Automation
In Partnership with the Future

AUTOMATION CABLES
FOR SECURED POWER NETWORK

AUTOMATION CABLES & WIRES INDUSTRIES
An Enterprise of Automation Group

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০১৭১৩-১০৩৮১৮

নিরাপদ ক্যাবল নিশ্চিন্ত জীবন

AUTOMATION CABLES

অগ্নি প্রতিরোধক | আধুনিকতম উৎপাদন প্রক্রিয়া | আমদানিকৃত কাঁচামাল | সঠিক প্রস্থচ্ছেদের কোর

বিশুদ্ধ ইলেক্ট্রোলাইটিক ৯৯.৯৯% কপার

অটোমেশন গ্রুপের একটি প্রতিষ্ঠান

Automation
In Partnership with the Future

টেস্টে পরীক্ষিত

BSTI BUET

AUTOMATION Historical Perspective

Automation Engineering & Controls Ltd. started trading of Electrical power distribution and control equipments in 1994.Through this business it had the opportunity to establish a good relationship with Fuji Electric, Japan. Soon Automation Engineering & Controls Ltd. was able to achieve the confidence of the Fuji Electric. Consequently, in 1996 Fuji Electric appointed Automation Engineering & Controls Ltd. as a sole distributor of it's electrical power distribution & control devices and factory automation equipments in Bangladesh. By hard labor, sincerity & dynamic marketing of Automation Engineering and Controls Ltd. Fuji's products became popular in our country. During the components trading period, occasionally customers requested us to manufacture and supply complete sub–station equipments & panel boards also. Being inspired by the customers, a small workshop was established at Halishahar, in the Chittagong city area to manufacture panel boards. This workshop was too small to meet the customers growing demand.

So, in 2007 a factory named Automation Engineering, was established at Banshbaria in Sitakunda Upazila, Chittagong. It was established to manufacture LT, HT Switchgear, MDB, DB, MCC, PFI Plant & Distribution Transformers (12 KV Class). This factory is 30 KM far from Chittagong city, by the side of Dhaka–Chittagong highway and railway.

Electrical cable is one of the most important materials of this panel board manufacturing factory. The factory used to buy cables from local manufacturers. But though there are about more than 100 cable industries in Bangladesh, yet there is a scarcity of quality cables. Actually, these bitter experiences lead the proprietor of Automation Engineering to setup a factory to procure & establish a modern full–fledged Cable Factory as a part of related business diversification.

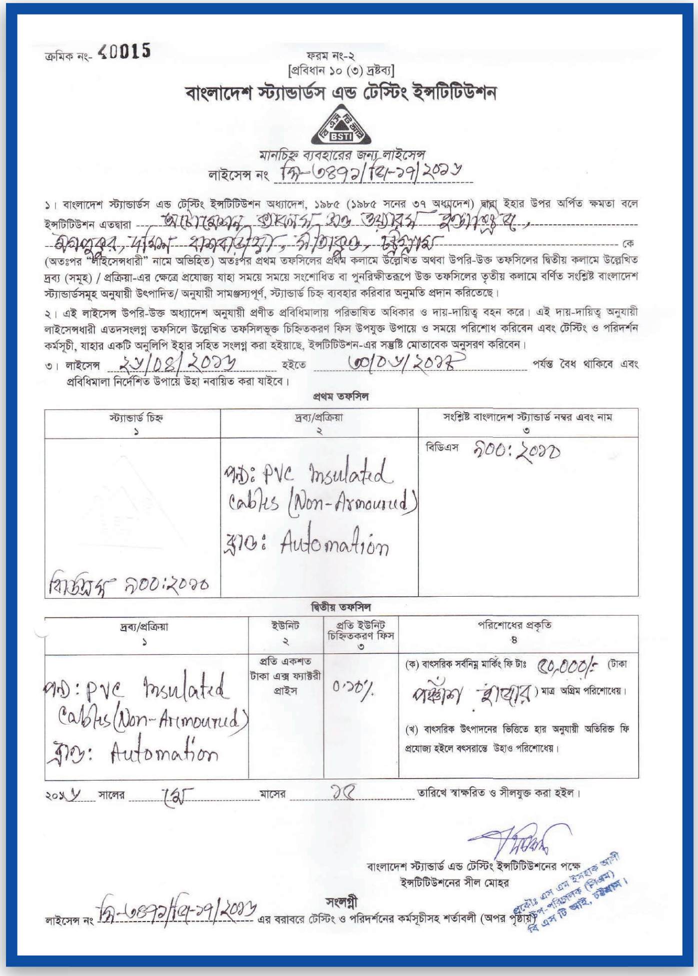
From the past experience it is seen that in our country every year fire accident occurs in garments industries, jute mills, multi–storied shopping malls and other commercial buildings. These fire accidents take away many lives and properties. Occasionally, investigations show that the causes in most of the cases is electrical short circuit, created from low grade cables and power distribution control equipments. Billion crore of taka has been lost by those fire accidents.

Automation Cables and Wires Industries is committed to manufacture electrical Cables, Wires and Conductors by using raw materials of the highest grade, utilizing modern and latest technology, uncompromising quality control and also highly experienced technicians and engineers.

Our cables will confirm the latest version of National and International Standards i.e. BDS, IEC, VDE, BS, IS and also meet the specific need of customers.

Automation Cables & Wires Industries, has been manufacturing the following products: Domestic Cables, LT, HT power (11Kv) Cables, Multi–Core Control Cables, Telecommunication Cables, Flexible Cables, Welding cables, Aluminum Cables, AAC, ACSR, Super Enameled copper wires etc. It has an enriched laboratory to test all vital parameters of cables and wires. Its annual capacity on a three shift basis is 3000 MT.

BSTI Certificate



ক্রমিক নং- ৫0015

ফরম নং-২
[প্রবিধান ১০ (৩) দ্রষ্টব্য]

বাংলাদেশ স্ট্যান্ডার্ডস এন্ড টেস্টিং ইন্সটিটিউশন

মানচিহ্ন ব্যবহারের জন্য লাইসেন্স

লাইসেন্স নং [illegible]

১। বাংলাদেশ স্ট্যান্ডার্ডস এন্ড টেস্টিং ইন্সটিটিউশন অধ্যাদেশ, ১৯৮৫ (১৯৮৫ সনের ৩৭ অধ্যাদেশ) দ্বারা ইহার উপর অর্পিত ক্ষমতা বলে ইন্সটিটিউশন এতদ্বারা [illegible] কে (অতঃপর "লাইসেন্সধারী" নামে অভিহিত) অতঃপর প্রথম তফসিলের প্রথম কলামে উল্লেখিত অথবা উপরি-উক্ত তফসিলের দ্বিতীয় কলামে উল্লেখিত দ্রব্য (সমূহ) / প্রক্রিয়া-এর ক্ষেত্রে প্রযোজ্য যাহা সময়ে সময়ে সংশোধিত বা পুনরিক্ষীতরূপে উক্ত তফসিলের তৃতীয় কলামে বর্ণিত সংশ্লিষ্ট বাংলাদেশ স্ট্যান্ডার্ডসমূহ অনুযায়ী উৎপাদিত/ অনুযায়ী সামঞ্জস্যপূর্ণ, স্ট্যান্ডার্ড চিহ্ন ব্যবহার করিবার অনুমতি প্রদান করিতেছে।

২। এই লাইসেন্স উপরি-উক্ত অধ্যাদেশ অনুযায়ী প্রণীত প্রবিধিমালায় পরিভাষিত অধিকার ও দায়-দায়িত্ব বহন করে। এই দায়-দায়িত্ব অনুযায়ী লাইসেন্সধারী এতদসংলগ্ন তফসিলে উল্লেখিত তফসিলভূক্ত চিহ্নিতকরণ ফিস উপযুক্ত উপায়ে ও সময়ে পরিশোধ করিবেন এবং টেস্টিং ও পরিদর্শন কর্মসূচী, যাহার একটি অনুলিপি ইহার সহিত সংলগ্ন করা হইয়াছে, ইন্সটিটিউশন-এর সন্তুষ্টি মোতাবেক অনুসরণ করিবেন।

৩। লাইসেন্স [illegible] হইতে [illegible] পর্যন্ত বৈধ থাকিবে এবং প্রবিধিমালা নির্দেশিত উপায়ে উহা নবায়িত করা যাইবে।

প্রথম তফসিল

স্ট্যান্ডার্ড চিহ্ন ১	দ্রব্য/প্রক্রিয়া ২	সংশ্লিষ্ট বাংলাদেশ স্ট্যান্ডার্ড নম্বর এবং নাম ৩
[illegible]	পণ্য: PVC Insulated Cables (Non-Armoured) ব্র্যান্ড: Automation	বিডিএস [illegible]

দ্বিতীয় তফসিল

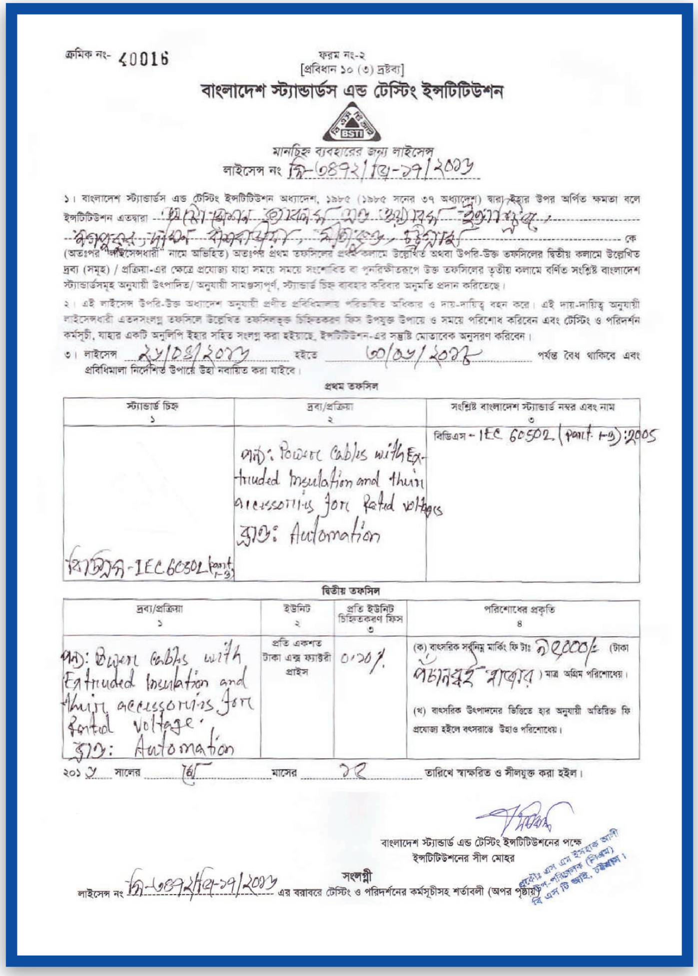
দ্রব্য/প্রক্রিয়া ১	ইউনিট ২	প্রতি ইউনিট চিহ্নিতকরণ ফিস ৩	পরিশোধের প্রকৃতি ৪
পণ্য: PVC Insulated Cables (Non-Armoured) ব্র্যান্ড: Automation	প্রতি একশত টাকা এক্স ফ্যাক্টরী প্রাইস	[illegible]	(ক) বাৎসরিক সর্বনিম্ন মার্কিং ফি টাঃ [illegible] (টাকা [illegible]) মাত্র অগ্রিম পরিশোধেয়। (খ) বাৎসরিক উৎপাদনের ভিত্তিতে হার অনুযায়ী অতিরিক্ত ফি প্রযোজ্য হইলে বৎসরান্তে উহাও পরিশোধেয়।

২০[illegible] সালের [illegible] মাসের [illegible] তারিখে স্বাক্ষরিত ও সীলযুক্ত করা হইল।

বাংলাদেশ স্ট্যান্ডার্ড এন্ড টেস্টিং ইন্সটিটিউশনের পক্ষে
ইন্সটিটিউশনের সীল মোহর

সংলগ্নী

লাইসেন্স নং [illegible] এর বরাবরে টেস্টিং ও পরিদর্শনের কর্মসূচীসহ শর্তাবলী (অপর পৃষ্ঠায়)



ক্রমিক নং- ৫0016

ফরম নং-২
[প্রবিধান ১০ (৩) দ্রষ্টব্য]

বাংলাদেশ স্ট্যান্ডার্ডস এন্ড টেস্টিং ইন্সটিটিউশন

মানচিহ্ন ব্যবহারের জন্য লাইসেন্স

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২। এই লাইসেন্স উপরি-উক্ত অধ্যাদেশ অনুযায়ী প্রণীত প্রবিধিমালায় পরিভাষিত অধিকার ও দায়-দায়িত্ব বহন করে। এই দায়-দায়িত্ব অনুযায়ী লাইসেন্সধারী এতদসংলগ্ন তফসিলে উল্লেখিত তফসিলভূক্ত চিহ্নিতকরণ ফিস উপযুক্ত উপায়ে ও সময়ে পরিশোধ করিবেন এবং টেস্টিং ও পরিদর্শন কর্মসূচী, যাহার একটি অনুলিপি ইহার সহিত সংলগ্ন করা হইয়াছে, ইন্সটিটিউশন-এর সন্তুষ্টি মোতাবেক অনুসরণ করিবেন।

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প্রথম তফসিল

স্ট্যান্ডার্ড চিহ্ন ১	দ্রব্য/প্রক্রিয়া ২	সংশ্লিষ্ট বাংলাদেশ স্ট্যান্ডার্ড নম্বর এবং নাম ৩
[illegible] -IEC 60502 (Part 1-3)	পণ্য: Power Cables with Extruded Insulation and their accessories for Rated voltages ব্র্যান্ড: Automation	বিডিএস - IEC 60502 (Part 1-3):2005

দ্বিতীয় তফসিল

দ্রব্য/প্রক্রিয়া ১	ইউনিট ২	প্রতি ইউনিট চিহ্নিতকরণ ফিস ৩	পরিশোধের প্রকৃতি ৪
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বাংলাদেশ স্ট্যান্ডার্ড এন্ড টেস্টিং ইন্সটিটিউশনের পক্ষে
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সংলগ্নী

লাইসেন্স নং [illegible] এর বরাবরে টেস্টিং ও পরিদর্শনের কর্মসূচীসহ শর্তাবলী (অপর পৃষ্ঠায়)

BUET Certificate

তড়িৎ ও ইলেকট্রনিক কৌশল বিভাগ
বাংলাদেশ প্রকৌশল বিশ্ববিদ্যালয়, ঢাকা-১০০০
ফোন ঃ ৮৬১১৫৯৪ (সরাসরি)
পিএবিএক্স ঃ ৯৬৬৫৬৫০-৮০/৭১১৩, ৭১১২
ফ্যাক্স ঃ ৮৮০-২-৮৬১৩০২৬
৮৮০-২-৮৬১১৫৯৪

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TEST REPORT ON 1X4 RM BYA AND 1X16 RM NYY LT CABLES REQUESTED BY ASSISTANT ENGINEER, AUTOMATION CABLES & WIRES INDUSTRIES, BANGLADESH

BRTC REF. NO.: 1101-17070/EEE/2016-2017 Date: 10/08/2016
CLIENT'S REF. NO.: Nil Date: 05/06/2016

Table 2: Test results of 1X16 rm NYY LT cable

Test Specifications	Unit	Test Results
Number of cores in the cable	No.	1
Number of copper strands in the core	No.	7
Average diameter of each strand in the core	mm	1.75
Average thickness of insulation	mm	0.99
Minimum thickness of insulation	mm	0.87
Average thickness of sheath	mm	1.95
Minimum thickness of sheath	mm	1.79
Average overall outer diameter of the cable	mm	11.32
Average diameter of the cable without sheath (Insulation + Conductor)	mm	7.01
Average diameter of bare conductor core	mm	4.89
Weight of the cable	kg/km	258
DC resistance of the conductor at 20° C	Ω/km	1.05
Insulation resistance between core and the body at ambient temperature	MΩ	>10,000
High voltage withstand test (4.0 kV rms, 5min)		Satisfactory
Heat run test		Satisfactory

4. Comments

1) Physical dimensions of the supplied cables are within acceptable limits.
2) DC resistances at 20° C of the supplied cables are less than the maximum allowable limits and hence satisfactory.
3) Insulation resistances of the cables are satisfactory.
4) The cable passed high voltage withstand test satisfactorily.
5) The temperature rise under stable condition is within acceptable limit.

The overall performances of the supplied cables are satisfactory.

P. 4 /4

Contents

1. GENERAL GUIDE TO THE DIFFERENT NOMENCLATURES AND CODE DESIGNATION USED

Nomenclature	Interpretation
BDS	Bangladesh Standard
BS	British Standard
VDE	Union of German Electrical Engineers (Verband Deutscher Elecktrotechniker)
N	According to VDE Standard (VDE 0250 & 0271)
B	According to British Standard (BS 6004)
I	According to British Standard (BS 2004: 1961: Imperial System)
Y	Insulation or Sheath of Thermoplastic based on PVC (Polyvinyl Chloride)
A	Insulated Single Core Wire
M	Sheathed Wire
F	a) Flat Cable (VDE 0250, BS 2004 & 6004) b) Galv. Steel Flat Wire Armour (VDE–0271, IEC–60502)

Nomenclature	Interpretation
E	Earth Continuity Conductor.
S	Shield of Copper.
C	Concentric Neutral Conductor of Copper.
R	Galv. Round Steel Wire Armour.
G	Helical Galvanize Steel tape. (As per IEC–60502)
Gb	Helical Galvanized Steel tape. (As per VDE–0271)
I	International Colour Code: Cable possessing a green–yellow identification core
re	Conductor of Single Solid Wire of Circular Cross Section
rm	Conductor of Multiple Stranded Wires of Circular Cross Section
Sm	Conductor of Multiple Stranded Wires of Sector Shaped Cross Section

Cable Code

As per BDS 900, BS 6004

BYA	PVC insulated non–sheathed Single core Cable.
BYFY	PVC insulated & PVC sheathed FLAT Cable.
BYFYE	PVC insulated & PVC sheathed FLAT Cable with Earth Continuity Conductor.
BYM	PVC insulated & PVC sheathed Cable.

As per BDS 901, VDE 0271 / 3.69 & VDE 0250 / 3.69

NYY	PVC insulated & PVC sheathed Cable.
NYY–I	PVC insulated and PVC sheathed cable having international colour code, i. e., one of the cores being coloured green/yellow.
NYFGbY	Cable with PVC insulation, flat steel wire armouring and helical steel taping over common covering of cores and pvc sheath, i. e., flat wire armoured NYY type of cable.
NYRGbY	Cable with PVC insulation, round steel wire armouring and helical steel taping over common covering of cores and PVC sheath, i. e., round wire armoured NYY type of cable.
NYCY	Cable with PVC insulation, concentric conductor of copper over common covering of cores and PVC sheath, i. e., NYY type of cable having a concentric conductor of copper. The conductor of the half core of a three and half core cable or of the fourth core of a four core cable is arranged concentrically over the common covering of the remaining three cores. Similarly copper screening of screened control cable is arranged concentrically around the cores.

Cable Code

NYSY	Cable with PVC insulation, shield of copper over common covering of cores and PVC sheath. The minimum cross sectional area of the copper shield is 16 mm^2
NYHSY	Single core cable with PVC insulation, field limiting conducting layers over the conductor and also over the insulation, copper shield and PVC sheath. The minimum cross sectional area of the copper shield is 16 mm^2
NYSEY	Multicore cable with PVC insulation, field limiting conducting layers over each individual conductor and over each individual core copper shield also over each individual core and overall PVC sheath. The minimum total cross sectional area of the copper shield of the individual cores, all of which remain in electrical contact with each other, is 16 mm^2. The cable may be said as a multicore NYHSY type of cable.
NYSEYFGbY	Multicore cable with PVC insulation, field limiting conducting layers over each individual conductor and core, coper shield also over each individual core, PVC inner sheath over common covering of cores, flat steel wire armouring, helical steel taping and PVC outer sheath, i. e., flat wire armoured NYSEY type of cable.

2. SOME USEFUL DEFINITIONS

Voltage designation	The voltage designation indicates the rated voltage Uo/U for which the cables are designed, where "Uo" is the power frequency voltage between conductor to metallic covering / Earth and "U" is the power frequency voltage between conductors.
Service Voltage	It is the voltage which locally exists between the line conductors of a power installation (or between conductor and earth) in undisturbed operation at a given place and at a given time.
Permissible Service Voltage	It is the maximum permissible voltage with which the cable can be used in continuous undisturbed operation.
Nominal value	It is the value by which a quantity is designated which must be maintained within the tolerance as laid down in corresponding standard.
Approximate value	It is the value which is neither guaranteed nor checked, but it should lie within commercially accepted tolerances or tolerances governed by the method of manufacture. Approximate values may, for instance, be used as a basis for the computation of dimensions.

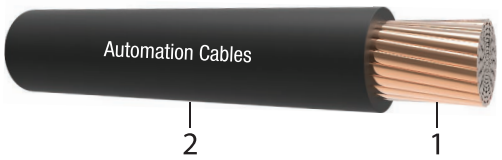
PVC INSULATED CABLES

3. APPLICATION, CONSTRUCTION & DIFFERENT PARAMETERS OF CABLES

BYA-FR

450/750V
SINGLE CORE
Domestic Cable
Made as per
BDS 900 & BS 6004

Application: Suitable for surface mounted or concealed steel conduits or trunking. Also suitable for field protected installation in and appliance up to 1000V a.c or upto 750V to earth d.c.



Construction: 1. Annealed Copper 2. PVC Insulation

Table: 01

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
				Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
1x1.0	1/1.13	re	0.7	2.5	3.0	16	18.1	13	16
1x1.0	3/0.65	rm	0.7	2.5	3.0	17	18.1	13	16
1x1.3	3/0.74	rm	0.7	2.6	3.2	20	14.03	15	19
1x1.5	1/1.38	re	0.7	2.6	3.2	22	12.1	16	20
1x1.5	7/0.52	rm	0.7	2.7	3.3	23	12.1	16	20
1x1.5	3/0.80	rm	0.7	2.7	3.3	23	12.1	16	20
1x2.0	3/0.91	rm	0.8	3.1	3.8	30	9.11	20	25
1x2.5	1/1.78	re	0.8	3.2	3.9	32	7.41	22	28
1x2.5	7/0.67	rm	0.8	3.3	4.0	33	7.41	22	28
1x3.0	7/0.74	rm	0.8	3.5	4.3	40	5.99	26	31
1x4.0	7/0.85	rm	0.8	3.8	4.6	51	4.61	30	37
1x4.5	7/0.91	rm	0.8	3.9	4.7	56	3.89	32	39
1x6.0	7/1.04	rm	0.8	4.3	5.2	71	3.08	38	47
1x7.0	7/1.12	rm	1.0	4.5	5.8	85	2.61	42	51
1x9.5	7/1.32	rm	1.0	5.4	6.5	113	1.86	50	61
1x10	7/1.35	rm	1.0	5.6	6.7	117	1.83	52	63
1x14.5	7/1.63	rm	1.0	6.2	7.5	164	1.23	65	79
1x16	7/1.70	rm	1.0	6.4	7.8	179	1.15	70	85

MCB

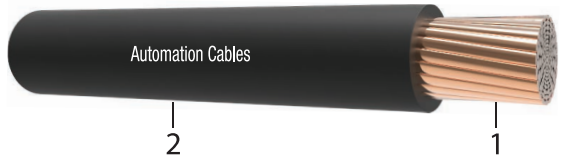
AUTOMATION CABLES
FOR SECURED POWER NETWORK

MCCB

BYA

450/750V
SINGLE CORE
LT Power Cable
Made as per
BDS 900 & BS: 6004

Application: Suitable for surface mounted or concealed steel conduits or trunking. Also suitable for field protected installation in and appliance up to 1000V a.c or upto 750V to earth d.c.



Construction: 1. Annealed Copper 2. PVC Insulation.

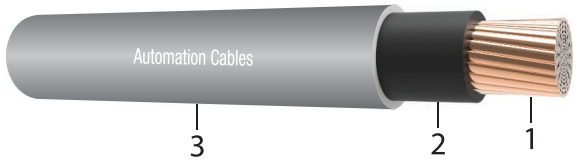
Table: 02

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
				Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
1x25	7/2.14	rm	1.2	8.1	9.7	276	0.727	91	110
1x35	min.6	rm	1.2	9.0	10.9	373	0.524	112	136
1x50	min.6	rm	1.4	10.8	12.8	532	0.387	136	164
1x70	min.12	rm	1.4	12.1	14.6	732	0.268	173	207
1x95	min.15	rm	1.6	14.1	17.1	985	0.193	216	253
1x120	min.18/15	rm	1.6	15.6	18.8	1227	0.153	244	291
1x150	min.18/15	rm	1.8	17.3	20.9	1535	0.124	–	333
1x185	min.30	rm	2.0	19.3	23.3	1891	0.0991	–	381
1x240	min.34/30	rm	2.2	22.0	26.6	2458	0.0754	–	452
1x300	min.34/30	rm	2.4	24.5	29.6	3055	0.0601	–	526
1x400	min.53	rm	2.6	27.5	33.2	4078	0.047	–	639
1x500	min.53	rm	2.8	30.5	36.9	5048	0.0366	–	752
1x630	min.53	rm	2.8	34.0	41.1	6363	0.0283	–	855

BYM

300/500 V
SINGLE CORE
Made as per
BDS 900 & BS: 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation 3. Gray PVC outer Sheath

Table: 03

PHYSICAL DATA								ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
					Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	mm	kg/km	ohm/km	amps	amps
1x1.0	1/1.13	re	0.6	0.8	3.8	4.5	25	18.1	13	16
1x1.0	3/0.65	rm	0.6	0.8	3.8	4.5	26	18.1	13	16
1x1.3	3/0.74	rm	0.7	0.8	4.2	4.9	34	14.03	15	19
1x1.5	1/1.38	re	0.7	0.8	4.2	4.9	32	12.1	16	20
1x1.5	7/0.52	rm	0.7	0.8	4.2	4.9	33	12.1	16	20
1x1.5	3/0.80	rm	0.7	0.8	4.2	4.9	33	12.1	16	20
1x2.0	3/0.91	rm	0.7	0.8	4.6	5.4	44	9.11	20	25
1x2.5	1/1.78	re	0.8	0.8	4.8	5.8	45	7.41	22	28
1x2.5	7/0.67	rm	0.8	0.8	4.8	5.8	46	7.41	22	28
1x3.0	7/0.74	rm	0.8	0.8	5.1	6.1	60	5.99	26	31
1x4.0	7/0.85	rm	0.8	0.9	5.4	6.8	73	4.61	30	37
1x4.5	7/0.91	rm	0.8	0.9	5.6	7.0	81	3.89	32	39
1x6.0	7/1.04	rm	0.8	0.9	6.0	7.4	96	3.08	38	47
1x7.0	7/1.12	rm	0.8	0.9	6.5	7.8	107	2.61	42	51
1x9.5	7/1.32	rm	1.0	0.9	7.0	8.7	145	1.86	50	61
1x10	7/1.35	rm	1.0	0.9	7.2	8.8	147	1.83	52	63
1x14.5	7/1.63	rm	1.0	1.0	8.0	10.0	206	1.23	65	79
1x16	7/1.70	rm	1.0	1.0	8.40	10.5	218	1.15	70	85
1x25	7/2.14	rm	1.2	1.1	10.0	12.5	328	0.727	91	110
1x35	19/1.53	rm	1.2	1.1	11.0	13.5	432	0.524	112	136

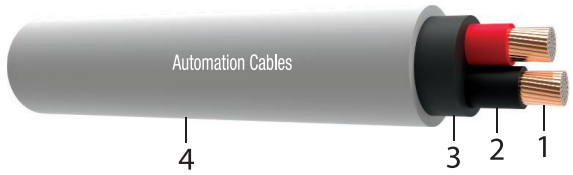
Magnetic Contactor

Manual Motor Starters

BYM

300/500V
TWIN CORE
Made as per
BDS 900 & BS 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC Inner Sheath 4. Gray PVC outer Sheath

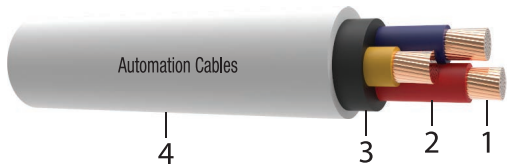
Table: 04

PHYSICAL DATA								ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
					Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	mm	kg/km	ohm/km	amps	amps
2x1.0	1/1.13	re	0.6	1.2	7.6	8.8	93	18.1	13	15
2x1.0	3/0.65	rm	0.6	1.2	7.6	8.8	102	18.1	13	15
2x1.5	1/1.38	re	0.7	1.2	8.4	10	119	12.1	16	18
2x1.5	7/0.52	rm	0.7	1.2	9.0	10.2	121	12.1	16	18
2x1.5	3/0.80	rm	0.7	1.2	9.0	10.2	121	12.1	16	18
2x2.5	1/1.78	re	0.8	1.2	9.6	11.5	165	7.41	22	26
2x2.5	7/0.67	rm	0.8	1.2	10.4	11.8	167	7.41	22	26
2x4	7/0.85	rm	0.8	1.2	10.5	12.5	228	4.61	30	33
2x6	7/1.04	rm	0.8	1.2	11.5	14.0	294	3.08	37	43
2x10	7/1.35	rm	1.0	1.4	15.0	17.5	485	1.83	50	60
2x16	7/1.70	rm	1.0	1.4	16.5	20.0	673	1.15	66	80
2x25	7/2.14	rm	1.2	1.4	20.5	24.0	1004	0.727	75	88
2x35	19/1.53	rm	1.2	1.6	23.0	27.5	1347	0.524	92	108

BYM

300/500V
THREE CORE
Made as per
BDS 900 & BS 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC Inner Sheath 4. Gray PVC outer Sheath.

Table: 05

PHYSICAL DATA								ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
					Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	mm	kg/km	ohm/km	amps	amps
3x1.0	1/1.13	re	0.6	1.2	7.8	9.2	106	18.1	11	12
3x1.0	3/0.65	rm	0.7	1.2	7.8	9.2	115	18.1	11	12
3x1.5	1/1.38	re	0.7	1.2	8.8	10.5	139	12.1	15	16
3x1.5	7/0.52	rm	0.7	1.2	9.2	10.8	142	12.1	15	16
3x1.5	3/0.80	rm	0.8	1.2	9.2	10.8	142	12.1	15	16
3x2.5	1/1.78	re	0.8	1.2	10.0	12.0	195	7.41	20	22
3x2.5	7/0.67	rm	0.8	1.2	10.5	12.5	198	7.41	20	22
3x4	7/0.85	rm	0.8	1.2	11.0	13.0	268	4.61	27	30
3x6	7/1.04	rm	0.8	1.4	12.5	15.5	386	3.08	33	37
3x10	7/1.35	rm	1.0	1.4	15.5	19.0	590	1.83	46	51
3x16	7/1.70	rm	1.0	1.4	18.0	21.5	856	1.15	58	67
3x25	7/2.14	rm	1.2	1.6	22.0	26.0	1272	0.727	66	77
3x35	19/1.53	rm	1.2	1.6	24.5	29.0	1685	0.524	81	90

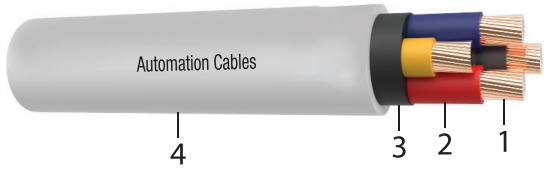
ACB

VCB

BYM

300/500 V
FOUR CORE
BDS 900
& BS: 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC Inner Sheath 4. Gray PVC outer Sheath

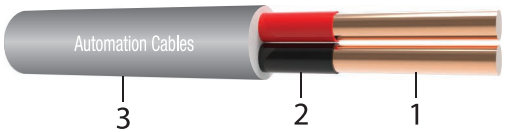
Table: 06

PHYSICAL DATA								ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter		Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
					Lower limit	Upper limit				
Core x mm^2	nos./mm	–	mm	mm	mm	mm	kg/km	ohm/km	amps	amps
4x1.0	1/1.13	re	0.6	1.2	8.4	9.8	124	18.1	11	12
4x1.0	3/0.65	rm	0.6	1.2	8.4	9.8	151	18.1	11	12
4x1. 5	1/1.38	re	0.7	1.2	9.6	11.5	164	12.1	15	16
4x1.5	7/0.52	rm	0.7	1.2	10.0	12.0	168	12.1	15	16
4x1. 5	3/0.80	rm	0.7	1.2	10.0	12.0	168	12.1	15	16
4x2.5	1/1.78	re	0.8	1.2	11.0	13.0	224	7.41	20	22
4x2.5	7/0.67	rm	0.8	1.2	11.5	13.5	228	7.41	20	22
4x4	7/0.85	rm	0.8	1.4	12.0	14.5	342	4.61	27	30
4x6	7/1.04	rm	0.8	1.4	14.0	17.0	464	3.08	33	37
4x10	7/1.35	rm	1.0	1.4	17.0	20.5	719	1.83	46	51
4x16	7/1.70	rm	1.0	1.4	20.0	23.5	1051	1.15	58	67
4x25	7/2.14	rm	1.2	1.6	24.5	28.5	1600	0.727	66	77
4x35	19/1.53	rm	1.2	1.6	27.0	32.0	2085	0.524	81	90

BYFY

300/500 V
TWIN CORE
Made as per
BDS 900 & BS 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation & Cores Laid in Flat Form, 3. Gray PVC outer Sheath.

Table: 07

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approx. Cable diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
2x1.0	1/1.13	re	0.6	0.9	7.4x4.7	53	18.1	13	15
2x1.0	3/0.65	rm	0.6	0.9	7.6x4.8	58	18.1	13	15
2x1.3	3/0.74	rm	0.7	0.9	8.3x5.3	69	14.03	15	17
2x1.5	1/1.38	re	0.7	0.9	8.4x5.4	65	12.10	16	18
2x1.5	7/0.52	rm	0.7	0.9	8.4x5.4	67	12.10	16	18
2x1.5	3/0.80	rm	0.7	0.9	8.4x5.4	67	12.10	16	18
2x2.0	3/0.91	rm	0.7	0.9	9.4x5.8	92	9.11	20	23
2x2.5	1/1.78	re	0.8	1.0	9.8x6.2	98	7.41	22	26
2x2.5	7/0.67	rm	0.8	1.0	9.8x6.2	99	7.41	22	26
2x3.0	7/0.74	rm	0.8	1.0	11.2x6.7	127	5.99	24	28
2x4.0	7/0.85	rm	0.8	1.0	11.5x7.2	152	4.61	30	33
2x4.5	7/0.91	rm	0.8	1.0	11.8x7.5	165	3.89	32	38
2x6.0	7/1.04	rm	0.8	1.1	13.0x8.0	205	3.08	37	43

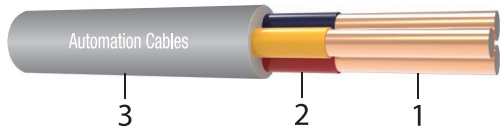
Inverter

DoI Starter

BYFY

300/500 V
THREE CORE
Made as per
BDS 900 & BS 6004

Application: Suitable for fixed installations in dry or damp premises clipped direct to a surface or on a cable tray unenclosed and also for use in non metallic conduit (PVC).



Construction: 1. Annealed Copper 2. PVC Insulation & Cores Laid in Flat Form 3. Gray PVC outer Sheath.

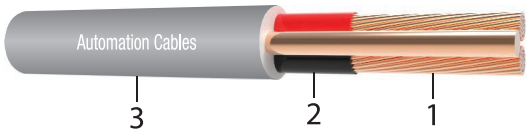
Table: 08

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approx. Cable diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in conduit	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
3x1.0	1/1.13	re	0.6	0.9	9.8x4.7	76	18.1	11	12
3x1.0	3/0.65	rm	0.6	0.9	10.4x4.8	87	18.1	11	12
3x1.5	1/1.38	re	0.7	0.9	11.5x5.4	77	12.1	15	16
3x1.5	7/0.52	rm	0.7	0.9	11.5x5.4	96	12.1	15	16
3x1.5	3/0.80	rm	0.7	0.9	11.5x5.4	96	12.1	15	16
3x2.5	1/1.78	re	0.8	0.9	13.5x6.2	97	7.41	20	22
3x2.5	7/0.67	rm	0.8	1.0	13.5x6.2	145	7.41	20	22
3x4	7/0.85	rm	0.8	1.1	16.5x7.4	229	4.61	33	30
3x6	7/1.04	rm	0.8	1.1	18.0x8.0	301	3.08	37	37

BYFYE

300/500V
TWO CORE
Made as per
BDS 900 & BS 6004

Application: Suitable for fixed installations in dry or damp premises and for installation, on boards and in channels or embedded in plaster.



Construction: 1. Annealed Copper 2. PVC Insulation & Cores Laid in Flat Form With ECC 3. Gray PVC outer Sheath.

Table: 09

PHYSICAL & ELECTRICAL DATA										
Nominal Cross Sectional Area of conductor	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Max overall diamentions	No. & nominal diameter of wire in ECC	Max. DC resistance of conductor at 20°C	Approx. weight of Cable	Current rating	
									Enclosed in conduit at 35°C	Clipped to surface or cable tray at 35°C
Core x mm^2	nos./mm	–	mm	mm	mm	no/mm	ohm/km	kg/km	amps	amps
2x1.0	1/1.13	re	0.6	0.9	9.2x5.0	1/1.13	18.1	68	13	15
2x1.5	1/1.38	re	0.6	0.9	10.2x5.4	1/1.13	12.1	81	16	18
2x2.5	1/1.78	re	0.7	1.0	12.0x6.4	1/1.13	7.41	114	22	26
2x4.0	7/0.85	rm	0.8	1.0	13.5x7.2	1/1.38	4.61	177	30	33
2x6.0	7/1.04	rm	0.8	1.1	15.5x8.0	1/1.78	3.08	244	37	43

Super Timer

Overload Relay

NYY

600/1000 V
SINGLE CORE
Made as per
VDE 0271

Application: Suitable for indoors, outdoors, underground and in water for continuous permissible service voltage of 720/1200 Volts.

Construction: 1. Annealed Copper 2. PVC Insulation 3. Black PVC outer Sheath.

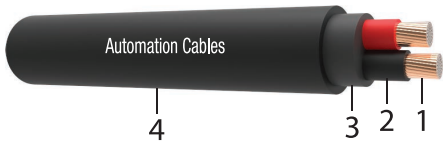
Table: 10

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter (approx.)	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
1x1.5	1/1.38	re	0.8	1.8	6.6	55	12.1	27	22
1x1.5	7/0.52	rm	0.8	1.8	6.8	58	12.1	27	22
1x2.5	1/1.78	re	0.8	1.8	7.2	70	7.41	36	30
1x2.5	7/0.68	rm	0.8	1.8	7.4	75	7.41	36	30
1x4	7/0.85	rm	1.0	1.8	8.2	106	4.61	47	39
1x6	7/1.04	rm	1.0	1.8	8.7	132	3.08	59	50
1x10	7/1.35	rm	1.0	1.8	9.7	182	1.83	78	69
1x16	7/1.70	rm	1.0	1.8	10.7	252	1.15	100	94
1x25	7/2.14	rm	1.2	1.8	12.4	363	0.727	130	125
1x35	min.6	rm	1.2	1.8	13.7	470	0.524	155	160
1x50	min.6	rm	1.4	1.8	15.6	645	0.387	185	195
1x70	min.12	rm	1.4	1.8	17.3	858	0.268	225	245
1x95	min.15	rm	1.6	1.8	19.4	1129	0.193	270	300
1X120	min.18/15	rm	1.6	1.8	21	1384	0.153	310	350
1x150	min.18/15	rm	1.8	1.8	23.1	1709	0.124	350	405
1x185	min.30	rm	2.0	2.0	25.6	2097	0.0991	390	460
1x240	min.34/30	rm	2.2	2.0	28.6	2708	0.0754	450	555
1x300	min.34/30	rm	2.4	2.0	31.3	3405	0.0601	515	640
1x400	min.53	rm	2.6	2.2	35.3	4408	0.047	585	770
1x500	min.53	rm	2.8	2.2	38.0	5436	0.0366	680	900
1x630	min.53	rm	2.8	2.2	42.0	6780	0.0283	800	1030
1x800	min.53	rm	2.8	2.4	46.2	8510	0.0221	945	1160
1X1000	min.53	rm	3.0	2.5	51.1	10530	0.0176	1095	1310

NYY

600/1000 V
TWO CORE
Made as per
VDE-0271 &
IEC-60502-1

Application: Suitable for indoors, outdoors, underground and in water for continuous permissible service voltage of 720/1200 Volts.



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC inner Sheath 4 Black PVC outer Sheath.

Table: 11

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter (approx.)	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
2x1.5	1/1.38	re	0.8	1.8	11.0	165	12.1	25	19
2x1.5	7/0.52	rm	0.8	1.8	11.2	170	12.1	25	19
2x2.5	1/1.78	re	0.8	1.8	12.4	205	7.41	34	27
2x2.5	7/0.67	rm	0.8	1.8	12.8	215	7.41	34	27
2x4	7/0.85	rm	1.0	1.8	14.5	305	4.61	44	35
2x6	7/1.04	rm	1.0	1.8	15.6	375	3.08	55	45
2x10	7/1.35	rm	1.0	1.8	17.5	509	1.83	74	62
2x16	7/1.70	rm	1.0	1.8	19.5	691	1.15	97	84
2x25	7/2.14	rm	1.2	1.8	23.5	1044	0.727	125	110
2x35	19/1.53	rm	1.2	1.8	26.0	1330	0.524	150	140

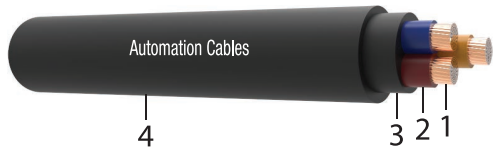
PLC

Cast Resin Transformer

NYY

600/1000V
THREE CORE
Made as per
VDE-0271
& IEC-60502-1

Application: Suitable for indoors, outdoors, undeground and in water for continuous permissible service voltage of 720/1200 Volts.



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC inner Sheath 4. Black PVC outer Sheath.

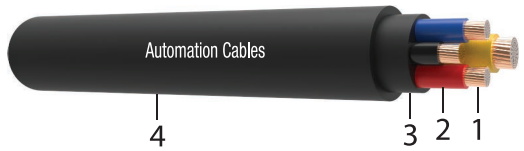
Table: 12

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approx. cable diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
3x1.5	1/1.38	re	0.8	1.8	11.5	195	12.1	22.0	16
3x1.5	7/0.52	rm	0.8	1.8	11.8	200	12.1	22.0	16
3x2.5	1/1.78	re	0.8	1.8	12.7	250	7.41	30.0	23
3x2.5	7/0.67	rm	0.8	1.8	13.2	260	7.41	30.0	23
3x4	7/0.85	rm	1.0	1.8	15.0	360	4.61	38	32
3x6	7/1.04	rm	1.0	1.8	16.4	460	3.08	48	41
3x10	7/1.35	rm	1.0	1.8	18.5	625	1.83	64	56
3x16	7/1.70	rm	1.0	1.8	21.0	920	1.15	83	75
3x25	7/2.14	rm	1.2	1.8	25.0	1320	0.727	110	98
3x35	min.6	sm	1.2	1.8	24.2	1400	0.524	130	120
3x50	min.6	sm	1.4	1.8	25.9	1815	0.387	155	150
3x70	min.12	sm	1.4	2.0	29.2	2444	0.268	190	190
3x95	min.15	sm	1.6	2.1	33.4	3350	0.193	225	230
3x120	min.18/15	sm	1.6	2.2	36.3	4110	0.153	260	270
3x150	min.18/15	sm	1.8	2.3	39.5	5100	0.124	295	305
3x185	min.30	sm	2.0	2.5	43.5	6260	0.0991	330	350
3x240	min.34/30	sm	2.2	2.7	48.8	7900	0.0754	385	410
3x300	min.34/30	sm	2.4	2.9	54.1	10000	0.0601	425	470

NYY

600/1000 V
THREE & HALF CORE
Made as per
VDE-0271
& IEC-60502-1

Application: Suitable for indoors, outdoors, underground and in water for continuous permissible service voltage of 720/1200 Volts.

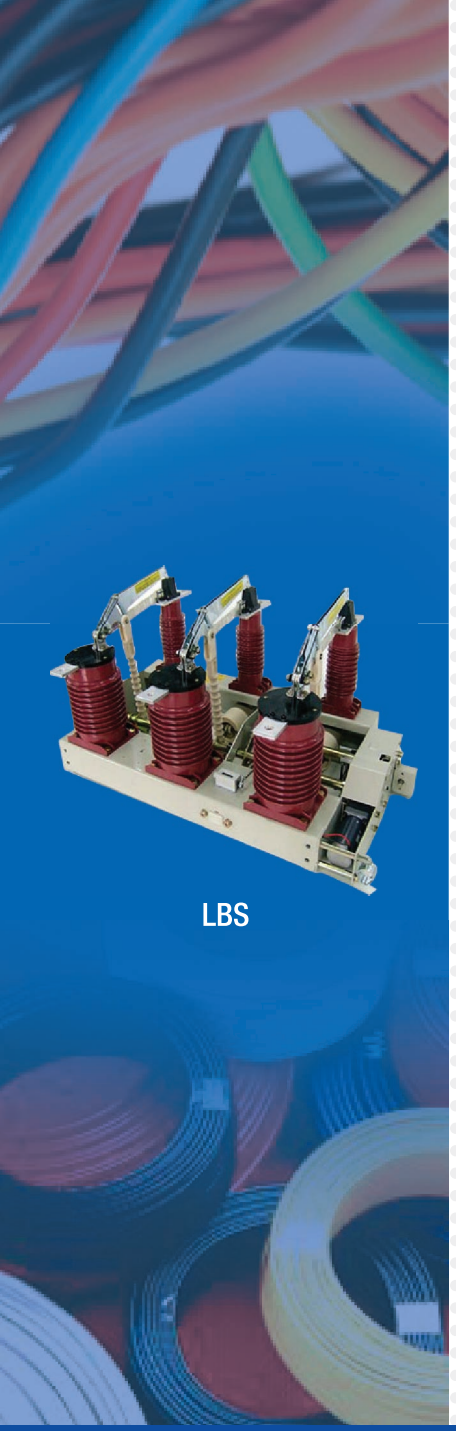


Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC inner Sheath 4. Black PVC outer Sheath.

Table: 13

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter (approx.)	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos.	–	mm	mm	mm	kg/km	ohm/km	amps	amps
3x25+16	min.6 min.6	rm/rm	1.2 1.0	1.8	27.0	1400	0.727/1.15	110	98
3x35+16	min.6 min.6	sm/rm	1.2 1.0	1.8	26.2	1580	0.524/1.15	130	120
3x50+25	min.6 min.6	sm/rm	1.4 1.2	1.9	28.5	2180	0.387/0.727	155	150
3x70+35	min.12 min.6	sm/rm	1.4 1.2	2.0	32.5	2910	0.268/0.524	190	190
3x95+50	min.15 min.6	sm/rm	1.6 1.4	2.2	38.0	3950	0.193/0.387	225	230
3x120+70	min.18/15 min.12	sm/rm	1.6 1.4	2.3	40.8	5050	0.153/0.268	260	270
3x150+70	min.18/15 min.12	sm/rm	1.8 1.4	2.4	45.0	6020	0.124/0.268	295	305
3x185+95	min.30 min.15	sm/rm	2.0 1.6	2.6	50.5	7450	0.0991/0.193	330	350
3x240+20	min.34/30 min.18/15	sm/rm	2.2 1.6	2.8	56.0	9650	0.0754/0.153	385	410
3x300+150	min.34/30 min.18/15	sm/rm	2.4 1.8	3.0	63.0	12100	0.0601/0.124	425	470

Online UPS

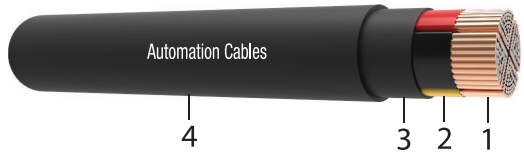


LBS

NYY

720/1200 V
FOUR CORE
Made as per
VDE-0271
& IEC-60502-1

Application: Suitable for indoors, outdoors, undeground and in water for continuous permissible service voltage of 720/1200 Volts.



Construction: 1. Annealed Copper 2. PVC Insulation 3. PVC inner Sheath 4. Black PVC outer Sheath.

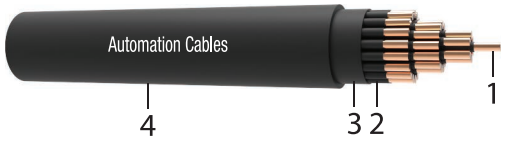
Table: 14

PHYSICAL DATA							ELECTRICAL DATA		
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approx. cable diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	ohm/km	amps	amps
4x1.5	1/1.38	re	0.8	1.8	12.5	230	12.1	22	16
4x1.5	7/0.52	rm	0.8	1.8	13.0	235	12.1	22	16
4x2.5	1/1.78	re	0.8	1.8	14.0	305	7.41	30	23
4x2.5	7/0.67	rm	0.8	1.8	14.6	312	7.41	30	23
4x4	7/0.85	rm	1.0	1.8	16.2	430	4.61	38	32
4x6	7/1.04	rm	1.0	1.8	17.5	540	3.08	48	41
4x10	7/1.35	rm	1.0	1.8	20.0	760	1.83	64	56
4x16	7/1.70	rm	1.0	1.8	23.2	1135	1.15	83	75
4x25	7/2.14	rm	1.2	1.8	27.6	1600	0.727	110	98
4x35	min.6	sm	1.2	1.8	26.4	1800	0.524	130	120
4x50	min.6	sm	1.4	1.9	29.0	2460	0.387	155	150
4x70	min.12	sm	1.4	2.1	33.5	3250	0.268	190	190
4x95	min.15	sm	1.6	2.2	38.4	4400	0.193	225	230
4x120	min.18/15	sm	1.6	2.4	41.0	5500	0.153	260	270
4x150	min.18/15	sm	1.8	2.5	45.2	6800	0.124	295	305
4x185	min.30	sm	2.0	2.7	50.5	8350	0.0991	330	350
4x240	min.34/30	sm	2.2	2.9	56.0	10700	0.0754	385	410
4x300	min.34/30	sm	2.4	3.1	64.0	13200	0.0601	425	470

NYY-I

600/1000V
MULTI CORE
Made as per
VDE-0271
& IEC-60502-1

Application: Suitable for indoors, outdoors, undeground and in water for continuous permissible service voltage of 720/1200 Volts.



Construction: 1. Annealed Copper Conductor 2. PVC Insulation & multi cores laid up 3. PVC/PE Tapping 4. PVC outer sheath.

Table: 15

PHYSICAL & ELECTRICAL DATA								
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Overall diameter (approx)	Approx. weight of Cable	Current rating at 30°C in Ground	Current rating at 35°C in air
Core x mm^2	nos./mm	–	mm	mm	mm	kg/km	amps	amps
5x1.5	1/1.38	re	0.8	1.8	12.6	206	18	13
7x1.5	1/1.38	re	0.8	1.8	13.5	258	16	12
10x1.5	1/1.38	re	0.8	1.8	16.4	351	13	10
12x1.5	1/1.38	re	0.8	1.8	16.9	399	12	9
16x1.5	1/1.38	re	0.8	1.8	18.5	507	11	8
21x1.5	1/1.38	re	0.8	1.8	20.3	635	9	7
24x1.5	1/1.38	re	0.8	2.0	22.4	712	9	7
30x1.5	1/1.38	re	0.8	2.0	23.6	851	8	6
5x2.5	1/1.78	re	0.8	1.8	14.2	289	24	19
7x2.5	1/1.78	re	0.8	1.8	15.3	360	21	17
10x2.5	1/1.78	re	0.8	1.8	18.8	490	18	14
12x2.5	1/1.78	re	0.8	1.8	19.4	567	16	13
16x2.5	1/1.78	re	0.8	1.8	21.3	727	14	11
21x2.5	1/1.78	re	0.8	2.0	23.5	920	13	10
24x2.5	1/1.78	re	0.8	2.0	26.4	1059	12	9
30x2.5	1/1.78	re	0.8	2.0	27.8	1274	10	8
5x4	7/0.85	rm	1.0	1.8	16.8	402	31	25
7x4	7/0.85	rm	1.0	1.8	18.2	544	27	22
10x4	7/0.85	rm	1.0	1.8	22.7	708	23	19
12x4	7/0.85	rm	1.0	1.8	22.4	837	21	17

Transformer

SERVICE DROP CABLES

400 V
DUPLEX /
QUADUPLEX

Application: Suitable for outdoors as a service drop cable.

Construction: 1. Annealed Copper 2. PVC Insulation

Table: 16

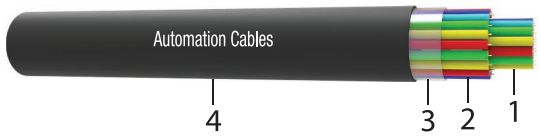
DUPLEX CABLE : PHYSICAL & ELECTRICAL DATA							
Cross Sectional Area	No. & approx. diameter of wire	Shape of Conductor	Nominal thickness of insulation	Approx. cable diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C in air
mm^2	nos.	–	mm	mm	kg/km	ohm/km	amps
2.5/2.5	1.78/1.78	re/re	1.6	10.0	93	7.41/7.41	27
4/4	7x0.85/2.26	rm/re	1.6	11.6	132	4.61/4.61	35
6/6	7x1.05/2.77	rm/re	1.6	12.8	178	3.08/3.08	45
6/6	7x1.05/7x1.05	rm/rm	1.6	12.9	180	3.08/3.08	45
10/10	7x1.35/7x1.35	rm/rm	1.6	14.6	262	1.83/1.83	62
16/16	7x1.71/7x1.71	rm/rm	1.6	16.6	382	1.15/1.15	84
25/25	7x2.14/7x2.14	rm/rm	1.6	19.2	563	0.727/0.727	110

QUADUPLEX CABLE : PHYSICAL & ELECTRICAL DATA							
mm^2	nos.	–	mm	mm	kg/km	ohm/km	amps
3x4/4	7x0.85/2.26	rm/re	1.6	14.0	264	4.61/4.61	32
3x6/6	7x1.05/2.77	rm/re	1.6	15.4	352	3.08/3.08	41
3x6/6	7x1.05/7x1.05	rm/rm	1.6	15.5	356	3.08/3.08	41
3x10/10	7x1.35/7x1.35	rm/rm	1.6	17.6	524	1.83/1.83	56
3x16/16	7x1.71/7x1.71	rm/rm	1.6	20.0	765	1.15/1.15	75
3x25/25	7x2.14/7x2.14	rm/rm	1.6	23.1	1127	0.727/0.727	98

TELEPHONE CABLE

200 V
VDE-0815

Application: Suitable for telecommunication and signal circuits.They are suitable for expose or concealed conduit installation permissible voltage 200 V.



Construction: 1. Annealed Copper Conductor 2. PE Insulation & multi pair laid up 3. PT/PE Tapping 4. PVC outer sheath.

Table: 17

PHYSICAL DATA						
Number of core	Nominal cross sectional area	Number and size of wires	Thickness of insulation	Thickness of sheath	Approximate overall diameter	Approximate weight
	mm^2	Nos/mm	mm	mm	mm	kg/km
1 Pair (2 core)	0.125	1/0.4	0.2	0.8	4.2	20.2
2 Pair (4 core)	0.125	1/0.4	0.2	0.8	4.3	24.4
3 Pair (6 core)	0.125	1/0.4	0.2	1.0	5.0	35.1
4 Pair (8 core)	0.125	1/0.4	0.2	1.2	6.6	54.3
5 Pair (10 core)	0.125	1/0.4	0.2	1.2	7.1	62.1
6 Pair (12 core)	0.125	1/0.4	0.2	1.4	7.7	73.3
7 Pair (14 core)	0.125	1/0.4	0.2	1.4	8.12	81
8 Pair (16 core)	0.125	1/0.4	0.2	1.4	8.25	82.5
10 Pair (20 core)	0.125	1/0.4	0.2	1.4	9.65	108
15 Pair (30 core)	0.125	1/0.4	0.2	1.4	12.7	147
20 Pair (40 core)	0.125	1/0.4	0.2	1.6	13.4	185
30 Pair (60 core)	0.125	1/0.4	0.2	1.6	15.00	303
1 Pair (2 core)	0.282	1/0.6	0.2	0.8	4.20	23.5
2 Pair (4 core)	0.282	1/0.6	0.2	0.8	4.32	30.0
3 Pair (6 core)	0.282	1/0.6	0.2	1.0	5.08	43.5
4 Pair (8 core)	0.282	1/0.6	0.2	1.2	6.60	65.5
5 Pair (10 core)	0.282	1/0.6	0.2	1.2	7.20	76.0
6 Pair (12 core)	0.282	1/0.6	0.2	1.4	7.80	90.0
7 Pair (14 core)	0.282	1/0.6	0.2	1.4	8.12	103.5
8 Pair (16 core)	0.282	1/0.6	0.2	1.4	8.25	107.0
10 Pair (20 core)	0.282	1/0.6	0.2	1.4	9.65	142.0
15 Pair (30 core)	0.282	1/0.6	0.2	1.4	12.82	275.0
20 Pair (40 core)	0.282	1/0.6	0.2	1.6	14.23	350.0
30 Pair (60 core)	0.282	1/0.6	0.2	1.6	16.77	413.0
50 Pair (100 cores)	0.282	1/0.6	0.2	1.6	20.20	535.0
100 Pair (200 cores)	0.282	1/0.6	0.2	1.6	27.00	942.0

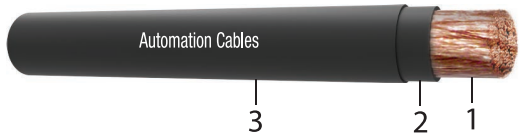
HT Switchgear

LT Switchgear

WELDING CABLES

200V
Single Core

Application: Suitable for Flexible use under rugged conditions, on assembly lines & Conveyer systems, in Machine Tool & Motor car Manufacturing, Shipbuilding, for Welding Machines.



Construction: 1. Annealed Flexible Copper Conductor 2. PVC Tapping 3. Black PVC outer sheath

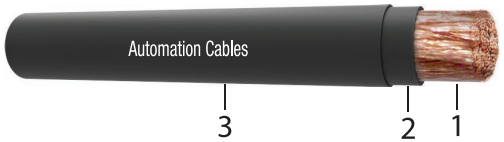
Table: 18

PHYSICAL DATA					ELECTRICAL DATA		
Cross Section	No. & approx. diameter of wire	Thickness of sheath	Approximate outer diameter	Approximate weight	Cross Section	Maximum resistance at 20°C	Current rating at maximum duty cycle of 60%
mm^2	nos./mm	mm	mm	kg/km	mm^2	ohm/km	ampere
1x25 rm	190/0.41	2.0	12.30	326.0	1 x 25 rm	0.780	169
1x35 rm	266/0.41	2.0	13.40	430.0	1 x 35 rm	0.554	215
1x50 rm	379/0.41	2.0	15.30	575.0	1 x 50 rm	0.386	264
1x70 rm	343/0.51	2.2	18.00	779.0	1 x 70 rm	0.272	330
1x95 rm	465/0.51	2.2	19.70	935.0	1 x 95 rm	0.206	405
1x120 rm	588/0.51	2.2	23.20	1297.0	1 x 120 rm	0.161	473

NYYF

600/1000V
Single/Two Core
Made as per
VDE-0271
& IEC-60502-1

Application: Suitable for temporary installations for power connection, decorative illumination, temporary site illumination.



Construction: 1. Annealed Flexible Copper Conductor 2. PVC Insulation 3. PVC Inner sheath

Table: 19

SINGLE CORE : PHYSICAL ELECTRICAL DATA								
Nominal cross sectional area of conductor	No. & Maximum Diameter of wire	Shape of Conductor	Nominal thickness of insulation	Nominal thickness of sheath	Approx. overall diameter	Approx. weight of Cable	Max. DC resistance of conductor at 20°C	Current rating at 35°C
mm^2	nos/mm	–	mm	mm	mm	kg/km	ohms/km	amps
1x4	53/0.31	rm	1.0	1.8	8.5	105	4.95	41
1x6	80/0.31	rm	1.0	1.8	9.1	135	3.3	52
1x10	76/0.41	rm	1.0	1.8	10.2	185	1.91	72
1x16	122/0.41	rm	1.0	1.8	11.8	260	1.21	98
1x25	190/0.41	rm	1.2	1.8	13.6	370	0.78	131
1x35	266/0.41	rm	1.2	1.8	15.2	480	0.554	167
1x50	379/0.41	rm	1.4	1.8	17.6	668	0.386	204
1x70	343/0.51	rm	1.4	1.8	19.2	880	0.272	256
1x95	465/0.51	rm	1.6	1.8	21.8	1160	0.206	314
1x120	588/0.51	rm	1.6	1.8	24	1420	0.161	366
1x150	735/0.51	rm	1.8	1.8	26.5	1772	0.129	423

TWO CORE : PHYSICAL ELECTRICAL DATA								
mm^2	nos.	–	mm	mm	mm	kg/km	ohms/km	amps
2x4	53/0.31	rm	1.0	1.8	13.8	290	4.95	37
2x6	80/0.31	rm	1.0	1.8	15.2	375	3.30	48
2x10	76/0.41	rm	1.0	1.8	16.9	502	1.91	66
2x16	122/0.41	rm	1.0	1.8	19.0	700	1.21	90
2x25	190/0.41	rm	1.2	1.8	22.4	1060	0.78	121
2x35	266/0.41	rm	1.2	2.0	24.7	1360	0.554	154

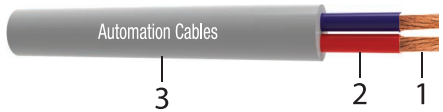
ATS Panel

PFI Panel

FLEXIBLE CABLES

300/500V
Single/Two core
Made as per
BDS 899 & BS 6500

Application: Suitable for dry places where mechanical stresses do not exist, at the connections of mobile equipments



Construction: 1. Annealed Flexible Copper Conductor 2. PVC Insulation 3. Gray PVC outer sheath.

Table: 20

SINGLE CORE : PHYSICAL & ELECTRICAL DATA								
Cross sectional area of conductor	No. & Size of wires	No. & Size of wires	Thickness of insulation	Overall diameter of each core	Approx. weight	Max. DC resistance	Current rating at 35°C	
							In Conduit	In air
mm^2	no./mm	no./inch	mm	mm	kg/km	Ohm/km	amps	amps
0.40	14/0.193	14/0.0076	0.6	2.26	8.0	49.25	2	3
0.65	23/0.193	23/0.0076	0.6	2.57	12.4	30.31	5	6
1.20	40/0.193	40/0.0076	0.6	2.84	16.9	16.42	11	13
2.00	70/0.193	70/0.0076	0.6	3.43	23.6	9.85	16	18

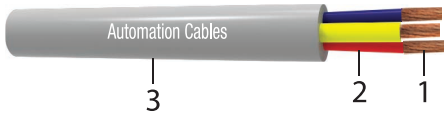
TWO CORE (T/T) : PHYSICAL & ELECTRICAL DATA								
mm^2	no./mm	no./inch	mm	mm	kg/km	Ohm/km	amps	amps
2x0.40	14/0.193	14/0.0076	0.6	2.26	16.0	49.25	2	3
2x0.65	23/0.193	23/0.0076	0.6	2.57	24.8	30.31	5	6
2x1.20	40/0.193	40/0.0076	0.6	2.84	33.9	16.42	11	13
2x2.00	70/0.193	70/0.0076	0.6	3.43	47.2	9.85	16	18

TWIN CORE (F/T) : PHYSICAL & ELECTRICAL DATA								
Cross sectional area of conductor	No. & Size of wires	Thickness of insulation	Thickness of Sheath	Overall diameter of each core	Approx. weight	Max. DC resistance	Current rating at 35°C	
							In Conduit	In air
mm^2	no./mm	mm	mm	mm	kg/km	Ohm/km	amps	amps
2x0.40	14/0.193	0.6	0.8	3.9x6.1	36.0	49.25	3	4
2x0.65	23/0.193	0.6	0.8	4.0x6.4	45.0	30.31	6	8

FLEXIBLE CABLES

300/500V
Two/Three core
Made as per
BDS 899 & BS 6500

Application: Suitable for dry places where mechanical stresses do not exist, at the connections of mobile equipments.



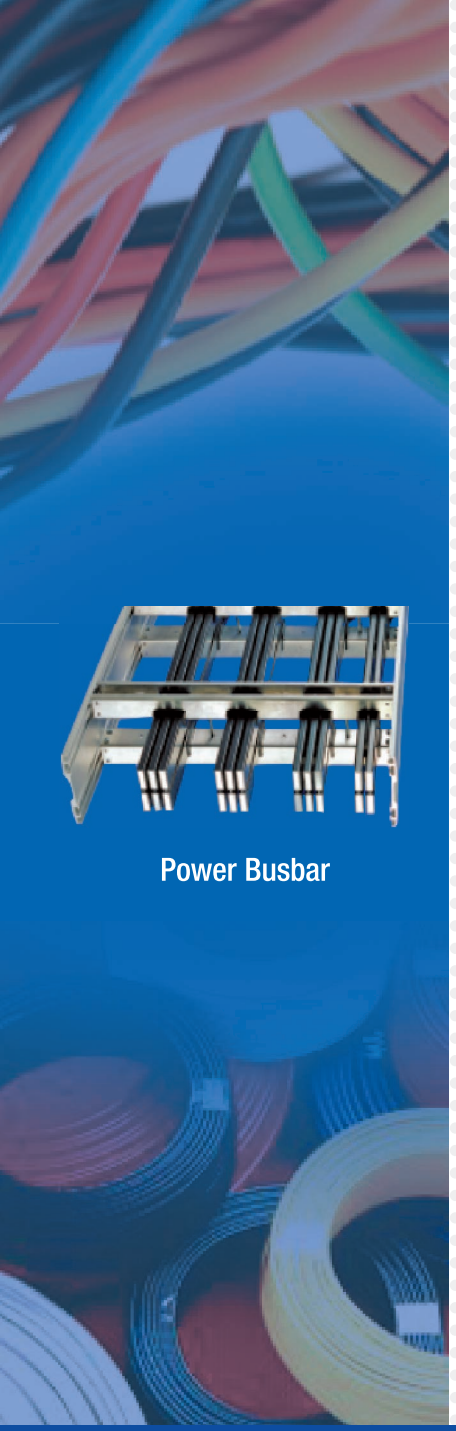
Construction: 1. Annealed Flexible Copper Conductor 2. PVC Insulation 3. Gray PVC outer sheath

Table: 21

TWIN CORE : PHYSICAL & ELECTRICAL DATA								
Nominal cross sectional area of conductor	No.& Nominal diameter of wires	Nominal thickness of insulation	Nominal thickness of sheath	Approx. overall diameter	Max. DC resistance of conductor at 20°C	Approx. weight of cable	Current rating at 35°C in conduit	Current rating at 35°C in air
no. x mm^2	no./mm	mm	mm	mm	ohm/km	kg/km	amp	amp
2x0.4	14/0.19	0.6	0.8	6.1	47.33	49	3	4
2x0.5	16/0.20	0.6	0.8	6.3	39.00	54	3	4
2x0.65	23/0.19	0.6	0.8	6.5	28.79	60	6	7
2x0.75	24/0.20	0.6	0.8	6.8	26.00	64	7	8
2x1.0	32/0.20	0.6	0.8	7.2	19.50	74	10	11
2x1.2	40/0.19	0.6	0.8	7.4	16.56	78	13	15
2x1.5	30/0.25	0.7	0.8	8.0	13 .30	99	15	17
2x2.0	70/0.19	0.7	1.0	9.1	9.46	127	18	20
2x2.5	50/0.25	0.8	1.0	9.8	7.98	151	20	22
2x3.0	110/0.19	0.8	1.1	10.6	6.01	174	24	26
2x4.0	56/0.30	0.8	1.1	11.0	4.95	200	25	27

THREE CORE : PHYSICAL & ELECTRICAL DATA								
no. x mm^2	no./mm	mm	mm	mm	ohm/km	kg/km	amp	amp
3x0.4	14/0.19	0.6	0.8	6.4	47.33	58	2	3
3x0.5	16/0.20	0.6	0.8	6.7	39.00	64	3	4
3x0.65	23/0.19	0.6	0.8	6.9	28.79	71	6	7
3x0.75	24/0.20	0.6	0.8	7.2	26.00	76	7	8
3x1.0	32/0.20	0.6	0.8	7.5	19.50	88	10	11
3x1.2	40/0.19	0.6	0.9	8.0	16.56	99	13	15
3x1.5	30/0.25	0.7	0.9	8.8	13.30	124	15	17
3x2.0	70/0.19	0.7	1.1	10.0	9.46	160	18	20
3x2.5	50/0.25	0.8	1.1	10.4	7.98	183	20	22
3x3.0	110/0.19	0.8	1.2	11.5	6.01	222	24	26
3x4.0	56/0.30	0.8	1.2	12.0	4.95	254	25	27

MCC Panel

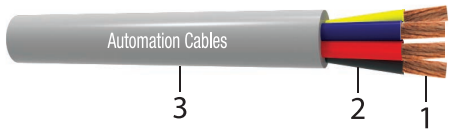


Power Busbar

FLEXIBLE CABLES

300/500V
Four core
Made as per
BDS 899 & BS 6500

Application: Suitable for dry places where mechanical stresses do not exist, at the connections of mobile equipments



Construction: 1. Annealed Flexible Copper Conductor 2. PVC Insulation 3. Gray PVC outer sheath.

Table: 22

FOUR CORE : PHYSICAL & ELECTRICAL DATA								
Nominal cross sectional area of conductor	No.& Nominal diameter of wires	Nominal thickness of insulation	Nominal thickness of sheath	Approx. overall diameter	Max. DC resistance of conductor at 20°C	Approx. weight of cable	Current rating at 30°C in conduit	Current rating at 35°C in air
no. x mm^2	no./mm	mm	mm	mm	ohm/km	kg/km	amp	amp
4x0.4	14/0.19	0.6	0.8	7.0	47.33	68	2	3
4x0.5	16/0.20	0.6	0.8	7.3	39.00	77	3	4
4x0.65	23/0.19	0.6	0.9	7.6	28.79	85	6	7
4x0.75	24/0.20	0.6	0.9	7.8	26.00	93	7	8
4x1.0	32/0.20	0.6	0.9	8.4	19.50	113	10	11
4x1.2	40/0.19	0.6	1.0	8.8	16.56	124	13	15
4x1.5	30/0.25	0.7	1.0	9.8	13.30	158	15	17
4x2.0	70/0.19	0.7	1.1	10.8	9.46	194	18	20
4x2.5	50/0.25	0.8	1.1	11.6	7.98	231	20	22
4x3.0	110/0.19	0.8	1.2	12.5	6.01	274	24	26
4x4.0	56/0.30	0.8	1.2	13.0	4.95	315	25	27

Super Enameled Copper Wire

Frenic-eco

4. HARD DRAWN COPPER WIRE & SUPER ENAMELED COPPER WIRE

SPECIAL FEATURE OF AUTOMATION SECW

1. High Conductivity
2. High Di–Electric strength of Industries covering
3. Elongation 30–35%
4. Uniform insulation covering
5. Insulation film have superior material and heat resistance properties
6. Wire is soft & textile suitable for winding
7. Wire is transformer oil resistant
8. Wire conforms to BSS & BDS standards

DIAMETER, AREA, WEIGHT AND RESISTANCE OF HARD DRAWN BARE COPPER WIRE (HDBC)

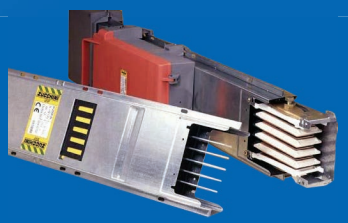
Table: 23

SWG	DIAMETER OF CONDUCTOR			Area of conductor (Nom) mm	Copper Weight (bare) Kg/Km	Standard resistance of HDBC at 20°C (65°F) Ohm/Km
	Nominal mm	Maximum mm	Minimum mm			
1	2	3	4	5	6	7
11	2.946	2.974	2.915	6.816	60.560	2.601
12	2.642	2.668	2.616	5.481	48.720	3.238
13	2.337	2.360	2.314	4.289	38.130	4.137
14	2.032	2.052	2.012	3.243	28.830	5.471
15	1.829	1.847	1.811	2.627	23.350	6.756
16	1.626	1.641	1.610	2.075	18.430	8.552
17	1.422	1.438	1.407	1.589	14.130	11.180
18	1.219	1.232	1.207	1.163	10.380	15.210
19	1.016	1.026	1.006	0.811	7.207	21.910
20	0.914	0.924	0.904	0.657	5.838	27.040
21	0.812	0.820	0.805	0.519	4.613	34.220

TYPE AND THICKNESS OF SUPER ENAMELED ROUND COPPER WIRES AND RESISTANCE OF CONDUCTOR

Table: 24

SWG	DIAMETER OF CONDUCTOR			FINE COVERING		MEDIUM COVERING		THICK COVERING		Resistance at 20°C
	Nominal mm	Maximum mm	Minimum mm	Overall dia	Increase in dia	Overall dia	Increase in dia	Overall dia	Increase in dia	
1	2	3	4	5	6	7	8	9	10	11
11	2.946	2.974	2.915	3.058	0.054	3.091	0.080	3.127	0.110	2.529
12	2.642	2.668	2.616	2.749	0.052	2.781	0.077	2.816	0.107	3.146
13	2.337	2.360	2.314	2.433	0.051	2.468	0.075	2.502	0.104	4.019
14	2.032	2.052	2.012	2.125	0.050	2.153	0.073	2.186	0.101	5.317
15	1.829	1.847	1.811	1.918	0.048	1.946	0.071	1.978	0.099	6.564
16	1.626	1.641	1.610	1.710	0.046	1.738	0.068	1.769	0.096	8.307
17	1.422	1.438	1.407	1.502	0.044	1.529	0.066	1.599	0.093	10.850
18	1.219	1.232	1.207	1.295	0.042	1.320	0.062	1.351	0.088	14.768
19	1.016	1.026	1.006	1.085	0.039	1.110	0.059	1.203	0.085	21.270
20	0.914	0.924	0.904	0.980	0.038	1.005	0.057	1.033	0.081	26.260
21	0.812	0.820	0.805	0.874	0.036	0.898	0.054	0.925	0.078	33.230



Power Busbar

Technical Information

5. TECHNICAL INFORMATION

SOME IMPORTANT POINTS FOR CABLE INSTALLATIONS

The following are the important points to be taken care of, during cable installations at site:

1. General : The cable should be paid off from the top of the cable drum, held in the normal position. Sufficient care should be taken to prevent twist, acute bends etc., while laying the cable.
2. Minimum Bending Radius :

		Single Core	Multi Core
– Cables of 1100 V Grade	:	15 D	12 D
– Cables from 3.5 kV to 10 kV	:	15 D	15 D
– Cables of 33 kV	:	20 D	15 D

Where D is the overall diameter of the cable

3. Maximum Pulling Tension, during Installation :
   - Cables having Copper Conductor : 50 N/mm^2. Max.
   - Cables having Aluminium Conductor : 30 N/mm^2. Max.
4. Cable Support Spacing : The disposition of cable support and its spacing should be such, as to prevent undue strain of damage to the cable.
5. Prevention of Moisture Ingress : Care should be exercised at site, during installation, to prevent damage to cable coverings and ends which may cause the ingress of moisture.
6. Tests After Installation : Voltage withstand and Insulation Resistance tests, should be conducted on cables after laying or after jointing and termination.

SOME USEFUL FORMULA OFTEN USED FOR CURRENT AND POWER CALCULATION

To Calculate	Given	D.C.	A.C. Single Phase	A.C. Three Phase
Current (A)	KW	$A = \frac{1000 \times KW}{V}$	$A = \frac{1000 \times KW}{V \times p.f.}$	$A = \frac{1000 \times KW}{1.73 \times V \times p.f.}$
Current (A)	KVA	–	$A = \frac{1000 \times KVA}{V}$	$A = \frac{1000 \times KVA}{1.73 \times V}$
Current (A)	HP	$A = \frac{746 \times HP}{V \times eff.}$	$A = \frac{746 \times HP}{V \times eff. \times p.f.}$	$A = \frac{746 \times HP}{1.73 \times eff. \times p.f. \times V}$
Power (KW)	VA	$KW = \frac{A \times V}{1000}$	$KW = \frac{A \times V \times p.f}{1000}$	$KW = \frac{1.73 \times A \times V \times p.f.}{1000}$
Apparent power (KVA)	VA	–	$KVA = \frac{A \times V}{1000}$	$KVA = \frac{1.73 \times A \times V}{1000}$

P.f. = Power factor of equipment or system under consideration.
eff. = efficiency of motor or machinery.
V = line voltage.

MCCB

Magnetic Contactor

AVERAGE INDUCTION MOTOR - PURE RESISTIVE LOAD CURRENT

AVERAGE INDUCTION MOTOR CURRENT								PURE RESISTIVE LOAD CURRENT					
Normal Motor Rating		1 Phase		3 Phase				Power	1 Phase			3 Phase	
		110V	230V	380V	415V	440V			110V	230V	380	415V	440V
HP	KW	amp	amp	amp	amp	amp		KW	amp	amp	amp	amp	amp
1/2	0.37	7.8	3.7	1.2	1.1	1.0		1	9.1	4.3	1.5	1.4	1.3
3/4	0.55	10.4	5.0	1.6	1.5	1.4		2	18.2	8.7	3.0	2.8	2.6
1	0.75	13.2	6.3	2.0	1.9	1.8		3	27.3	13.0	4.6	4.2	3.9
1 1/2	1.1	19.2	9.2	3.0	2.8	2.6		4	36.4	17.4	6.1	5.6	5.3
2	1.5	25.0	12.2	3.9	3.6	3.4		5	45.5	21.7	7.6	7.0	6.6
3	2.2	37.0	17.9	5.8	5.3	5.0		6	54.6	26.1	9.1	8.4	7.9
5	3.7	59.0	28.0	9.2	8.4	7.9		7	63.6	30.4	10.6	9.7	9.2
7 1/2	5.5	84.0	40.0	13.1	11.9	11.3		8	72.7	34.8	12.2	11.1	10.5
10	7.5	109.0	52.0	16.8	15.4	14.5		9	81.8	39.1	13.7	12.5	11.8
15	11.0	157.0	75.0	24.0	22.0	21.0		10	91.0	43.5	15.2	13.9	13.1
20	15.0	–	–	32.0	29.0	27.0		20	182	87.0	30.4	27.9	26.3
30	22.0	–	–	46.0	42.0	40.0		40	364	170.0	60.8	55.7	52.5
50	37.0	–	–	75.0	69.0	65.0		60	545	261.0	91.3	83.6	78.8
75	55.0	–	–	111.0	102.0	96.0		80	727	348.0	122.0	111.0	105.0
100	75.0	–	–	146.0	134.0	126.0		100	909	435.0	152.0	139.0	131.0

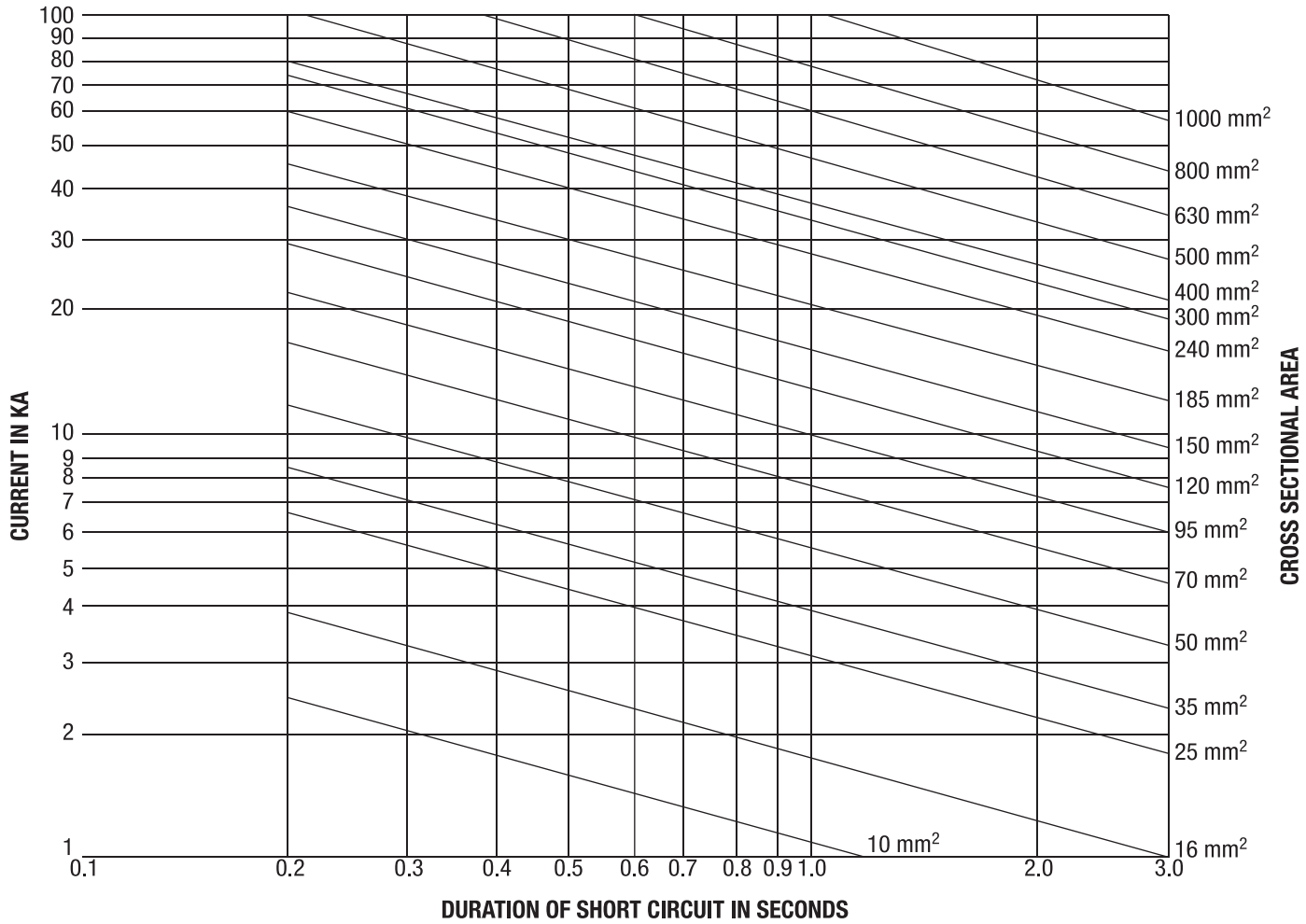
COMPARISON BETWEEN SOME PHYSICAL & ELECTRICAL PROPERTIES OF COPPER AND ALUMINUM

Property	Unit	Copper		Aluminium	
		Hard–drawn	Annealed	Hard–drawn	Annealed
Melting Point	^{0}C	1083	1083	658	658
Density	gm/cm^3	8.89	8.89	2.703	2.703
Tensile Strength	kg/mm^2	34–47	34–47	15–20	7–14
Electrical Resistivity at 20°C	ohm–mm^2/m	17.770	17.241	28.73	28.20
Electrical Conductivity at 20°C	%IACS	97	100	60	61
Temperature Co–efficient of Resistance at 20°C, Per Unit of Cons. Mass	–	0.00393	0.00393	0.00403	0.00403
Co–efficient of Linear Expansion	/^{0}C	17 x 10^{-6}	17 x 10^{-6}	23 x 10^{-6}	23 x 10^{-6}
Thermal Conductivity	W/^{0}C.cm	3.86	3.86	2.39	2.39
Specific Heat	J/^{0}C.cm^3	3.4	3.4	2.4	2.4

SHORT CIRCUIT LOADING CAPACITY OF CABLES

SHORT CIRCUIT RAGING

The values of fault current given in the graph are based on the cables being fully loaded at the start of the short circuit (conductor temperature 70° C) and a final conductor temperature of 160° C for conductor sizes upto and including 300 mm^2, and 130° C for conductor sizes above 300 mm^2



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