		at 70 °C	at 85 °C			Ground	Duct	Air	Ground	Duct	Air	For General Purpose Insulation	For Heat Resisting Insulation
No's	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
2	12.10	14.52	15.20	0.112	0.20	23	20	20	26	24	24	0.173	0.156
3	12.10	14.52	15.20	0.112	0.20	21	17	17	24	21	21	0.173	0.156
4	12.10	14.52	15.20	0.112	0.20	21	17	17	24	21	21	0.173	0.156
5	12.10	14.52	15.20	0.112	0.20	21	17	17	24	21	21	0.173	0.156
6	12.10	14.52	15.20	0.112	0.20	15	13	13	17	16	16	0.173	0.156
7	12.10	14.52	15.20	0.112	0.20	14	13	13	16	15	15	0.173	0.156
10	12.10	14.52	15.20	0.112	0.20	13	11	11	15	13	13	0.173	0.156
12	12.10	14.52	15.20	0.112	0.20	12	10	10	14	12	12	0.173	0.156
14	12.10	14.52	15.20	0.112	0.20	11	10	10	13	12	12	0.173	0.156
16	12.10	14.52	15.20	0.112	0.20	11	9	9	13	11	11	0.173	0.156
19	12.10	14.52	15.20	0.112	0.20	10	9	9	11	11	11	0.173	0.156
24	12.10	14.52	15.20	0.112	0.20	9	8	8	10	10	10	0.173	0.156
27	12.10	14.52	15.20	0.112	0.20	9	8	8	10	10	10	0.173	0.156
30	12.10	14.52	15.20	0.112	0.20	9	7	7	10	8	8	0.173	0.156
37	12.10	14.52	15.20	0.112	0.20	8	7	7	9	8	8	0.173	0.156
40	12.10	14.52	15.20	0.112	0.20	8	7	7	9	8	8	0.173	0.156
44	12.10	14.52	15.20	0.112	0.20	7	7	7	8	7	7	0.173	0.156
52	12.10	14.52	15.20	0.112	0.20	6	6	6	7	7	7	0.173	0.156
61	12.10	14.52	15.20	0.112	0.20	6	6	6	7	7	7	0.173	0.156

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 12

TECHNICAL DETAILS FOR VINAMRA 1.1 KV 2.5 SQMM COPPER CONDUCTOR, PVC INSULATED, ARMoured / UNARMoured CONTROL CABLES

Ref. Spec. : IS :1554PART -1

Cable Code : YY/YFY/YWY

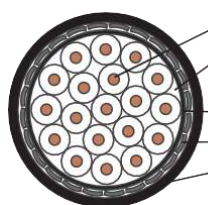
Physical Parameters

No. of Cores	Minimum Inner Sheath Thickness	Unarmoured (YY)					Flat Strip Armoured (YFY)						Round Wire Armoured (YWY)					
		Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Dimension of Armour Strip	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Nominal Dia of Armour Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable	
			Solid Cond.	Std. cond.	Soild Cond	Std. cond.			Soild Cond	Std. cond.	Soild Cond	Std. cond.			Solid Cond	Std. cond.	Soild Cond	Std. cond.
No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km
2	0.30	1.80	12	13	210	220	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	14	410	440
3	0.30	1.80	13	13	250	260	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	15	430	450
4	0.30	1.80	14	14	300	310	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	16	500	520
5	0.30	1.80	15	15	360	360	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	17	570	590
6	0.30	1.80	16	16	400	420	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	18	18	630	660
7	0.30	1.80	16	16	390	400	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	18	18	670	700
10	0.30	1.80	20	20	530	550	4x0.8	1.40	20	21	750	790	1.60	1.40	22	23	960	1010
12	0.30	2.00	21	21	620	650	4x0.8	1.40	21	22	820	870	1.60	1.40	23	24	1040	1100
14	0.30	2.00	21	22	700	730	4x0.8	1.40	22	23	920	970	1.60	1.40	24	24	1150	1190
16	0.30	2.00	22	23	780	810	4x0.8	1.40	23	24	1020	1050	1.60	1.40	25	26	1240	1300
19	0.30	2.00	24	25	890	930	4x0.8	1.40	24	25	1130	1190	1.60	1.40	26	27	1390	1450
24	0.30	2.00	27	29	1110	1150	4x0.8	1.40	28	29	1400	1470	1.60	1.56	30	31	1720	1790
27	0.30	2.00	28	29	1210	1260	4x0.8	1.40	28	30	1510	1580	1.60	1.56	30	32	1840	1920
30	0.30	2.00	29	30	1320	1380	4x0.8	1.56	30	31	1670	1750	1.60	1.56	31	33	1980	2060
37	0.40	2.20	32	33	1630	1700	4x0.8	1.56	32	34	1960	2050	2.00	1.56	34	36	2520	2620
40	0.40	2.20	33	34	1730	1800	4x0.8	1.56	33	35	2080	2160	2.00	1.56	36	37	2620	2740
44	0.40	2.20	35	37	1900	1980	4x0.8	1.56	36	37	2300	2380	2.00	1.56	38	40	2900	3020
52	0.40	2.20	37	38	2190	2280	4x0.8	1.56	37	39	2600	2700	2.00	1.72	40	42	3260	3400
61	0.40	2.20	39	41	2520	2620	4x0.8	1.56	40	41	2950	3050	2.00	1.72	42	44	3640	3810

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



- Conductor : Solid / Stranded Annealed Bare Copper as per Class-2 of IS: 8130; Options : Tinned
 - Insulation Material : PVC Type-A OR HR PVC Type-C as per IS: 5831; Nominal Insulation Thickness : 0.90 mm
 - Core Identification : Upto 5 cores : By colour coding & Above 5 cores : By colour coding / Number printing on cores as per IS : 1554 Part-1
 - Inner Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type
 - Armouring : Single Layer of Aluminium Round Wire / Flat Strip
 - Outer Sheath : PVC Type ST-1 as per IS: 5831; Options : PVC Type ST-2/FR Type/FRLS Type
- Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

No. of Cores	Max. Conductor D.C.Resistance at 20 °C	Approx. Conductor A.C.Resistance		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
						For General Purpose Insulation			For Heat Resisting Insulation				
		at 70 °C	at 85 °C			Ground	Duct	Air	Ground	Duct	Air	For General Purpose Insulation	For Heat Resisting Insulation
No's	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
2	7.41	8.89	9.34	0.107	0.22	32	27	27	38	32	32	0.288	0.260
3	7.41	8.89	9.34	0.107	0.22	27	24	24	30	28	28	0.288	0.260
4	7.41	8.89	9.34	0.107	0.22	27	24	24	30	28	28	0.288	0.260
5	7.41	8.89	9.34	0.107	0.22	27	24	24	30	28	28	0.288	0.260
6	7.41	8.89	9.34	0.107	0.22	21	18	18	24	21	21	0.288	0.260
7	7.41	8.89	9.34	0.107	0.22	20	17	17	22	20	20	0.288	0.260
10	7.41	8.89	9.34	0.107	0.22	18	15	15	20	16	16	0.288	0.260
12	7.41	8.89	9.34	0.107	0.22	17	14	14	19	16	16	0.288	0.260
14	7.41	8.89	9.34	0.107	0.22	16	13	13	18	15	15	0.288	0.260
16	7.41	8.89	9.34	0.107	0.22	15	13	13	17	15	15	0.288	0.260
19	7.41	8.89	9.34	0.107	0.22	14	12	12	16	14	14	0.288	0.260
24	7.41	8.89	9.34	0.107	0.22	13	11	11	14	13	13	0.288	0.260
27	7.41	8.89	9.34	0.107	0.220	12	10	10	13	12	12	0.288	0.260
30	7.41	8.89	9.34	0.107	0.22	12	10	10	13	12	12	0.288	0.260
37	7.41	8.89	9.34	0.107	0.22	11	9	9	12	10	10	0.288	0.260
40	7.41	8.89	9.34	0.107	0.22	11	9	9	12	10	10	0.288	0.260
44	7.41	8.89	9.34	0.107	0.22	10	9	9	11	10	10	0.288	0.260
52	7.41	8.89	9.34	0.107	0.22	9	8	8	10	10	10	0.288	0.260
61	7.41	8.89	9.34	0.107	0.22	8	8	8	9	9	9	0.288	0.260

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no.52 - 54

Table - 13

TECHNICAL DETAILS FOR VINAMRA 1.1 KV SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, UN-ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XY/2XY

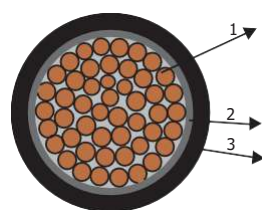
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper				With Al'm Cond.	With Cu Cond.
						A2XY	2XY
Sqmm	No's	No's	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	0.70	1.80	7	70	90
6	1/3	1/3	0.70	1.80	8	80	110
10	1/7	6	0.70	1.80	9	90	160
16	6	6	0.70	1.80	10	130	250
25	6	6	0.90	1.80	11	150	350
35	6	6	0.90	1.80	12	200	400
50	6	6	1.00	1.80	14	250	550
70	12	12	1.10	1.80	16	350	750
95	15	15	1.10	1.80	18	450	1000
120	15	18	1.20	1.80	19	500	1250
150	15	18	1.40	2.00	21	650	1500
185	30	30	1.60	2.00	24	800	1850
240	30	34	1.70	2.00	26	950	2400
300	30	34	1.80	2.00	29	1150	2950
400	53	53	2.00	2.20	33	1500	3750
500	53	53	2.20	2.20	36	1850	4750
630	53	53	2.40	2.20	40	2350	6100
800	53	53	2.60	2.40	44	2900	7750
1000	53	53	2.80	2.60	48	3600	9650

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular,

16 Sq.mm and above - Stranded Compacted Circular

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm and above - Stranded Compacted Circular

Insulation Material : XLPE (Cross linked polyethylene); Colour : Natural

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.136	0.29	—	—	—	48	47	45	0.376	0.572
6	4.61	3.08	5.90	3.94	0.128	0.34	48	45	45	60	59	57	0.564	0.858
10	3.08	1.83	3.94	2.34	0.118	0.42	62	62	61	80	78	77	0.940	1.43
16	1.91	1.15	2.44	1.47	0.108	0.50	81	80	83	104	102	106	1.50	2.28
25	1.20	0.727	1.54	0.931	0.102	0.52	99	90	115	130	115	145	2.35	3.57
35	0.868	0.524	1.11	0.671	0.097	0.60	117	110	135	155	140	175	3.29	5.00
50	0.641	0.387	0.820	0.495	0.092	0.63	138	125	170	185	165	215	4.70	7.15
70	0.443	0.268	0.567	0.343	0.088	0.68	168	155	210	225	200	270	6.58	10.01
95	0.320	0.193	0.411	0.248	0.085	0.79	204	185	255	265	235	330	8.93	13.59
120	0.253	0.153	0.325	0.197	0.082	0.79	230	210	300	300	265	380	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.082	0.79	265	230	342	335	300	430	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.082	0.79	295	260	385	380	335	495	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.079	0.84	340	300	450	435	385	590	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.078	0.86	390	335	519	490	430	670	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.077	0.88	450	380	605	550	480	780	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.076	0.90	500	430	700	610	530	900	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.075	0.94	555	485	809	680	590	1020	59.22	90.09
800	0.0367	0.0221	0.0530	0.0319	0.075	0.97	625	530	935	740	630	1140	75.20	114.40
1000	0.0291	0.0176	0.0444	0.0268	0.068	1.01	690	570	1065	780	660	1250	94.00	143.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 14

TECHNICAL DETAILS FOR VINAMRA 1.1

TWO CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, UN-ARMOURED CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XY/2XY

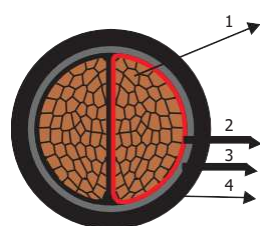
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper					With Al'm Cond.	With Cu Cond.
	No's	No's					A2XY Kg/Km	2XY Kg/Km
4	1/3	1/3	0.70	0.30	1.80	12	180	240
6	1/3	1/3	0.70	0.30	1.80	13	220	300
10	1/7	6	0.70	0.30	1.80	15	280	420
16	6	6	0.70	0.30	1.80	14	250	450
25	6	6	0.90	0.30	2.00	18	400	700
35	6	6	0.90	0.30	2.00	19	450	900
50	6	6	1.00	0.30	2.00	21	600	1150
70	12	12	1.10	0.30	2.00	24	750	1550
95	15	15	1.10	0.40	2.20	27	950	2100
120	15	18	1.20	0.40	2.20	29	1150	2550
150	15	18	1.40	0.40	2.20	31	1350	3100
185	30	30	1.60	0.50	2.40	35	1700	3850
240	30	34	1.70	0.50	2.60	40	2150	5000
300	30	34	1.80	0.60	2.80	43	2650	6200
400	53	53	2.00	0.60	3.00	48	3300	7850
500	53	53	2.20	0.70	3.40	54	4200	10000
630	53	53	2.40	0.70	3.80	59	5200	12750

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular, 16 Sq.mm and above - Stranded Compacted Shaped

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular, 16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : XLPE (Cross linked polyethylene); Colour : Red & Black

Inner Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C. Resistance at 20 °C		Approx. Conductor A.C. Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor			Aluminium	Copper
	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km			Ground	Duct	Air	Ground	Duct	Air		
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 15

TECHNICAL DETAILS FOR VINAMRA 1.1 THREE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, UN-ARMOURED CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XY/2XY

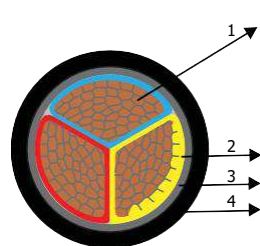
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper					With Al'm Cond.	With Cu Cond.
	Sqmm	No's	No's	mm	mm	mm	A2XY Kg/Km	2XY Kg/Km
4		1/3	1/3	0.70	0.30	1.80	13	200
6		1/3	1/3	0.70	0.30	1.80	14	250
10		1/7	6	0.70	0.30	1.80	16	310
16		6	6	0.70	0.30	1.80	17	350
25		6	6	0.90	0.30	2.00	20	500
35		6	6	0.90	0.30	2.00	22	600
50		6	6	1.00	0.30	2.00	24	800
70		12	12	1.10	0.40	2.20	28	1050
95		15	15	1.10	0.40	2.20	31	1300
120		15	18	1.20	0.40	2.20	34	1600
150		15	18	1.40	0.50	2.40	38	1950
185		30	30	1.60	0.50	2.60	42	2450
240		30	34	1.70	0.60	2.80	47	3100
300		30	34	1.80	0.60	3.00	52	3800
400		53	53	2.00	0.70	3.20	58	4750
500		53	53	2.20	0.70	3.60	65	6000
630		53	53	2.40	0.70	3.80	73	7500

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : XLPE (Cross linked polyethylene); Colour : Red, Yellow & Blue

Inner Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C. Resistance at 20 °C		Approx. Conductor A.C. Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor			Aluminium	Copper
	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km			Ground	Duct	Air	Ground	Duct	Air		
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 16

TECHNICAL DETAILS FOR VINAMRA 1.1 KV, THREE & HALF CORE ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, UN-ARMOURED CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XY/2XY

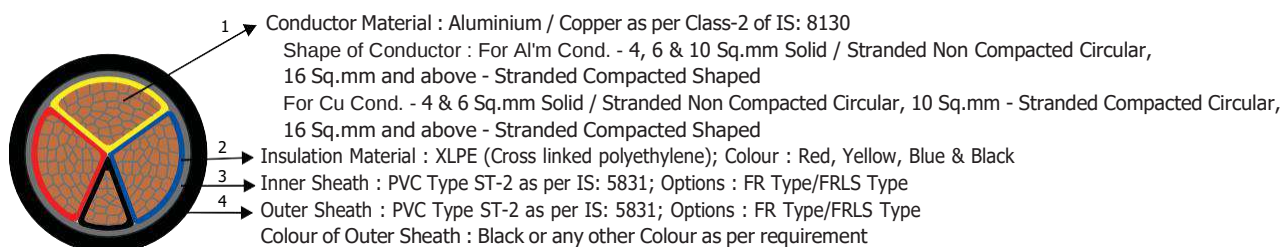
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper					With Al'm Cond.	With Cu Cond.
	Sqmm	No's					A2XY Kg/Km	2XY Kg/Km
3X25+16	6/6	6/6	0.90/0.70	0.30	2.00	21	600	1150
3X35+16	6/6	6/6	0.90/0.70	0.30	2.00	24	700	1400
3X50+25	6/6	6/6	1.00/0.90	0.30	2.00	26	900	1850
3X70+35	12/6	12/6	1.10/0.90	0.40	2.20	30	1200	2600
3X95+50	15/6	15/6	1.10/1.00	0.40	2.20	34	1500	3450
3X120+70	15/12	18/12	1.20/1.10	0.40	2.20	37	1800	4350
3X150+70	15/12	18/12	1.40/1.10	0.50	2.40	41	2250	5250
3X185+95	30/15	30/15	1.60/1.10	0.50	2.60	46	2800	6600
3X240+120	30/15	34/18	1.70/1.20	0.60	2.80	50	3550	8500
3X300+150	30/15	34/18	1.80/1.40	0.60	3.00	55	4300	10500
3X400+185	53/30	53/30	2.00/1.60	0.70	3.40	62	5450	13350
3X500+240	53/30	53/34	2.20/1.70	0.70	3.60	72	6900	17050
3X630+300	53/30	53/34	2.40/1.80	0.70	4.00	80	8700	21750

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor			Aluminium	Copper
	Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Ground	Duct	Air	Ground	Duct	Air		
3X25+16	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
3X35+16	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
3X50+25	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
3X70+35	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
3X95+50	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
3X120+70	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
3X150+70	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
3X185+95	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
3X240+120	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
3X300+150	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
3X400+185	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
3X500+240	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
3X630+300	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 17

TECHNICAL DETAILS FOR VINAMRA 1.1

FOUR CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, UN-ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XY/2XY

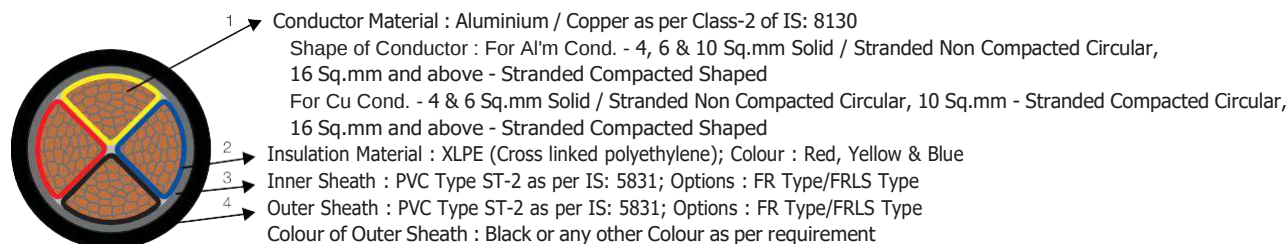
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper					With Al'm Cond.	With Cu Cond.
	A2XY	2XY					Kg/Km	Kg/Km
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	0.70	0.30	1.80	14	230	340
6	1/3	1/3	0.70	0.30	1.80	15	290	430
10	1/7	6	0.70	0.30	1.80	17	360	630
16	6	6	0.70	0.30	1.80	19	450	800
25	6	6	0.90	0.30	2.00	22	600	1200
35	6	6	0.90	0.30	2.00	24	750	1600
50	6	6	1.00	0.30	2.00	27	950	2000
70	12	12	1.10	0.40	2.20	31	1300	2900
95	15	15	1.10	0.40	2.20	35	1700	3900
120	15	18	1.20	0.50	2.40	39	2100	4900
150	15	18	1.40	0.50	2.60	43	2550	6000
185	30	30	1.60	0.50	2.80	48	3150	7450
240	30	34	1.70	0.60	3.00	54	4000	9700
300	30	34	1.80	0.70	3.20	61	4950	12050
400	53	53	2.00	0.70	3.60	68	6250	15350
500	53	53	2.20	0.70	3.80	75	7800	19450
630	53	53	2.40	0.70	4.00	84	9800	24850

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor			Aluminium	Copper
	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km			Ground	Duct	Air	Ground	Duct	Air		
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	μF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

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TECHNICAL DETAILS FOR VINAMRA 1.1

SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XFaY/2XFaY, A2XWaY/2XWaY

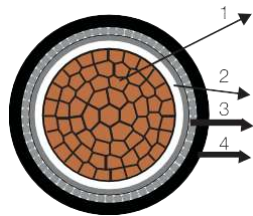
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Flat Strip Armoured (A2XFaY/2XFaY)					Round Wire Armoured (A2XWaY/2XWaY)				
				Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	With Al'm Cond.	With Cu Cond.					With Al'm Cond.	With Cu Cond.					
	Aluminium	Copper					A2XFaY	2XFaY				A2XWaY	2XWaY
Sqmm	No's	No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	1.00	N/A	N/A	N/A	N/A	N/A	1.40	1.24	10	120	150
6	1/3	1/3	1.00	N/A	N/A	N/A	N/A	N/A	1.40	1.24	11	130	170
10	1/7	6	1.00	N/A	N/A	N/A	N/A	N/A	1.40	1.24	12	150	220
16	6	6	1.00	N/A	N/A	N/A	N/A	N/A	1.40	1.24	12	200	300
25	6	6	1.20	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	250	400
35	6	6	1.20	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	300	500
50	6	6	1.3	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	360	650
70	12	12	1.40	N/A	N/A	N/A	N/A	N/A	1.40	1.24	18	450	850
95	15	15	1.40	4 X 0.80	1.40	19	500	1100	1.60	1.40	21	600	1150
120	15	18	1.50	4 X 0.80	1.40	21	600	1300	1.60	1.40	22	700	1400
150	15	18	1.70	4 X 0.80	1.40	23	700	1600	1.60	1.40	24	800	1650
185	30	30	1.90	4 X 0.80	1.40	25	900	1950	1.60	1.40	26	950	2050
240	30	34	2.00	4 X 0.80	1.40	27	1050	2500	1.60	1.40	29	1150	2600
300	30	34	2.10	4 X 0.80	1.56	30	1300	3100	1.60	1.56	32	1400	3200
400	53	53	2.40	4 X 0.80	1.56	34	1650	3900	2.00	1.56	36	1850	4100
500	53	53	2.60	4 X 0.80	1.56	37	2000	4900	2.00	1.56	40	2200	5100
630	53	53	2.80	4 X 0.80	1.72	42	2520	6300	2.00	1.72	44	2750	6500
800	53	53	3.10	4 X 0.80	1.72	46	3150	7950	2.00	1.88	49	3450	8250
1000	53	53	3.30	4 X 0.80	1.88	50	3850	9850	2.50	2.04	54	4300	10300

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular, 16 Sq.mm and above - Stranded Compacted Circular

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm and above - Stranded Compacted Circular

Insulation Material : XLPE (Cross linked polyethylene); Colour : Natural

Inner Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Armouring : Single Layer of Aluminium Round Wire / Flat Strip

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.152	0.22	—	—	—	48	47	45	0.376	0.572
6	4.61	3.08	5.90	3.94	0.144	0.26	45	45	40	60	59	57	0.56	0.858
10	3.08	1.83	3.94	2.34	0.133	0.31	59	62	53	80	78	77	0.94	1.43
16	1.91	1.15	2.44	1.47	0.122	0.40	76	80	73	104	102	106	1.50	2.29
25	1.20	0.727	1.54	0.931	0.116	0.40	99	90	115	130	115	145	2.35	3.58
35	0.868	0.524	1.11	0.671	0.110	0.47	117	110	140	155	140	175	3.29	5.01
50	0.641	0.387	0.820	0.495	0.103	0.50	138	125	170	185	165	215	4.70	7.15
70	0.443	0.268	0.567	0.343	0.099	0.55	168	155	210	225	200	270	6.58	10.01
95	0.320	0.193	0.411	0.248	0.097	0.64	204	185	255	265	235	330	8.93	13.59
120	0.253	0.153	0.325	0.197	0.093	0.67	230	210	300	300	265	380	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.091	0.67	265	230	342	335	300	430	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.090	0.67	295	260	385	380	335	495	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.086	0.72	340	300	450	435	385	590	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.085	0.75	390	335	519	490	430	670	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.085	0.75	450	380	605	550	480	780	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.083	0.77	500	430	700	610	530	900	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.082	0.81	555	485	809	680	590	1020	59.22	90.09
800	0.0367	0.0221	0.0530	0.0319	0.081	0.88	625	530	935	740	630	1140	75.20	114.40
1000	0.0291	0.0176	0.0444	0.0268	0.081	0.88	690	570	1065	780	660	1250	94.00	143.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

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TECHNICAL DETAILS FOR VINAMRA 1.1

TWO CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XFY/2XFY, A2XWY/2XWY

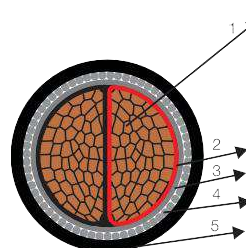
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	370	470
6	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	460	550
10	1/7	6	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	530	700
16	6	6	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.40	17	550	750
25	6	6	0.90	0.30	4 X 0.80	1.40	18	550	850.0	1.60	1.40	20	750	1050
35	6	6	0.90	0.30	4 X 0.80	1.40	20	650	1050.0	1.60	1.40	21	850	1250
50	6	6	1.00	0.30	4 X 0.80	1.40	22	750	1350.0	1.60	1.40	23	1000	1550
70	12	12	1.10	0.30	4 X 0.80	1.56	25	1000	1800.0	1.60	1.56	26	1250	2050
95	15	15	1.10	0.40	4 X 0.80	1.56	27	1250	2350.0	2.00	1.56	30	1700	2800
120	15	18	1.20	0.40	4 X 0.80	1.56	30	1450	2850.0	2.00	1.56	32	1950	3350
150	15	18	1.40	0.40	4 X 0.80	1.72	32	1700	3450.0	2.00	1.72	35	2250	4000
185	30	30	1.60	0.50	4 X 0.80	1.72	35	2050	4200.0	2.00	1.88	38	2700	4850
240	30	34	1.70	0.50	4 X 0.80	1.88	40	2550	5400.0	2.50	2.04	44	3550	6350
300	30	34	1.80	0.60	4 X 0.80	2.04	43	3000	6550.0	2.50	2.20	47	4100	7650
400	53	53	2.00	0.60	4 X 0.80	2.36	49	4000	8300.0	2.50	2.36	52	4950	9500
500	53	53	2.20	0.70	4 X 0.80	2.52	54	4650	10450.0	3.15	2.68	59	6500	12300
630	53	53	2.40	0.70	4 X 0.80	2.68	60	5700	13200.0	3.15	2.84	64	7800	15350

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : XLPE (Cross linked polyethylene); Colour : Red & Black

Inner Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Armouring : Single Layer of Galvanized Steel Round Wire / Flat Strip

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.1
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

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TECHNICAL DETAILS FOR VINAMRA 1.1

THREE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XFY/2XFY, A2XWY/2XWY

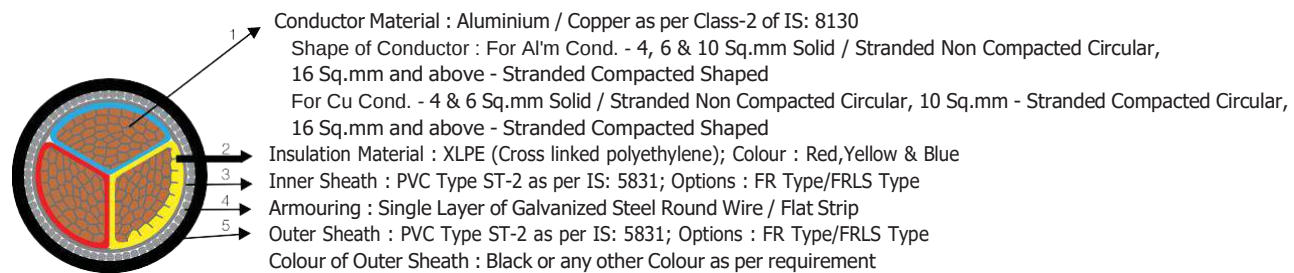
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	400	490
6	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	460	580
10	1/7	6	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	540	750
16	6	6	0.70	0.30	4 X 0.80	1.24	18	550	850.0	1.60	1.40	20	700	1000
25	6	6	0.90	0.30	4 X 0.80	1.40	20	700	1150.0	1.60	1.40	22	900	1350
35	6	6	0.90	0.30	4 X 0.80	1.40	22	850	1450.0	1.60	1.40	24	1050	1700
50	6	6	1.00	0.30	4 X 0.80	1.40	25	1000	1850.0	1.60	1.56	27	1300	2100
70	12	12	1.10	0.40	4 X 0.80	1.56	29	1350	2550.0	2.00	1.56	31	1800	3000
95	15	15	1.10	0.40	4 X 0.80	1.56	31	1600	3300.0	2.00	1.56	34	2150	3800
120	15	18	1.20	0.40	4 X 0.80	1.56	34	1900	4000.0	2.00	1.72	37	2550	4650
150	15	18	1.40	0.50	4 X 0.80	1.72	38	2350	4950.0	2.00	1.88	41	3000	5600
185	30	30	1.60	0.50	4 X 0.80	1.88	42	2850	6050.0	2.50	2.04	46	3950	7150
240	30	34	1.70	0.60	4 X 0.80	2.04	47	3500	7750.0	2.50	2.20	51	4800	9000
300	30	34	1.80	0.60	4 X 0.80	2.20	52	4250	9550.0	2.50	2.36	56	5600	10900
400	53	53	2.00	0.70	4 X 0.80	2.52	59	5350	12250.0	3.15	2.68	64	7450	14200
500	53	53	2.20	0.70	4 X 0.80	2.68	65	6550	15300.0	3.15	2.84	70	8900	17600
630	53	53	2.40	0.70	4 X 0.80	2.84	73	8150	19450.0	4.00	3.00	79	11800	23100

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	460	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 21

TECHNICAL DETAILS FOR VINAMRA 1.1 KV, THREE & HALF CORE ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XFY/2XFY, A2XWY/2XWY

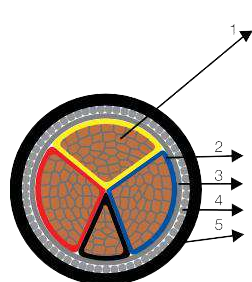
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thick- ness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thick- ness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
3X25 +16	6/6	6/6	0.90/0.70	0.30	4 X 0.80	1.40	22	800	1350	1.60	1.40	23	1000	1550
3X35 +16	6/6	6/6	0.90/0.70	0.30	4 X 0.80	1.40	24	950	1650	1.60	1.40	26	1200	1900
3X 50+25	6/6	6/6	1.00/0.90	0.30	4 X 0.80	1.40	27	1150	2150	1.60	1.56	28	1450	2400
3X70+35	12/6	12/6	1.10/0.90	0.40	4 X 0.80	1.56	31	1500	2850	2.00	1.56	33	2000	3400
3X95 +50	15/6	15/6	1.10/1.00	0.40	4 X 0.80	1.56	34	1850	3800	2.00	1.56	36	2400	4350
3X120+70	15/12	18/12	1.20/1.10	0.40	4 X 0.80	1.72	38	2250	4750	2.00	1.72	40	2900	5400
3X150+70	15/12	18/12	1.40/1.10	0.50	4 X 0.80	1.72	41	2650	5600	2.00	1.88	44	3400	6400
3X 185+95	30/15	30/15	1.60/1.10	0.50	4 X 0.80	1.88	46	3200	7000	2.50	2.04	50	4450	8200
3X240+120	30/15	34/18	1.70/1.20	0.60	4 X 0.80	2.04	50	4000	8900	2.50	2.2	54	5250	10200
3X300+150	30/15	34/18	1.80/1.40	0.60	4 X 0.80	2.2	55	4800	11000	2.50	2.36	59	6200	12400
3X400+185	53/30	53/30	2.00/1.60	0.70	4 X 0.80	2.52	62	5950	13850	3.15	2.68	66	8200	16050
3X500+240	53/30	53/34	2.20/1.70	0.70	4 X 0.80	2.68	72	7500	17650	3.15	2.84	77	10150	20250
3X630+300	53/30	53/34	2.40/1.80	0.70	4 X 0.80	3.00	80	9300	22400	4.00	3.00	86	13250	26300

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Conductor Material : Aluminium / Copper as per Class-2 of IS: 8130

Shape of Conductor : For Al'm Cond. - 4, 6 & 10 Sq.mm Solid / Stranded Non Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

For Cu Cond. - 4 & 6 Sq.mm Solid / Stranded Non Compacted Circular, 10 Sq.mm - Stranded Compacted Circular,

16 Sq.mm and above - Stranded Compacted Shaped

Insulation Material : XLPE (Cross linked polyethylene); Colour : Red, Yellow, Blue & Black

Inner Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Armouring : Single Layer of Galvanized Steel Round Wire / Flat Strip

Outer Sheath : PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type

Colour of Outer Sheath : Black or any other Colour as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
3X25+16	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
3X35+16	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
3X50+25	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
3X70+35	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
3X95+50	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
3X120+70	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
3X150+70	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
3X185+95	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
3X240+120	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
3X300+150	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	461	460	390	590	28.20	42.90
3X400+185	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
3X500+240	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
3X630+300	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 22

TECHNICAL DETAILS FOR VINAMRA 1.1 KV FOUR CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-1

Cable Code : A2XFY/2XFY, A2XWY/2XWY

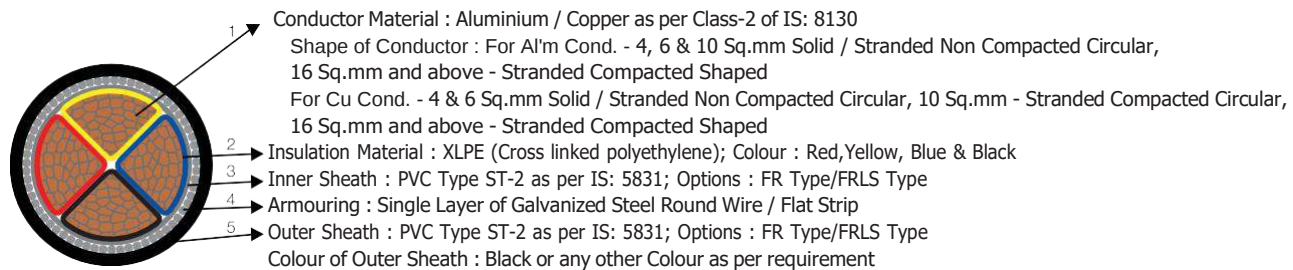
Physical Parameters

Size (Cross Sectional Area)	Minimum No. of Strand in Conductor		Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
					Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
	Aluminium	Copper						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
Sqmm	No's	No's	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
4	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	440	560
6	1/3	1/3	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.24	17	520	670
10	1/7	6	0.70	0.30	N/A	N/A	N/A	N/A	N/A	1.40	1.40	19	620	900
16	6	6	0.70	0.30	4 X 0.80	1.40	20	650	1000	1.60	1.40	21	850	1200
25	6	6	0.90	0.30	4 X 0.80	1.40	22	850	1450	1.60	1.40	24	1100	1700
35	6	6	0.90	0.30	4 X 0.80	1.40	25	1000	1850	1.60	1.40	26	1300	2100
50	6	6	1.00	0.30	4 X 0.80	1.56	28	1300	2400	1.60	1.56	29	1550	2700
70	12	12	1.10	0.40	4 X 0.80	1.56	32	1650	3250	2.00	1.56	34	2200	3800
95	15	15	1.10	0.40	4 X 0.80	1.56	35	2000	4250	2.00	1.72	38	2700	4900
120	15	18	1.20	0.50	4 X 0.80	1.72	39	2500	5300	2.00	1.88	42	3200	6000
150	15	18	1.40	0.50	4 X 0.80	1.88	43	2950	6400	2.50	2.04	47	4100	7550
185	30	30	1.60	0.50	4 X 0.80	2.04	48	3600	7950	2.50	2.20	52	4850	9150
240	30	34	1.70	0.60	4 X 0.80	2.20	54	4500	10200	2.50	2.36	58	5950	11600
300	30	34	1.80	0.70	4 X 0.80	2.36	61	5500	12600	3.15	2.52	66	7750	14850
400	53	53	2.00	0.70	4 X 0.80	2.68	68	6850	15900	3.15	2.84	73	9350	18400
500	53	53	2.20	0.70	4 X 0.80	2.84	75	8500	20100	4.00	3.00	82	12400	24000
630	53	53	2.40	0.70	4 X 0.80	3.00	84	10550	25650	4.00	3.00	91	14750	30000

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
4	7.41	4.61	9.48	5.90	0.098	0.11	34	28	30	44	37	39	0.376	0.572
6	4.61	3.08	5.90	3.94	0.090	0.13	43	37	40	55	47	50	0.564	0.858
10	3.08	1.83	3.94	2.34	0.084	0.16	57	48	53	74	61	67	0.940	1.43
16	1.91	1.15	2.44	1.47	0.080	0.18	78	61	70	94	78	85	1.50	2.29
25	1.20	0.727	1.54	0.931	0.080	0.20	95	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.080	0.23	116	94	117	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.078	0.24	140	110	140	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.077	0.26	170	140	176	210	175	235	6.58	10.01
95	0.320	0.193	0.411	0.248	0.074	0.29	200	165	221	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.072	0.29	225	185	258	285	240	330	11.28	17.16
150	0.206	0.1240	0.265	0.159	0.072	0.29	255	210	294	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.072	0.29	285	235	339	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.072	0.31	325	270	402	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.071	0.33	370	305	460	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.070	0.33	435	350	542	520	440	670	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.070	0.34	481	405	624	580	480	750	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.069	0.36	537	470	723	680	575	875	59.22	90.09

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 23

TECHNICAL DETAILS FOR VINAMRA 1.1 KV 1.5 SQMM COPPER CONDUCTOR, XLPE INSULATED, ARMoured / UNARMoured CONTROL CABLES

Ref Specification : IS 7098 Part-1

Cable Code : 2XY/2XFY/2XWY

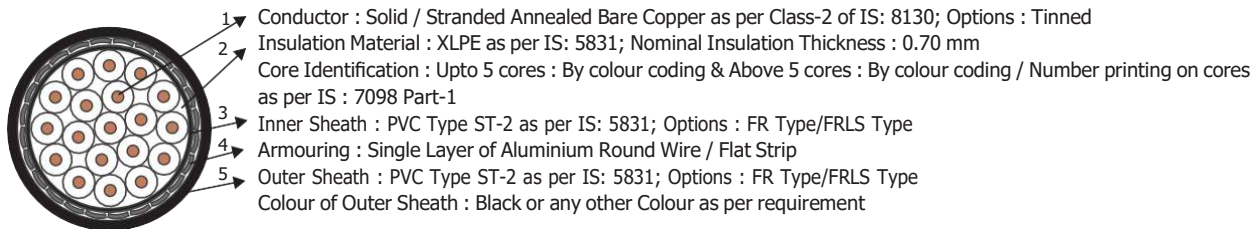
Physical Parameters

No. of Cores	Minimum Inner Sheath Thickness	Unarmoured (2XY)					Flat Strip Armoured (2XFY)						Round Wire Armoured (2XWY)					
		Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Dimension of Armour Strip	Minimum Outer Sheath Thick-ness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Nominal Dia of Armour Wire	Minimum Outer Sheath Thick-ness	Approx. Overall Dia of Cable		Approx. Weight of Cable	
			Solid Cond.	Std. cond.	Sold Cond	Std. cond.			Sold Cond	Std. cond.	Sold Cond	Std. cond.			Sold Cond	Std. cond.	Sold Cond	Std. cond.
No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km
2	0.30	1.80	10	10	150	150	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	12	13	320	350
3	0.30	1.80	11	11	170	200	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	13	330	350
4	0.30	1.80	12	12	200	200	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	14	370	400
5	0.30	1.80	12	13	230	250	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	15	420	450
6	0.30	1.80	13	14	260	300	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	16	460	500
7	0.30	1.80	13	14	250	250	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	16	470	500
10	0.30	1.80	16	16	340	350	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	18	19	640	650
12	0.30	1.80	17	17	380	400	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.40	19	20	750	800
14	0.30	1.80	17	18	420	450	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.40	20	21	800	850
16	0.30	1.80	18	19	470	500	4x0.8	1.40	19	20	660	700	1.60	1.40	21	22	860	900
19	0.30	1.80	19	20	550	550	4x0.8	1.40	20	21	750	750	1.60	1.40	21	22	940	1000
24	0.30	2.00	22	23	680	700	4x0.8	1.40	23	24	920	950	1.60	1.40	24	25	1140	1200
27	0.30	2.00	23	24	730	750	4x0.8	1.40	23	24	970	1000	1.60	1.40	25	26	1210	1300
30	0.30	2.00	23	25	800	850	4x0.8	1.40	24	25	1030	1100	1.60	1.40	25	27	1290	1350
37	0.30	2.00	25	26	940	1000	4x0.8	1.40	25	27	1200	1250	1.60	1.40	27	29	1510	1600
40	0.30	2.00	26	27	1030	1080	4x0.8	1.40	26	28	1310	1380	1.60	1.40	28	29	1590	1680
44	0.30	2.00	28	30	1130	1170	4x0.8	1.40	28	30	1420	1490	1.60	1.56	31	32	1760	1850
52	0.30	2.00	29	31	1290	1340	4x0.8	1.56	30	32	1640	1710	1.60	1.56	32	33	1950	2050
61	0.40	2.20	31	33	1520	1580	4x0.8	1.56	32	34	1860	1940	2.00	1.56	34	36	2410	2520

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Number of Cores	Max. Conductor D.C. Resistance at 20 °C	Approx. Conductor A.C. Resistance	Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating for XLPE Insulation			Short Circuit Current Rating for 1 Second Duration
					Ground	Duct	Air	
No's	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	K.amps
2	12.10	15.49	0.102	0.09	33	29	29	0.215
3	12.10	15.49	0.102	0.09	25	22	22	0.215
4	12.10	15.49	0.102	0.09	25	22	22	0.215
5	12.10	15.49	0.102	0.09	24	21	21	0.215
6	12.10	15.49	0.102	0.09	22	19	19	0.215
7	12.10	15.49	0.102	0.09	21	18	18	0.215
10	12.10	15.49	0.102	0.09	18	16	16	0.215
12	12.10	15.49	0.102	0.09	17	15	15	0.215
14	12.10	15.49	0.102	0.09	16	14	14	0.215
16	12.10	15.49	0.102	0.09	16	14	14	0.215
19	12.10	15.49	0.102	0.09	15	13	13	0.215
24	12.10	15.49	0.102	0.09	13	12	12	0.215
27	12.10	15.49	0.102	0.09	13	11	11	0.215
30	12.10	15.49	0.102	0.09	12	11	11	0.215
37	12.10	15.49	0.102	0.09	11	10	10	0.215
40	12.10	15.49	0.102	0.09	11	9	9	0.215
44	12.10	15.49	0.102	0.09	11	9	9	0.215
52	12.10	15.49	0.102	0.09	10	9	9	0.215
61	12.10	15.49	0.102	0.09	9	8	8	0.215

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 24

TECHNICAL DETAILS FOR VINAMRA 1.1 KV 2.5 SQMM COPPER CONDUCTOR, XLPE INSULATED, ARMoured / UNARMoured CONTROL CABLES

Ref Specification : IS 7098 Part-1

Cable Code : 2XY/2XFY/2XWY

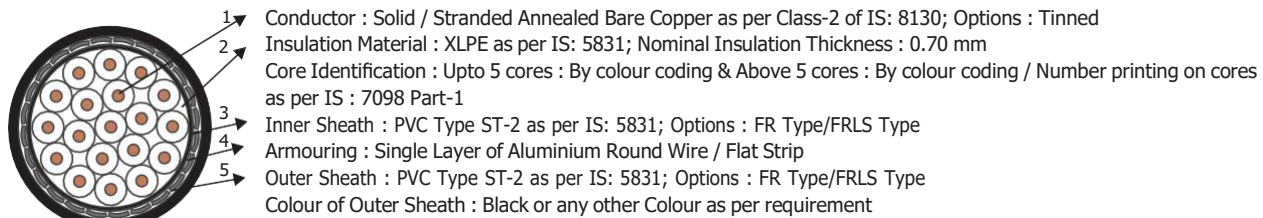
Physical Parameters

No. of Cores	Minimum Inner Sheath Thickness	Unarmoured (2XY)					Flat Strip Armoured (2XFY)						Round Wire Armoured (2XWY)					
		Nominal Outer Sheath Thickness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Dimension of Armour Strip	Minimum Outer Sheath Thick-ness	Approx. Overall Dia of Cable		Approx. Weight of Cable		Nominal Dia of Armour Wire	Minimum Outer Sheath Thick-ness	Approx. Overall Dia of Cable		Approx. Weight of Cable	
			Solid Cond.	Std. cond.	Soild Cond	Std. cond.			Soild Cond	Std. cond.	Soild Cond	Std. cond.			Soild Cond	Std. cond.		
No's	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	mm	Kg/Km	Kg/Km
2	0.30	1.80	11	12	180	200	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	13	13	370	400
3	0.30	1.80	12	12	210	220	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	14	14	390	410
4	0.30	1.80	13	13	250	270	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	15	440	460
5	0.30	1.80	14	14	300	310	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	15	16	500	520
6	0.30	1.80	15	15	350	360	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	17	560	580
7	0.30	1.80	15	15	330	340	N/A	N/A	N/A	N/A	N/A	N/A	1.40	1.24	16	17	590	610
10	0.30	1.80	18	19	450	470	4x0.8	1.24	19	20	650	690	1.60	1.40	20	21	850	880
12	0.30	1.80	19	20	530	550	4x0.8	1.40	19	20	700	750	1.60	1.40	21	22	920	950
14	0.30	1.80	20	21	590	610	4x0.8	1.40	20	21	790	830	1.60	1.40	22	23	1000	1030
16	0.30	2.00	21	22	660	680	4x0.8	1.40	21	22	880	900	1.60	1.40	23	24	1080	1130
19	0.30	2.00	22	23	750	780	4x0.8	1.40	22	23	970	1010	1.60	1.40	24	25	1200	1260
24	0.30	2.00	25	26	930	960	4x0.8	1.40	25	27	1190	1240	1.60	1.40	27	29	1480	1540
27	0.30	2.00	25	27	1020	1050	4x0.8	1.40	26	27	1300	1320	1.60	1.40	28	29	1580	1640
30	0.30	2.00	26	28	1110	1150	4x0.8	1.40	27	28	1410	1470	1.60	1.40	29	30	1690	1770
37	0.30	2.00	29	30	1370	1410	4x0.8	1.40	30	31	1690	1720	1.60	1.56	31	32	1980	2050
40	0.30	2.00	29	31	1450	1500	4x0.8	1.56	31	32	1800	1870	1.60	1.56	32	33	2110	2210
44	0.40	2.20	32	34	1630	1690	4x0.8	1.56	32	34	1990	2070	2.00	1.56	35	37	2520	2650
52	0.40	2.20	33	35	1870	1940	4x0.8	1.56	34	36	2250	2340	2.00	1.56	36	38	2810	2920
61	0.40	2.20	35	37	2150	2220	4x0.8	1.56	36	38	3160	2640	2.00	1.56	38	40	3160	3280

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

** Refer page no. 55 for normal delivery lengths & packing details.

Cross-sectional view



Electrical Parameters

Number of Cores	Max. Conductor D.C. Resistance at 20 °C	Approx. Conductor A.C. Resistance	Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating for XLPE Insulation			Short Circuit Current Rating for 1 Second Duration
					Ground	Duct	Air	
No's	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	K.amps
2	7.41	9.48	0.100	0.10	39	32	32	0.358
3	7.41	9.48	0.100	0.10	34	30	30	0.358
4	7.41	9.48	0.100	0.10	34	30	30	0.358
5	7.41	9.48	0.100	0.10	31	28	28	0.358
6	7.41	9.48	0.100	0.10	29	26	26	0.358
7	7.41	9.48	0.100	0.10	27	25	25	0.358
10	7.41	9.48	0.100	0.10	24	21	21	0.358
12	7.41	9.48	0.100	0.10	22	20	20	0.358
14	7.41	9.48	0.100	0.10	21	19	19	0.358
16	7.41	9.48	0.100	0.10	20	18	18	0.358
19	7.41	9.48	0.100	0.10	19	17	17	0.358
24	7.41	9.48	0.100	0.10	17	16	16	0.358
27	7.41	9.48	0.100	0.10	16	16	16	0.358
30	7.41	9.48	0.100	0.10	16	14	14	0.358
37	7.41	9.48	0.100	0.10	15	13	13	0.358
40	7.41	9.48	0.100	0.10	14	13	13	0.358
44	7.41	9.48	0.100	0.10	14	13	13	0.358
52	7.41	9.48	0.100	0.10	13	12	12	0.358
61	7.41	9.48	0.100	0.10	12	11	11	0.358

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54



FEATURES

HT POWER CABLE

- HIGH CONTINUOUS CURRENT RATING
- HIGHER SHORT CIRCUIT RATING
- HIGH EMERGENCY LOAD CAPACITY LOW DIELECTRIC LOSS
- LONGER CHARGING CURRRNETS
- FREE FROM HEIGHT LIMITATION & MAINTENANCE
- RESISTANT TO VIBRATION, MOISTURE, CHEMICAL & CORROSSIVE GASES MUCH LONGER LIFE OF THE CABLE

APPLICABLE STANDARD

- 7098 PART-2

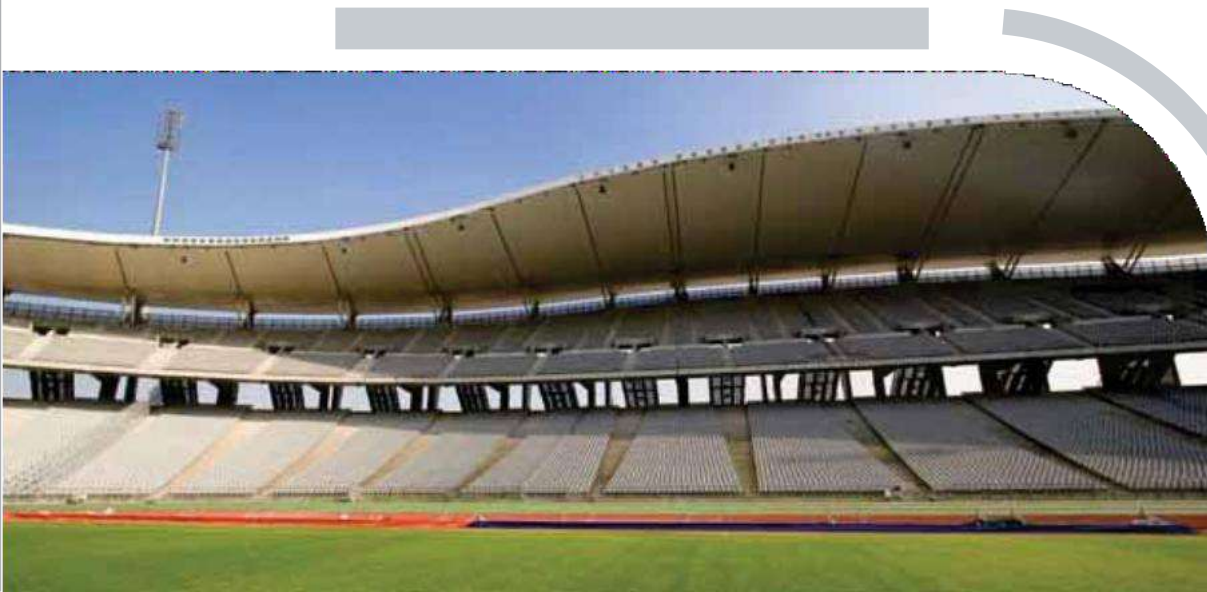


Table - 25

TECHNICAL DETAILS FOR VINAMRA 3.3 SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

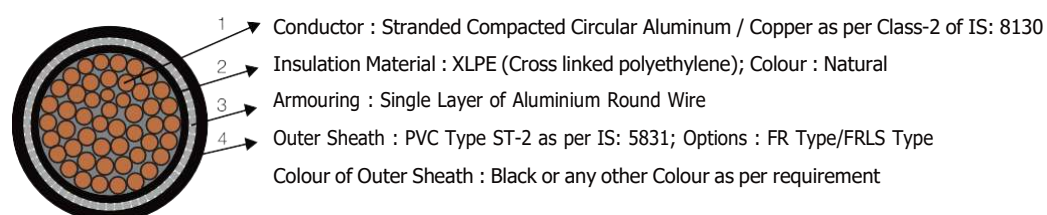
Physical Parameters

Ref Specification : IS 7098 Part-2
Cable Code : A2XWwY/2XWwY (3.3KV - EARTHED / UNEARTHED)

Size (Cross Sectional Area)	Nominal Insulation Thickness	Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
					With Al'm Cond.	With Cu Cond.
					A2XWwY	2XWwY
Sqmm	mm	mm	mm	mm	Kg/Km	Kg/Km
25	2.50	1.40	1.24	17	350	500
35	2.50	1.40	1.24	18	400	600
50	2.50	1.40	1.40	19	500	750
70	2.50	1.60	1.40	21	600	1000
95	2.50	1.60	1.40	23	700	1250
120	2.50	1.60	1.40	24	800	1500
150	2.50	1.60	1.40	26	900	1800
185	2.50	1.60	1.40	27	1050	2150
240	2.50	1.60	1.56	30	1300	2700
300	2.50	1.60	1.56	32	1500	3300
400	2.60	2.00	1.56	36	1900	4200
500	2.80	2.00	1.56	41	2300	5250
630	3.00	2.00	1.72	45	2850	6650
800	3.30	2.00	1.88	51	3550	8450
1000	3.50	2.50	2.04	56	4450	10600

- Tabulated approx. net weights of cables are only for guidelines for transportation / loading/ unloading purpose.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
25	1.20	0.727	1.54	0.931	0.133	0.25	100	91	110	130	115	145	2.35	3.58
35	0.868	0.524	1.11	0.671	0.126	0.29	120	110	135	155	140	175	3.29	5.00
50	0.641	0.387	0.82	0.495	0.122	0.33	140	125	165	185	165	215	4.70	7.15
70	0.443	0.268	0.567	0.343	0.116	0.38	175	155	210	225	200	270	6.58	10.00
95	0.32	0.193	0.41	0.248	0.111	0.44	205	185	255	265	235	330	8.93	13.59
120	0.253	0.153	0.325	0.197	0.106	0.49	235	210	295	300	265	380	11.28	17.16
150	0.206	0.124	0.265	0.159	0.103	0.53	260	230	335	335	300	430	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.100	0.58	295	260	390	380	335	495	17.39	26.45
240	0.125	0.0754	0.162	0.0976	0.097	0.67	340	300	460	435	385	590	22.56	34.32
300	0.10	0.0601	0.130	0.0778	0.095	0.73	385	335	530	490	430	670	28.20	42.90
400	0.0778	0.047	0.1023	0.0618	0.093	0.84	440	380	620	550	480	780	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.091	0.86	495	430	730	610	530	900	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.090	0.88	560	485	840	680	590	1020	59.22	90.10
800	0.0367	0.0221	0.053	0.0319	0.088	0.94	620	530	960	740	630	1140	75.20	114.40
1000	0.0291	0.0176	0.0444	0.0268	0.086	0.99	670	570	1070	780	660	1250	94.00	143.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 26

TECHNICAL DETAILS FOR VINAMRA 3.3

THREE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-2

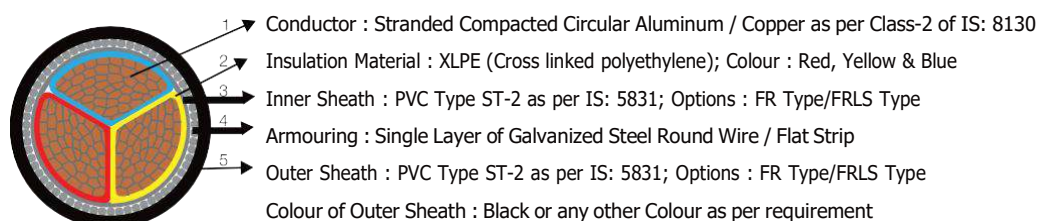
Physical Parameters

Cable Code : A2XFY/2XFY, A2XWY/2XWY (3.3KV - EARTHED / UNEARTHED)

Size (Cross Sectional Area)	Nominal Insulation Thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
			Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal Dia of Armor Wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
						A2XFY	2XFY				A2XWY	2XWY
Sqmm	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
25	2.20	0.30	4 x 0.80	1.40	27	1000	1450	1.60	1.56	30	1300	1750
35	2.20	0.30	4 x 0.80	1.56	29	1200	1800	1.60	1.56	33	1500	2100
50	2.20	0.40	4 x 0.80	1.56	31	1400	2250	2.00	1.56	35	1900	2750
70	2.20	0.40	4 x 0.80	1.56	34	1650	2900	2.00	1.56	38	2250	3450
95	2.20	0.40	4 x 0.80	1.72	37	2000	3700	2.00	1.72	42	2650	4300
120	2.20	0.50	4 x 0.80	1.72	40	2350	4450	2.00	1.88	45	3050	5150
150	2.20	0.50	4 x 0.80	1.88	43	2700	5300	2.50	2.04	48	3750	6400
185	2.20	0.50	4 x 0.80	2.04	46	3150	6450	2.50	2.04	51	4300	7600
240	2.20	0.60	4 x 0.80	2.2	51	3850	8150	2.50	2.20	56	5050	9400
300	2.20	0.60	4 x 0.80	2.2	55	4350	9900	2.50	2.36	60	5800	11250
400	2.20	0.70	4 x 0.80	2.36	61	5400	12350	3.15	2.68	67	7700	14600

- Tabulated approx. net weights of cables are only for guidelines for transportation / loading/ unloading purpose.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
25	1.20	0.727	1.54	0.931	0.098	0.25	94	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.094	0.29	115	95	120	145	120	155	3.29	5.00
50	0.641	0.387	0.82	0.495	0.086	0.33	135	110	145	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.084	0.38	165	140	185	210	175	235	6.58	10.01
95	0.32	0.193	0.41	0.248	0.081	0.44	195	165	225	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.078	0.49	220	185	255	285	240	330	11.28	17.16
150	0.206	0.124	0.265	0.159	0.076	0.53	245	210	295	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.075	0.58	280	235	340	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.073	0.67	320	270	400	410	350	510	22.56	34.32
300	0.1	0.0601	0.13	0.0778	0.072	0.73	360	305	460	460	390	590	28.20	42.90
400	0.0778	0.047	0.1023	0.0618	0.071	0.84	410	350	535	520	440	670	37.60	57.20

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 27

TECHNICAL DETAILS FOR VINAMRA 3.3 SINGLE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-2

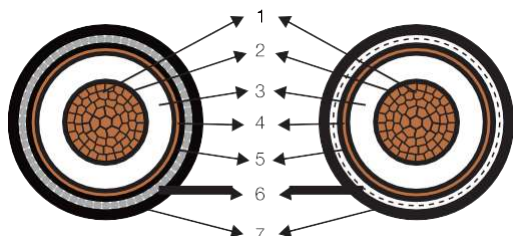
Physical Parameters

Cable Code : A2XFaY/2XFaY, A2XWaY/2XWaY (3.3KV - EARTHED / UNEARTHED)

Size (Cross Sectional Area)	Nominal insulation thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFaY/2XFaY)					Round Wire Armoured (A2XWaY/2XWaY)				
			Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal dia of armor wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
						A2XFaY	2XFaY				A2XWaY	2XWaY
Sqmm	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
25	2.50	0.30	4 X 0.80	1.40	18	450	550	1.60	1.40	20	500	650
35	2.50	0.30	4 X 0.80	1.40	19	500	650	1.60	1.40	21	550	750
50	2.50	0.30	4 X 0.80	1.40	21	550	800	1.60	1.40	22	650	900
70	2.50	0.30	4 X 0.80	1.40	22	650	1050	1.60	1.40	24	750	1150
95	2.50	0.30	4 X 0.80	1.40	24	750	1300	1.60	1.40	25	850	1400
120	2.50	0.30	4 X 0.80	1.40	25	850	1550	1.60	1.40	27	950	1650
150	2.50	0.30	4 X 0.80	1.40	27	1000	1800	1.60	1.56	29	1100	1950
185	2.50	0.30	4 X 0.80	1.56	29	1150	2200	1.60	1.56	30	1250	2300
240	2.50	0.40	4 X 0.80	1.56	31	1400	2750	2.00	1.56	34	1550	2950
300	2.50	0.40	4 X 0.80	1.56	33	1600	3300	2.00	1.56	36	1800	3550
400	2.60	0.40	4 X 0.80	1.56	37	1900	4100	2.00	1.72	40	2200	4450
500	2.80	0.40	4 X 0.80	1.72	42	2400	5200	2.00	1.72	44	2650	5550
630	3.00	0.50	4 X 0.80	1.88	46	3000	6600	2.00	1.88	49	3250	7000
800	3.30	0.50	4 X 0.80	1.88	51	3650	8300	2.50	2.04	55	4100	8900
1000	3.50	0.60	4 X 0.80	2.04	56	4400	10250	2.50	2.20	59	4950	10950

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

Cross-sectional view



1. Conductor : Stranded Compacted Circular Aluminum / Copper as per Class-2 of IS: 8130
2. Conductor Screening : Extruded Semiconductor Compound
3. Insulation Material : XLPE (Cross linked polyethylene)
4. Insulation Screening : Extruded Semiconducting Compound followed by helically wrapped Copper Tape
5. Inner Sheath : Extruded PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type
6. Armoring : Single layer of Aluminium Round Wire / Flat Strip
7. Outer Sheath : Extruded PVC Type ST-2 as per IS: 5831; Options : FR Type/FRLS Type
Colour of Outer Sheath : Black or any other color as per requirement

Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
25	1.20	0.727	1.54	0.931	0.133	0.25	100	91	110	130	115	145	2.35	3.58
35	0.868	0.524	1.11	0.671	0.126	0.29	120	110	135	155	140	175	3.29	5.01
50	0.641	0.387	0.820	0.495	0.122	0.33	140	125	165	185	165	215	4.70	7.15
70	0.443	0.268	0.567	0.343	0.116	0.38	175	155	210	225	200	270	6.58	10.01
95	0.320	0.193	0.410	0.248	0.111	0.44	205	185	255	265	235	330	8.93	13.59
120	0.253	0.153	0.325	0.197	0.106	0.49	235	210	295	300	265	380	11.28	17.16
150	0.206	0.124	0.265	0.159	0.103	0.53	260	230	335	335	300	430	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.100	0.58	295	260	390	380	335	495	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.097	0.67	340	300	460	435	385	590	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.095	0.73	385	335	530	490	430	670	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.093	0.84	440	380	620	550	480	780	37.60	57.20
500	0.0605	0.0366	0.0808	0.0489	0.091	0.86	495	430	730	610	530	900	47.00	71.50
630	0.0469	0.0283	0.0648	0.0391	0.090	0.88	560	485	840	680	590	1020	59.22	90.10
800	0.0367	0.0221	0.0530	0.0319	0.088	0.94	620	530	960	740	630	1140	75.20	114.40
1000	0.0291	0.0176	0.0444	0.0268	0.086	0.99	670	570	1070	780	660	1250	94.00	143.00

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

Table - 28

TECHNICAL DETAILS FOR VINAMRA 3.3 THREE CORE, ALUMINIUM/COPPER CONDUCTOR, XLPE INSULATED, ARMoured CABLES

Ref Specification : IS 7098 Part-2

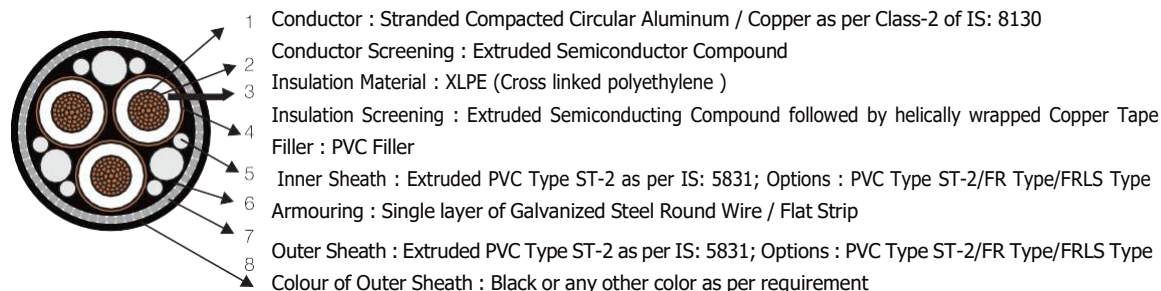
Physical Parameters

Cable Code : A2XFY/2XFY, A2XWY/2XWY (3.3KV - EARTHED / UNEARTHED)

Size (Cross Sectional Area)	Nominal insulation thickness	Minimum Inner Sheath Thickness	Flat Strip Armoured (A2XFY/2XFY)					Round Wire Armoured (A2XWY/2XWY)				
			Nominal Armour Strip Dimension	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable		Nominal dia of armor wire	Minimum Outer Sheath Thickness	Approx. Overall Dia of Cable	Approx. Weight of Cable	
						With Al'm Cond.	With Cu Cond.				With Al'm Cond.	With Cu Cond.
						A2XFY	2XFY				A2XWY	2XWY
Sqmm	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	mm	mm	mm	Kg/Km	Kg/Km
25	2.20	0.40	4 X 0.80	1.56	32	1450	1850	2.00	1.56	35	2000	2400
35	2.20	0.40	4 X 0.80	1.56	35	1700	2250	2.00	1.72	37	2300	2850
50	2.20	0.40	4 X 0.80	1.72	38	2000	2750	2.00	1.72	40	2650	3350
70	2.20	0.50	4 X 0.80	1.72	41	2350	3500	2.00	1.88	44	3100	4200
95	2.20	0.50	4 X 0.80	1.88	45	2800	4350	2.50	2.04	49	3950	5500
120	2.20	0.50	4 X 0.80	2.04	48	3250	5200	2.50	2.04	52	4500	6350
150	2.20	0.60	4 X 0.80	2.04	52	3700	6150	2.50	2.20	56	5000	7400
185	2.20	0.60	4 X 0.80	2.20	56	4300	7350	2.50	2.36	60	5750	8750
240	2.20	0.60	4 X 0.80	2.36	61	5150	9200	2.50	2.36	64	6600	10600
300	2.20	0.70	4 X 0.80	2.52	66	6050	11100	3.15	2.68	71	8350	13350
400	2.20	0.70	4 X 0.80	2.68	73	7300	13800	3.15	2.84	78	9850	16300

* Tabulated Approx. Weight of Cable are only for the purpose of guideline for transportation, loading & unloading purpose.

Cross-sectional view



Electrical Parameters

Size (Cross Sectional Area)	Max. Conductor D.C.Resistance at 20 °C		Approx. Conductor A.C.Resistance at 90 °C		Reactance of Cable at 50 Hz (Approx.)	Capacitance of Cable (Approx.)	Normal Current Rating						Short Circuit Current Rating for 1 Second Duration	
	Aluminium	Copper	Aluminium	Copper			For Aluminium Conductor			For Copper Conductor				
							Ground	Duct	Air	Ground	Duct	Air	Aluminium	Copper
Sqmm	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km	µF/Km	Amps	Amps	Amps	Amps	Amps	Amps	K.amps	K.amps
25	1.20	0.727	1.54	0.931	0.098	0.25	94	80	99	120	100	125	2.35	3.58
35	0.868	0.524	1.11	0.671	0.094	0.29	115	95	120	145	120	155	3.29	5.01
50	0.641	0.387	0.820	0.495	0.086	0.33	135	110	145	170	145	190	4.70	7.15
70	0.443	0.268	0.567	0.343	0.084	0.38	165	140	185	210	175	235	6.58	10.01
95	0.320	0.193	0.410	0.248	0.081	0.44	195	165	225	250	210	290	8.93	13.59
120	0.253	0.153	0.325	0.197	0.078	0.49	220	185	255	285	240	330	11.28	17.16
150	0.206	0.124	0.265	0.159	0.076	0.53	245	210	295	315	270	375	14.10	21.45
185	0.164	0.0991	0.211	0.127	0.075	0.58	280	235	340	355	300	435	17.39	26.46
240	0.125	0.0754	0.162	0.0976	0.073	0.67	320	270	400	410	350	510	22.56	34.32
300	0.100	0.0601	0.130	0.0778	0.072	0.73	360	305	460	460	390	590	28.20	42.90
400	0.0778	0.0470	0.1023	0.0618	0.071	0.84	410	350	535	520	440	670	37.60	57.20

Note: Normal current ratings are given in standard conditions (as given in page no 52, 53), if site conditions are different, current rating should be multiplied by rating factor as given in page no. 52 - 54

BASIC ASSUMPTION FOR CURRENT RATINGS & RATING FACTORS

SCOPE

The current ratings of cables as indicated in various tables have been calculated on certain assumed conditions.

In actual practice these conditions may be different. Therefore to determine the actual current ratings as per installation conditions, the tabulated ratings shall be multiplied with appropriate factors

a) Basic assumption for current ratings

i) Maximum permissible temperature - 90°C for XLPE insulation, 70°C for general purpose PVC, 85°C for HR PVC

ii) Ground/Duct temperature - 30°C

iii) Ambient temperature - 40°C

iv) Thermal resistivity of soil - 150°C cm/W

v) Thermal resistivity of Dielectric 650°C cm/W for PVC, 350°C cm/W for XLPE

vi) Single core cables installed in one circuit in following arrangement

OR

vi) Multicore cables installed in single circuit

Voltage Grade	Depth of Laying
1.1KV cables	750mm

b) Rating Factors

i) Rating factors related to variation in ambient air temperature

Air Temperature in Deg.		20°	25°	30°	35°	40°	45°	50°	55°
	Normal PVC	1.32	1.25	1.16	1.09	1.00	0.90	0.80	0.80
Rating factors	HR PVC	1.22	1.17	1.12	1.06	1.00	0.94	0.87	0.80
	XLPE	1.20	1.16	1.11	1.06	1.00	0.95	0.88	0.82

ii) Rating factors related to variation in ground temperature

Air Temperature in Deg.		15°	20°	25°	30°	35°	40°	45°	50°
	Normal PVC	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.71
Rating factors	HR PVC	1.13	1.09	1.04	1.00	0.95	0.90	0.85	0.80
	XLPE	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82

iii) Rating factors related to variation in ground thermal resistivity of soil for 3 single core cables laid direct in ground. (Average value)

Thermal Res. in °C.Cm/W	100	120	150	200	250	300
Rating factors	1.20	1.10	1.00	0.90	0.81	0.74

iv) Rating factors related to variation in ground thermal resistivity of soil for multi core cables laid direct in ground. (Average value)

Thermal Res. in °C.Cm/W	100	120	150	200	250	300
Rating factors	1.16	1.08	1.00	0.90	0.82	0.76

v) Rating factors related to variation in depth of laying for 1.1kv cables

1. For cross-sectional area of conductor < 25sqmm

Depth of laying (cm) >	75	90	105	120	150	180 & Above
Rating factors	1.00	0.99	0.98	0.97	0.96	0.95

2. For cross-sectional area of conductor 25 to 300sqmm

Depth of laying (cm) >	75	90	105	120	150	180 & Above
Rating factors	1.00	0.98	0.97	0.96	0.94	0.93

3. For cross-sectional area of conductor above 300sqmm

Depth of laying (cm) >	75	90	105	120	150	180 & Above
Rating factors	1.00	0.97	0.96	0.95	0.92	0.91

BASIC ASSUMPTION FOR CURRENT RATINGS & RATING FACTORS

Group Rating Factors

1. Cable laid direct in Ground

No of cables/ circuits in groups	Multicore cables in horizontal formation					Single cables in horizontal formation				
	Touching	S=15CM	S=30CM	S=45CM	S=60CM	Touching	S=15CM	S=30CM	S=45CM	S=60CM
2	0.80	0.84	0.87	0.90	0.91	0.80	0.85	0.90	0.92	0.95
3	0.68	0.74	0.79	0.83	0.86	0.70	0.78	0.85	0.88	0.91
4	0.62	0.69	0.75	0.80	0.83	0.64	0.73	0.81	0.86	0.89
5	0.58	0.65	0.72	0.77	0.80	0.59	0.70	0.79	0.84	0.88
6	0.55	0.62	0.69	0.75	0.78	0.55	0.67	0.77	0.83	0.87
7	0.52	0.59	0.67	0.73	0.77	0.53	0.65	0.76	0.82	0.86
8	0.50	0.57	0.66	0.72	0.75	0.51	0.64	0.76	0.82	0.86
9	0.48	0.55	0.65	0.71	0.75	0.49	0.63	0.74	0.81	0.85
10	0.46	0.54	0.64	0.70	0.74	0.48	0.63	0.74	0.81	0.85
11	0.45	0.53	0.63	0.70	0.74	0.47	0.62	0.73	0.80	0.84
12	0.44	0.52	0.62	0.69	0.73	0.46	0.61	0.73	0.80	0.84

S = axial spacing of cable

No. of cables/ circuits in groups	No. of Tier	Multicore cables in Tier formation				
		Touching	S=15CM	S=30CM	S=45CM	S=60CM
2	1	0.80	0.84	0.87	0.90	0.91
3	1	0.68	0.74	0.79	0.83	0.86
4	2	0.60	0.66	0.73	0.77	0.79
5	2	0.55	0.61	0.68	0.71	0.73
6	2	0.51	0.57	0.63	0.67	0.69
7	3	0.48	0.54	0.59	0.63	0.64
8	3	0.46	0.51	0.56	0.60	0.61
9	3	0.44	0.48	0.53	0.57	0.58
10	4	0.42	0.47	0.52	0.55	0.56
11	4	0.41	0.46	0.50	0.54	0.55
12	4	0.40	0.45	0.49	0.53	0.54

2. Cable laid direct in open racks in air

(i) Multicore Cables in open racks in air

No. of racks										
	No. of cables per rack					No. of cables per rack				
	1	2	3	6	9	1	2	3	6	9
1	1.00	0.98	0.96	0.93	0.92	1.00	0.84	0.80	0.75	0.73
2	1.00	0.95	0.93	0.90	0.89	1.00	0.80	0.76	0.71	0.69
3	1.00	0.94	0.92	0.89	0.88	1.00	0.78	0.74	0.70	0.68
6	1.00	0.93	0.90	0.87	0.86	1.00	0.76	0.72	0.65	0.66

(ii) Single Core Cables In open racks In air

ARRANGEMENT			
No. of Racks	No. of Circuit Racks (3 single cores) per rack		
	1	2	6
1	1	0.98	0.96
2	1	0.95	0.93
3	1	0.94	0.92
4	1	0.93	0.9

S = axial spacing of cable

No. of cables/ circuits in groups	No. of Tier	Multicore cables in Tier formation										
		Touching	S=15CM	S=30CM	S=45CM	S=60CM						
2	1	0.80	0.84	0.87	0.90	0.91						
3	1	0.68	0.74	0.79	0.83	0.86						
4	2	0.60	0.66	0.73	0.77	0.79						
5	2	0.55	0.61	0.68	0.71	0.73						
6	2	0.51	0.57	0.63	0.67	0.69						
7	3	0.48	0.54	0.59	0.63	0.64						
8	3	0.46	0.51	0.56	0.6	0.61						
9	3	0.44	0.48	0.53	0.57	0.58						
10	4	0.42	0.47	0.52	0.55	0.56						
11	4	0.41	0.46	0.50	0.54	0.55						
12	4	0.40	0.45	0.49	0.53	0.54						
No. of cables/ circuits in groups	Multicore cable (Touching) No of cables in racks				Multicore cables (spacing of cable equal to dia meter of cable No of cables in racks				S/core cables in trefoil touching formation spacing between circuits equal to twice the diameter of cable) No of cables in racks			
	1	2	3	4	1	2	3	4	1	2	3	4
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	0.84	0.80	0.78	0.76	0.98	0.95	0.94	0.93	0.98	0.95	0.94	0.93
3	0.80	0.76	0.74	0.72	0.96	0.93	0.92	0.90	0.96	0.93	0.92	0.90
4	0.76	0.71	0.70	0.68	0.93	0.90	0.89	0.87	—	—	—	—

Estimated Voltage Drops in PVC/XLPE Aluminium Cables For A.C. System				
(Voltage drop - Volts/Km/Amps)				
Nominal area of conductor (sq. mm)	P.V.C. Cable		XLPE Cable	
	Single Phase	Three Phase	Single Phase	Three System
1.5	43.44	37.62	46.34	40.13
2.5	29.04	25.15	30.98	26.83
4	17.78	15.40	18.98	16.44
6	11.06	9.58	11.80	10.22
10	7.40	6.41	7.88	6.82
16	4.58	3.97	4.90	4.24
25	2.89	2.50	3.08	2.67
35	2.10	1.80	2.23	1.94
50	1.55	1.30	1.65	1.44
70	1.10	0.94	1.15	1.00
95	0.79	0.68	0.83	0.70
120	0.63	0.55	0.66	0.56
150	0.52	0.46	0.55	0.48
185	0.42	0.37	0.44	0.40
240	0.34	0.30	0.35	0.30
300	0.28	0.26	0.30	0.26
400	0.24	0.22	0.24	0.22
500	0.23	0.20	0.23	0.20
630	0.20	0.18	0.21	0.18
800	0.19	-	0.20	-
1000	0.18	-	0.18	-

**Above voltage drops (volts/km/amps) shall be multiplied with rated current & length of Cable in K.M. to calculate total voltage drop in particular length and size of cables.

* Selection criteria of MV/HV cable size for primary distribution

SCOPE

The conductor size in the cables for any installation is also governed by its ability to carry short circuit current of system. For L.V. distribution cable may be selected on the basis of continuous load current. But in case of MV/HV distribution it is always safer to select the cable on the basis of ability of conductor to carry expected short circuit current. Short circuit current rating of cable should in line with short circuit capacity of damping apparatus such as circuit breakers, Transformers & reactor etc. beside its capacity to carry desired load current. Short circuit ratings of cables each size are given in relevant tables & have been calculated on the basis of IEC-949 & IEC-986 & on the following assumption

- Temperature of conductor just prior to short circuit
 - With XLPE insulation - 90 Deg. C
 - With PVC insulation - 70 Deg. C
- Maximum permissible conductor temperature during short circuit
 - With XLPE insulation - 250 Deg. C
 - With PVC insulation - 160 Deg. C
- Volumetric specific heat of the conductor
 - With Aluminium conductor - 2.5×10^{-3} J/Deg. C/MM³
 - With Copper conductor - 3.45×10^{-3} J/Deg. C/MM³
- Reciprocal of temperature co-efficient of resistance at 9 Deg. C
 - With Aluminium conductor - 228
 - With Copper conductor - 234.5

Short circuit current rating at different duration may be calculated as

$$I_{sh} \text{ (for } t \text{ duration)} = \frac{I_{sh} \text{ (for 1Sec.)}}{t}$$

Ish for 1 Sec. Duration is given in relevant tables in KA
t = Time duration required to be calculated of short circuit in Sec.

SELECTION CRITERIA OF H.V./MV CABLES FOR PRIMARY DISTRIBUTION

REQUIRED DATAS

- Nominal System voltage at H.T. Side
- Short circuit level for H.T. system
- Fault withstand time for H.T. CBs
- Formula for calculating H.T. cable size

$$\text{With Aluminium cond./XLPE insulated cable} = \frac{I_{sh} \times \sqrt{t}}{0.094}$$

$$= \frac{25 \times \sqrt{0.5}}{0.094} = 188$$

$$\text{With Copper cond./XLPE insulated cable} = \frac{I_{sh} \times \sqrt{t}}{0.143}$$

$$= \frac{25 \times \sqrt{0.5}}{0.143} = 124$$

Hence nearest higher size 150 sqmm is required

ELECTRICAL FORMULAS FOR CALCULATING A.C. LOAD CURRENT

Load current in Amps when KVA is given	for Single phase (A.C.) $\frac{KVA \times 1000}{V}$	for Three phase (A.C.) $\frac{KVA \times 1000}{1.732 \times V}$
Load current in Amps when Kilo Watt is given	for Single phase (A.C.) $\frac{KW \times 1000}{V \times pf}$	for Three phase (A.C.) $\frac{KW \times 1000}{1.732 \times V \times pf}$
Load current in Amps when H.P. is given	for Single phase (A.C.) $\frac{H.P. \times 746}{V \times \%Eff \times pf}$	for Three phase (A.C.) $\frac{H.P. \times 746}{1.732 \times V \times \%Eff \times pf}$

V = Nominal system voltage in Volts, pf = Power factor, KVA = Kilo Volts Ampere, H.P. = Horse Power

Standard drum lengths of cables

STANDARD LENGTH (MTS) WITH $\pm 5\%$ TOLERANCE			
DESCRIPTION OF CABLE UN-ARMoured	STRIP ARMoured	ROUND WIRE ARMoured	
1.1KV PVC/XLPE CABLES WITH ALUMINIUM			
~ SINGLE CORE	UP TO 150SQMM-1000 185 TO 1000sqmm-500	UP TO 150SQMM-1000 185 to 1000sqmm-500	UP TO 150SQMM-1000 185 to 1000sqmm-500
~ TWO CORE	UP TO 50SQMM-1000 70 to 630sqmm-500	UP TO 50SQMM-1000 70 to 630sqmm-500	UP TO 50SQMM-1000, 70 TO 500sqmm 500, 630sqmm-250
~ THREE CORE	UP TO 50SQMM-1000 70 to 630sqmm-500	UP TO 50SQMM-1000 70 to 500sqmm-500 630sqmm-250	UP TO 50SQMM-1000, 70 TO 300sqmm 500, 500 to 630sqmm-250
~ THREE & HALF CORE	UP TO 50SQMM-1000 70 to 630sqmm-500	UP TO 50SQMM-1000 70 to 400sqmm-500 500 to 630sqmm-250	UP TO 50SQMM-1000, 70 TO 300sqmm 500, 400-630sqmm-250
FOUR CORE	UP TO 50SQMM-1000 70 to 500sqmm-500 630sqmm-250	UP TO 50SQMM-1000 70 to 400sqmm-500 500 to 630sqmm-250	UP TO 50SQMM-1000, 70 to 240sqmm 500, 300 to 630sqmm-250
1.1KV PVC/XLPE CABLES WITH COPPER CONDUCTOR			
~ SINGLE CORE	UP TO 150SQMM-1000 185 TO 630sqmm-500 800 to 1000sqmm-250	UP TO 150SQMM-1000 185 to 630sqmm-500 800 to 1000sqmm-250	UP TO 150SQMM-1000 185 to 630sqmm-500 800 to 1000sqmm-250
~ TWO CORE	UP TO 10SQMM-1000 16 to 300sqmm-500 400 to 630sqmm-250	UP TO 10SQMM-1000 16 to 300sqmm-500 400 to 630sqmm-250	UP TO 10SQMM-1000, 70 TO 500sqmm 500, 500, 300 to 630sqmm-250
~ THREE CORE	UP TO 10SQMM-1000 300 to 400sqmm-250	UP TO 10SQMM-1000 16 to 240sqmm-500 240sqmm-400sqmm-250	UP TO 10SQMM-1000, 16 TO 185sqmm 16 to 185sqmm-500 500, 240 to 400sqmm-250
~ THREE & HALF CORE	UP TO 10SQMM-1000 300 to 400sqmm-250	UP TO 10SQMM-1000 16 to 240sqmm-500 240 to 400sqmm-250	UP TO 10SQMM-1000, 16 TO 150sqmm 16 to 185sqmm-500 500, 185 to 400sqmm-250
FOUR CORE	UP TO 10SQMM-1000 16 to 240sqmm-500 300 to 400sqmm-250	UP TO 10SQMM-1000 16 to 150sqmm-500 240 to 400sqmm-250	UP TO 10SQMM-1000, 16 to 150sqmm 500, 185 to 400sqmm-250

- Control cables more than FOUR CORES shall be supplied in 500 mts length

Quality Control

It has been rightly said that "Quality is never an accident, it is always the result of intelligent efforts".

In the manufacture of cables, intelligent efforts are incorporated to achieve quality. For a quality end products, control starts from proper design of the product. All raw materials are selected carefully and only materials of high quality are used in production. Having done this, stage wise inspection is done to ensure conformity with the requirements of relevant Indian Standards where these apply.

Stage - Wise Inspection

i) Wire-Drawing	: Wire diameter Surface Shape Quality of joints in the wire
ii) Stranding of Wires:	: Quality of joints in the wires Compaction of conductor Shape of Conductor Dimensions Resistance of Conductor
iii) Insulation :	: Dimension over Insulation, Thickness of Insulation,
iv) Curing (for XLPE Insulation)	: Hot set test, Tensile strength & elongation test.
v) Screening (for H.T. Screened cables)	: Dimension over screen, thick of screen visual examination of surface/defects.
v) Laying Up	: Sequence of Cores Direction of lay Diameter over laid up cores Circularity
vi) Inner Sheath	: Thickness of Sheath Diameter over Sheath Surface Uniformity Circularity Porosity
vii) Armouring	: Diameter of Wires/ Dimensions of Strips Direction of lay Coverage Quality of Joints of Wires
viii) Outer Sheath	: Thickness of Sheath Diameter over Sheath Tightness of Sheath Eccentricity Porosity, Embossing

Test

The tests on cables have been classified broadly in four categories as follows:

Routine Tests:

Tests carried out on each cable to check the requirements which are likely to vary during production.

Type Tests:

Tests carried out to prove conformity with the specification. These are intended to prove the general qualities and design of a given type of cable.

Acceptance Tests:

Tests carried out on samples taken from a lot for the purpose of acceptance of the lot.

Optional Tests:

Special tests to be carried out when required by agreement between the purchaser and the manufacturer.

Special tests required for FRLS Cables can also be carried out at our works i.e. Halogen gas generation test to IEC - 754 Part - I, Smoke generation test to ASTM D 2843, Oxygen index test and Temperature index test to ASTM D - 2863, Flammability test to (1) IEC-332-1, (2) Swedish Chimney test to SS-4241475 Class F3 & (3) IEC-332-3, Flame resistance test to IEEE-383.

Together with the most advanced equipment available, we are able to offer to our valued customers assurances of highest quality and strict adherence to the required specification. As a third party guarantee, our cables have passed rigorous tests at various Government recognized test laboratories such as CPRI, Shri Ram Test House, ERDA Baroda, National Test House, ERTL, RTC.

Routine Tests, Type Tests, Acceptance Tests and Optional Tests as per the Indian Standard Specification for Power and Control Cables with PVC insulation, Cross linked Polyethylene insulation and Special Tests are given in the Annexure.

Selection Guide

List of Tests as per IS:1554(Part - I): 1988, IS:1554 (Part- II):1988, IS:7098 (Part - I):1988

1. Routine Tests:
 - a) Conductor Resistance Test
 - b) High Voltage Test
 - c) Armour Resistance Test for mining Type Cables
 - d) Partial Discharge test (for H.T. Screened cable)
2. Type Tests:
 - a) Tensile Test (for Aluminium Conductor)
 - b) Wrapping Test (for Aluminium Conductor)
 - c) Annealing Test (for Copper Conductor)
 - d) Conductor Resistance Test
 - e) Test for Armour Wires/Strips
 - f) Test for thickness of Insulation & Sheath
 - g) Physical Test for Insulation & Outer Sheath
 - h) Insulation Resistance Test
 - i) High Voltage Test
 - j) Flammability Test
 - k) Hot Set Test - (For XLPE Insulation only)
 - l) Bending test (for H.T. Screened cable)
 - m) Heating cycle test (for H.T. Screened cable)
 - n) Impulse withstand test (for H.T. Screened cable)
3. Acceptance Tests:
 - a) Tensile Test (For Aluminium Conductor)
 - b) Wrapping Test (For Aluminium Conductor)
 - c) Annealing Test (For Copper Conductor)
 - d) Conductor Resistance Test
 - e) Test for thickness of Insulation & Sheath
 - f) High Voltage Test
 - g) Insulation Resistance Test
 - h) Tensile Strength & Elongation at break test for Insulation and Sheath
 - i) Hot Set Test - (for XLPE Insulation only)
 - j) Partial Discharge test (for H.T. Screened cable)
4. Optional Tests:
 - a) Cold Bend Test
 - b) Cold Impact Test
 - c) Armour Resistance Test
(for other than Mining Type Cables)
5. Special Tests (As Applicable):
 - a) Oxygen Index Test as per ASTM D - 2863-77
 - b) Temp. Index Test as per ASTM D - 2863-77
 - c) Smoke Generation Test as per ASTM D - 2843-77
 - d) Acid Gas Generation Test as per IEC - 754-1
 - e) Flammability Test as per IEC - 332-1, IEEE-383, SS-4241475 Class F3 and IEC - 332-3
 - g) Water absorption test (by Electrical Method)
 - h) Ultra violet resistance to ASTM-G-53
 - i) Dielectric Strength retention test
 - j) Test for Antirodent & Antitermite property

For selection of a cable, a first hand knowledge of the system in which the cable is to be used, and the installation conditions under which the cable has to operate, is necessary. A knowledge of statutory restrictions and the manufacturing facilities available in the country will help in finding out as to what type of cable will be available for particular usage. The environmental conditions under which the cable has to operate will decide its protective covering. Thus once voltage grade of the cable, number of cores, conductor material, type of insulation and protective coverings are known, size of conductor remains to be decided. The first and foremost criteria for the size of conductor is continuous current rating for the present load. There after the same should be checked for short circuit, voltage drop, over load capacities and future expansions. Once decided the selection of next higher size compared to what is essential for the requirement, will always be worthwhile.

Economic considerations are also necessary.

INFORMATION REQUIRED WITH ENQUIRY & ORDER

The following information should be included in an enquiry:

- i) Voltage Grade.
- ii) Whether cable is to be used on Earthed or Unearthed system (for voltages above 3.3 KV).
- iii) Type of installation whether in air or in ducts or in ground.
- iv) If cables are grouped together, then number of cables in group and vertical and horizontal spacing between them.
- v) Required value and duration of short circuit current.

Following further informations are also required for offering the exact type of cable for any specific purpose:

- a) The normal ambient or operating temperature.
- b) The maximum temperature to which the PVC will be exposed and the duration and frequency of such exposures.
- c) The material with which the PVC will be in contact i.e. oil, gases, acids, alkalies etc. at normal and maximum temperature.
- d) If special flame retardent property is required.
- e) If any special electrical characteristics needed.



Handling & Storage

Handling (Unloading at site) : On receipt of cable drums visual inspection of drums should be made ensuring drum packing is original. While unloading the cables certain precautions are to be taken to ensure the safety of the cables.

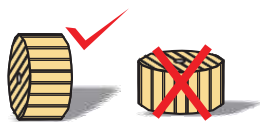
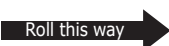
1. The cable drums should not be dropped or thrown from rail way wagons or trucks during unloading operations as the shock may cause serious damage to cable layers. A crane should be used for unloading cable drums. When lifting drums with the crane, it is recommended that the lagging should be kept in place to prevent the flanges from curshing on to the cable. If the crane is not available, a ramp should be prepared with approximate inclination of 1:3 or 1:4. The cable drum should be rolled over the ramp by means of ropes and winches. Additionally a sand bed at the foot of the ramp may be prepared to brake the rolling the cable drum.
2. Cable should not be dragged along the earth surface.
3. Cable ends should always be sealed by means of suitable end sealing materials to prevant moisturisation of cores and armour.
4. Drums should be rolled in direction of arrow marked on the drum.

Storage:

Cables should be stored in a dry covered place to prevent exposure to climatic conditions and wear and tear of wooden drums and it should preferably on a concrete surface/firm surface which will not cause the drums to sink and thus lead to flange rot and extreme difficulty in moving the drums.

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

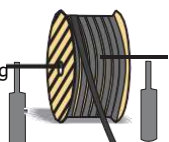
In no case should the drums be stored, "On the Flat", i.e., with flange horizontal.



Laying:

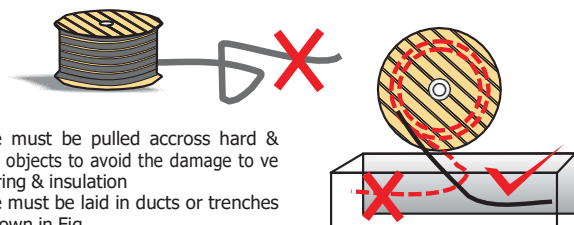
For laying of cables special cares to be taken to prevent sharp bending, kinking, twisting. Cable should be unwound from drum by proper mounting the cable drum on a cable wheel making sure the spindle is strong enough to carry the weight without bending and that it is lying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating.

Provision should be made to break the drum to avoid further rolling & buckling of cable during sudden stop. A simple wooden plank can server this purpose



This is incorrect way of pulling the cable & will cause kinks & twist in cable. Shall be avoided at all

Cable must be pulled from the top



Cable must be pulled accross hard & sharp objects to avoid the damage to ve covering & insulation
Cable must be laid in ducts or trenches as shown in Fig.

However, following salient points are to be considered during laying procedure of cables laid in racks and in built-in trenches.

1. For laying of cables power cables to be placed at the bottom most layer and control cables at top most layer.
2. Single core power cable for use on A.C. system shall be laid in delta formation supported by non-magnetic material. Trefoil clamps of suitable size are to be placed at regular intervals but preferably not more than 800 mm. Axial spacing of two circuits in delta formation shall not be less than 4 times the cable dia.

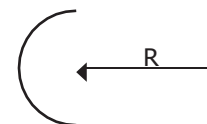
n case of multicore power cables, cables shall be laid side by side, with spacings not less than one cable diameter. However derating factors for cables laid on trenches are to be referred.

Multicore power cables and single core D.C. circuits may be clamped by means of galvanised mild steel saddles but 1.1 KV single core cables should be clamped by means of non-magnetic saddles. The saddles shall not be placed at intervals more than 1500 mm. for horizontal and 1200 mm. for vertical runs.

3. Multicore control cables can be laid touching each other on cable racks and wherever required may be taken in two layers. They should be clamped by means of PVC straps both for horizontal and vertical runs (alternatively, fabricated aluminium clamps may be used) at regular intervals.
4. a) If the cables are buried directly in ground I.S. 1255 is to be followed for code of practice. However, generally cables are laid 1000 mm. below finished ground level at any point of cable run and 75 mm. of sand cushioning to be provided.
4. b) In loose soil concrete pillar should be provided for as support and hence pipes are recommended to the used for cable path.
5. If there is a possibility of mechanical damage, cables should be protected by means of mild steel covers placed on racks.
6. While laying cables, special care to be taken at bends. Followings are the recommended bending radius for power and control cables.

Voltage Rating KV	PVC and XLPE Cables	
	Single Core	Multi Core
Upto 1.1	15 D	12 D
Above 1.1 but upto 3.3 K.V.	15 D	15 D

Where 'D' is overall diameter of cable.



7. Maximum safe pulling force (when pulled by pulling eye) Aluminium Conductor Cables : 3.0 Kg/mm² Copper Conductor Cables : 5.0 Kg/mm² Proper method of pulling of cable should be used.

TESTING

INSULATION RESISTANCE MEASUREMENT OF CABLE

The voltage rating of I.R. Tester (Megger) should be chosen as following table :

Voltage grade of cable	Rating of IR Tester (Megger) of cable
1.1 KV	500 V
3.3 KV	1000 V

Testing during laying :

All new cables shall be megger-tested before jointing. After jointing is completed all LV Cables shall be megger-tested.

End Terminations & Jointing :

Termination and jointing of Power & Control Cables shall be done by means of compression methods using solderless tinned copper/ Aluminium terminal lugs. For control cables terminations, ring tongue or reducer pin type terminal lug can also be used to suit the purpose.

Overhead/Outdoor Termination

XLPE insulation should be protected from direct solar rays or else ultra violet resistant sleeving / tapping must be provided on exposed XLPE insulation at the Termination to avoid degradation / cracking due to direct exposer of solar rays.



A view of dispatch yard



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