

Low Voltage

Power and Control Cables

Supplier of Industrial and Commercial Cables
Specialized in Supplying and Trading FZE



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Low Voltage

Power and Control Cables

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Preface

alfanar Low Voltage Power, Control and Special Application Cables are used in various indoor and outdoor applications in power plants, industries, switchgears, and in railways and traffic signaling systems.

Our products conform to various IEC and BS standards. They are tested at leading international laboratories and are approved by many utility companies, ministries and major industries.

alfanar brand is the manifestation of **alfanar**'s constant endeavor for providing a comprehensive range of construction materials to satisfy its customers with products of the highest quality standard and safety coupled with prompt services.

Our cables factory is one of the major industrial units in the ultramodern, fully-integrated **alfanar** Industrial Complex.



Industries

alfanar Industrial Complex – located in Riyadh – houses several industrial units for manufacturing medium/low voltage products, wires and cables, transformers, wooden reels (for coiling cables) and PVC compounds (for insulation and jacketing materials).

Apart from the manufacturing units, the Industrial Complex also houses a commercial zone, a data/communication center and other facilities.

The Industrial Complex is symbolic of **alfanar**'s consistent growth representing its bright future.

Group Overview

From its headquarters in Riyadh, Saudi Arabia, **alfanar** operates a fully-integrated global network of manufacturing facilities, design & development centers, and branches in Dubai (UAE), Doha (Qatar), Cairo (Egypt), Damascus (Syria), Chennai (India) and many other countries.

Our major businesses and services include: Electrical Manufacturing, Electrical Construction, Marketing and Distribution, Building Industry, Real Estate Development, Information Technology and Communication.

General Information

Selecting a Power Cable

The following factors are important when selecting a suitable cable construction which is required to transport electrical energy from the power station to the consumer:

- Maximum operating voltage
- Insulation level
- Frequency
- Load to be carried
- Magnitude and duration of possible load
- Voltage drop
- Length of line
- Mode of installation, either underground or in air
- Chemical and physical properties of soil
- Max. and min. ambient air temperature and soil temperature
- Specification and requirements to be met

Standards

The cables described in this catalogue are all standard types, and their performance has been proved in operation. Construction and tests are in accordance with the recommendations of IEC or BS publications where applicable. Power cables in accordance with other standards (VDE, NEMA, ICEA) can be manufactured upon a customer's request.

Weights and Dimensions

Weights and dimensions characteristics are approximate and any deviations are due to manufacturing tolerance.

Jacket Marking

Standard embossed outer jacket marking consisting of:

1. Name of manufacturer “**alfanar** CABLES”
2. Type designation, size of conductor, rated voltage
3. “ELECTRIC CABLES”
4. Year of manufacture
5. Continuous length marking every meter
6. Any special part number, on request

Definitions

Definitions of Dimensional Values

1. Nominal value

Value by which a quantity is designed and which is often used in tables. Usually, in IEC standard, nominal values give rise to values to be checked by measurements taking into consideration the specified tolerances.

2. Approximate value

Value which is neither guaranteed nor checked; It is used, for example, for the calculation of other dimensional values.

3. Median value

When several test results have been obtained and sorted in an ascending or descending order, the median value is the middle value if the number of available values is odd, and the mean of the two middle values if the number of available values is even.

4. Fictitious value

Value calculated according to the “fictitious method” described in Annex. A of IEC 60502-1.

Definitions Concerning Tests

1. Routine tests

Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

2. Sample tests

Tests made by the manufacturer on samples of completed cable or components taken from a completed cable, at a specified frequency, so as to verify that the finished product meets the specified requirements.

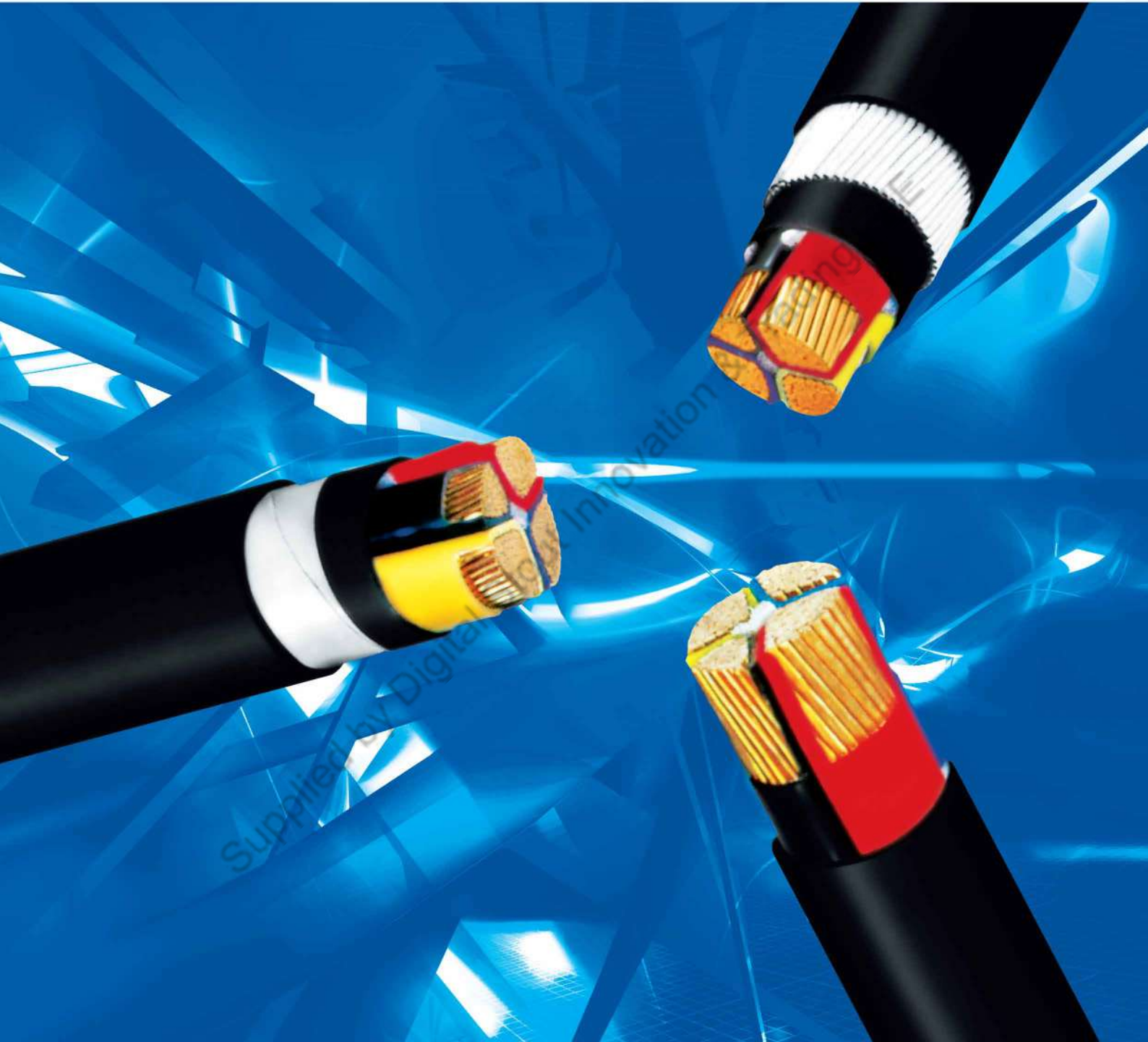
3. Type tests

Tests made before supplying on a general commercial basis, a type of cable covered by this standard, in order to demonstrate satisfactory performance characteristics to meet the intended application. These tests are of such a nature that, after they have been made, they need not be repeated, unless changes are made in the cable materials or design or manufacturing process, which might change the performance characteristics.

4. Electrical tests after installation

Tests made to demonstrate the integrity of the cable and its accessories after installation.

Power Cables To **IEC** Standard



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Single-Core Cables, with Stranded Circular Copper Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.







APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit for 5 seconds:
 - 160 °C for sizes ≤ 300 mm²
 - 140 °C for sizes > 300 mm²



Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 70 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A			
4	4.6100	5.5100	42	40	32	37	33	29	7.0	85	C212PA10100CBK51IMR
6	3.0800	3.6800	52	50	40	48	42	38	7.9	115	C213PA10100CBK51IMR
10	1.8300	2.1700	70	67	52	66	58	51	8.9	165	C314PA10100CBK51IMR
16	1.1500	1.3700	90	85	65	80	75	65	9.9	230	C315PA10100CBK51IMR
25	0.7270	0.8600	115	110	85	105	95	90	11.6	345	C316PA10100CBK51IMR
35	0.5240	0.6300	135	130	105	130	125	110	12.7	445	C317PA10100CBK51IMR
50	0.3870	0.4600	160	155	125	160	150	135	14.6	600	C318PA10100CBK51IMR
70	0.2680	0.3200	200	190	155	200	190	170	16.3	805	C319PA10100CBK51IMR
95	0.1930	0.2300	235	225	185	250	240	210	18.7	1085	C345PA10100CBK51IMR
120	0.1530	0.1900	270	255	210	285	275	245	20.4	1350	C346PA10100CBK51IMR
150	0.1240	0.1500	300	285	235	330	320	280	22.6	1655	C347PA10100CBK51IMR
185	0.0991	0.1200	345	325	270	380	370	320	24.9	2030	C348PA10100CBK51IMR
240	0.0754	0.0920	400	375	310	480	460	385	28.3	2675	C349PA10100CBK51IMR
300	0.0601	0.0750	450	420	350	550	530	450	31.1	3280	C350PA10100CBK51IMR
400	0.0470	0.0590	515	475	390	630	615	520	35.3	4350	C351PA10100CBK51IMF
500	0.0366	0.0480	580	525	435	720	700	600	38.8	5355	C352PA10100CBK51IMF
630	0.0283	0.0390	660	590	495	830	810	680	42.7	6685	C353PA10100CBK51IMF
800	0.0221	0.0290	740	650	555	940	920	775	47.2	8600	C354PA10100CBK51IMF
1000	0.0176	0.0250	820	710	605	1030	1010	860	52.0	10500	C355PA10100CBK51IMF

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Single-Core Cables, with Stranded Circular Aluminum Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

Conductor : Stranded circular aluminium conductor, as per Class 2 of IEC 60228.

Insulation : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.

Outer sheath : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.







APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit for 5 seconds:
 - 160 °C for sizes ≤ 300 mm²
 - 140 °C for sizes > 300 mm²



Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 70 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A			
16	1.9100	2.2900	65	63	50	65	60	45	9.9	135	A315PA10100CBK51IMR
25	1.2000	1.4400	85	83	65	85	80	65	11.6	185	A316PA10100CBK51IMR
35	0.8680	1.0430	105	102	80	105	100	85	12.7	250	A317PA10100CBK51IMR
50	0.6410	0.7700	125	120	95	125	120	105	14.6	295	A318PA10100CBK51IMR
70	0.4430	0.5330	155	145	120	165	155	125	16.3	375	A319PA10100CBK51IMR
95	0.3200	0.3850	185	175	135	205	195	160	18.7	500	A345PA10100CBK51IMR
120	0.2530	0.3050	210	200	165	235	225	185	20.4	605	A346PA10100CBK51IMR
150	0.2060	0.2480	235	225	180	265	255	210	22.6	725	A347PA10100CBK51IMR
185	0.1640	0.1980	265	255	205	310	300	245	24.8	900	A348PA10100CBK51IMR
240	0.1250	0.1510	310	295	240	365	355	290	28.3	1150	A349PA10100CBK51IMR
300	0.1000	0.1220	355	335	270	420	405	335	31.1	1420	A350PA10100CBK51IMR
400	0.0778	0.0954	410	380	310	500	480	390	35.3	1750	A351PA10100CBK51IMR
500	0.0605	0.0751	465	430	355	580	560	460	38.8	2220	A352PA10100CBK51IMF
630	0.0469	0.0595	535	490	405	680	660	535	42.7	2750	A353PA10100CBK51IMF
800	0.0367	0.0470	600	530	450	765	745	620	47.2	3450	A354PA10100CBK51IMF
1000	0.0291	0.0370	665	585	495	840	820	690	52.0	4230	A355PA10100CBK51IMF

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Multi-Core Cables, with Stranded Copper Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

Conductor : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of IEC 60228.

Insulation : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.

Outer sheath : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

1.5	rm	12.1000	14.6000	24	19	20	10.1	120	C208PA10200CBK01IMR
2.5	rm	7.4100	8.8700	30	25	28	10.9	145	C210PA10200CBK01IMR
4	rm	4.6100	5.5400	40	32	39	12.9	205	C212PA10200CBK01IMR
6	rm	3.0800	3.6900	50	40	50	13.9	255	C213PA10200CBK01IMR
10	rm	1.8300	2.1900	65	55	66	15.8	390	C314PA10200CBK01IMR
16	rm	1.1500	1.3900	85	65	88	17.9	527	C315PA10200CBK01IMR
25	rm	0.7270	0.8700	110	85	116	21.3	770	C316PA10200CBK01IMR
35	rm	0.5240	0.6280	130	105	143	23.5	965	C317PA10200CBK01IMR

Three Core Cables

1.5	rm	12.1000	14.6000	21	18	18	10.6	145	C208PA10300CBK04IMR
2.5	rm	7.4100	8.8700	27	23	22	11.5	190	C210PA10300CBK04IMR
4	rm	4.6100	5.5400	35	30	31	13.6	270	C212PA10300CBK04IMR
6	rm	3.0800	3.6900	45	36	39	14.7	340	C213PA10300CBK04IMR
10	rm	1.8300	2.1900	60	48	53	16.9	510	C314PA10300CBK04IMR
16	rm	1.1500	1.3900	75	60	72	19.0	710	C315PA10300CBK04IMR
25	rm	0.7270	0.8700	100	80	94	22.7	1050	C316PA10300CBK04IMR
35	sm	0.5240	0.6280	120	95	110	22.8	1360	C417PA10300CBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

1.5	rm	12.1000	14.6000	21	18	18	11.4	180	C208PA10400CBK08IMR
2.5	rm	7.4100	8.8700	27	23	22	12.4	230	C210PA10400CBK08IMR
4	rm	4.6100	5.5400	35	30	31	14.8	335	C212PA10400CBK08IMR
6	rm	3.0800	3.6900	45	36	39	16.0	425	C213PA10400CBK08IMR
10	rm	1.8300	2.1900	60	48	53	18.5	650	C314PA10400CBK08IMR
16	rm	1.1500	1.3900	75	60	72	20.9	910	C315PA10400CBK08IMR
25	rm	0.7270	0.8700	100	80	94	25.0	1360	C316PA10400CBK08IMR
35	sm	0.5240	0.6280	120	95	110	25.1	1650	C417PA10400CBK08IMR
50	sm	0.3870	0.4640	145	115	138	29.3	2225	C418PA10400CBK08IMR
70	sm	0.2680	0.3220	175	145	171	32.9	3065	C419PA10400CBK08IMR
95	sm	0.1930	0.2320	210	165	209	37.8	4175	C445PA10400CBK08IMR
120	sm	0.1530	0.1850	240	195	242	41.2	5205	C446PA10400CBK08IMF
150	sm	0.1240	0.1510	270	220	275	45.9	6400	C447PA10400CBK08IMF
185	sm	0.0991	0.1210	300	245	314	50.7	7960	C448PA10400CBK08IMF
240	sm	0.0754	0.0840	345	290	374	57.0	10330	C449PA10400CBK08IMS
300	sm	0.0601	0.0770	390	320	440	63.3	12915	C450PA10400CBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6280 / 1.3900	120	95	110	24.0	1470	C435PA10400CBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4640 / 0.8700	145	115	138	28.1	2115	C436PA10400CBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3220 / 0.6280	175	145	171	31.4	2725	C437PA10400CBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2320 / 0.4640	210	165	209	36.1	3690	C438PA10400CBK08IMR
120 sm	70 sm	0.1530 / 0.2680	0.1850 / 0.3220	240	195	242	39.5	4675	C439PA10400CBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1510 / 0.3220	270	220	275	43.5	5580	C440PA10400CBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1210 / 0.2320	300	245	314	48.2	7025	C441PA10400CBK08IMF
240 sm	120 sm	0.0754 / 0.1530	0.0840 / 0.1850	345	290	374	54.2	9060	C442PA10400CBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0770 / 0.1510	390	320	440	60.0	11280	C443PA10400CBK08IMS

Multi-Core Cables, with Stranded Aluminum Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	

Two Core Cables

10	rm	3.0800	3.3000	46	39	46	15.8	290	A314PA10200CBK01IMR
16	rm	1.9100	2.2900	60	46	62	17.9	370	A315PA10200CBK01IMR
25	rm	1.2000	1.4400	77	60	81	21.3	435	A316PA10200CBK01IMR
35	rm	0.8680	1.0430	103	83	114	23.5	505	A317PA10200CBK01IMR

Three Core Cables

10	rm	3.0800	3.3000	42	34	37	16.9	320	A314PA10300CBK04IMR
16	rm	1.9100	2.2900	53	42	50	19.0	405	A315PA10300CBK04IMR
25	rm	1.2000	1.4400	70	56	66	22.7	570	A316PA10300CBK04IMR
35	sm	0.8680	1.0430	95	75	88	22.8	700	A417PA10300CBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

10	rm	3.0800	3.3000	42	34	37	18.5	395	A314PA10400CBK08IMR
16	rm	1.9100	2.2900	53	42	50	20.9	510	A315PA10400CBK08IMR
25	rm	1.2000	1.4400	70	56	66	25.0	715	A316PA10400CBK08IMR
35	sm	0.8680	1.0430	95	75	88	25.1	800	A417PA10400CBK08IMR
50	sm	0.6410	0.7710	115	85	105	29.3	1060	A418PA10400CBK08IMR
70	sm	0.4430	0.5330	135	110	132	32.9	1380	A419PA10400CBK08IMR
95	sm	0.3200	0.3850	165	130	160	37.8	1865	A445PA10400CBK08IMR
120	sm	0.2530	0.3050	185	150	187	41.2	2300	A446PA10400CBK08IMF
150	sm	0.2060	0.2490	210	170	215	45.9	2760	A447PA10400CBK08IMF
185	sm	0.1640	0.1990	235	195	248	50.7	3400	A448PA10400CBK08IMF
240	sm	0.1250	0.1510	275	225	292	57.0	4345	A449PA10400CBK08IMS
300	sm	0.1000	0.1230	310	260	347	63.3	5400	A450PA10400CBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.0430 / 2.2900	95	75	88	24.0	725	A435PA10400CBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.7710 / 1.4400	115	85	105	28.1	970	A436PA10400CBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5330 / 1.0430	135	110	132	31.4	1240	A437PA10400CBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.3850 / 0.7710	165	130	160	36.1	1660	A438PA10400CBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3050 / 0.5330	185	150	187	39.5	2040	A439PA10400CBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2490 / 0.5330	210	170	215	43.5	2435	A440PA10400CBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.1990 / 0.3850	235	195	248	48.2	3025	A441PA10400CBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1510 / 0.3050	275	225	292	54.2	3830	A442PA10400CBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1230 / 0.2490	310	260	347	60.0	4720	A443PA10400CBK08IMS

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Multi-Core Cables, with Stranded Copper Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tapes.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

6	rm	3.0800	3.6900	50	40	50	16.9	460	C213PA1020GCBK01IMR
10	rm	1.8300	2.1900	65	55	66	18.7	585	C314PA1020GCBK01IMR
16	rm	1.1500	1.3900	85	65	88	20.7	760	C315PA1020GCBK01IMR
25	rm	0.7270	0.8700	110	85	116	24.1	1025	C316PA1020GCBK01IMR
35	rm	0.5240	0.6280	130	105	143	26.3	1325	C317PA1020GCBK01IMR

Three Core Cables

4	rm	4.6100	5.5400	35	30	31	16.4	440	C212PA1030GCBK04IMR
6	rm	3.0800	3.6900	45	36	39	17.5	525	C213PA1030GCBK04IMR
10	rm	1.8300	2.1900	60	48	53	19.7	725	C314PA1030GCBK04IMR
16	rm	1.1500	1.3900	75	60	72	21.8	950	C315PA1030GCBK04IMR
25	rm	0.7270	0.8700	100	80	94	25.5	1340	C316PA1030GCBK04IMR
35	sm	0.5240	0.6280	120	95	110	25.8	1560	C417PA1030GCBK04IMR

Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	

Four Core Cables

4	rm	4.6100	5.5400	35	30	31	17.6	520	C212PA1040GCBK08IMR
6	rm	3.0800	3.6900	45	36	39	18.8	630	C213PA1040GCBK08IMR
10	rm	1.8300	2.1900	60	48	53	21.3	885	C314PA1040GCBK08IMR
16	rm	1.1500	1.3900	75	60	72	23.7	1180	C315PA1040GCBK08IMR
25	rm	0.7270	0.8700	100	80	94	27.8	1680	C316PA1040GCBK08IMR
35	sm	0.5240	0.6280	120	95	110	27.9	1970	C417PA1040GCBK08IMR
50	sm	0.3870	0.4640	145	115	138	32.7	2640	C418PA1040GCBK08IMR
70	sm	0.2680	0.3220	175	145	171	37.5	3915	C419PA1040GCBK08IMR
95	sm	0.1930	0.2320	210	165	209	42.4	5140	C445PA1040GCBK08IMF
120	sm	0.1530	0.1850	240	195	242	46.2	6310	C446PA1040GCBK08IMF
150	sm	0.1240	0.1510	270	220	275	50.9	7615	C447PA1040GCBK08IMF
185	sm	0.0991	0.1210	300	245	314	56.1	9365	C448PA1040GCBK08IMS
240	sm	0.0754	0.0840	345	290	374	62.6	12790	C449PA1040GCBK08IMS
300	sm	0.0601	0.0770	390	320	440	68.7	14645	C450PA1040GCBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6280 / 1.3900	120	95	110	26.8	1770	C435PA1040GCBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4640 / 0.8700	145	115	138	30.9	2365	C436PA1040GCBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3220 / 0.6280	175	145	171	34.6	3155	C437PA1040GCBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2320 / 0.4640	210	165	209	40.7	4625	C438PA1040GCBK08IMF
120 sm	70 sm	0.1530 / 0.2680	0.1850 / 0.3220	240	195	242	44.5	5730	C439PA1040GCBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1510 / 0.3220	270	220	275	48.5	6740	C440PA1040GCBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1210 / 0.2320	300	245	314	53.2	8300	C441PA1040GCBK08IMS
240 sm	120 sm	0.0754 / 0.1530	0.0840 / 0.1850	345	290	374	59.6	10550	C442PA1040GCBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0770 / 0.1510	390	320	440	65.4	12920	C443PA1040GCBK08IMS

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Multi-Core Cables, with Stranded Aluminum Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tapes.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code	
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight		
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air				
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km		
Two Core Cables									
10	rm	3.0800	3.3000	46	39	46	16.7	455	A314PA1020GCBK01IMR
16	rm	1.9100	2.2900	60	46	62	20.7	540	A315PA1020GCBK01IMR
25	rm	1.2000	1.4400	77	60	81	24.1	730	A316PA1020GCBK01IMR
35	rm	0.8680	1.0430	103	83	115	26.3	880	A317PA1020GCBK01IMR
Three Core Cables									
10	rm	3.0800	3.3000	42	34	37	19.7	535	A314PA1030GCBK04IMR
16	rm	1.9100	2.2900	53	42	50	21.8	625	A315PA1030GCBK04IMR
25	rm	1.2000	1.4400	70	56	66	25.5	855	A316PA1030GCBK04IMR
35	sm	0.8680	1.0430	95	75	88	25.8	1250	A417PA1030GCBK04IMR

Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	

Four Core Cables

10	rm	3.0800	3.3000	42	34	37	21.3	630	A314PA1040GCBK08IMR
16	rm	1.9100	2.2900	53	42	50	23.7	775	A315PA1040GCBK08IMR
25	rm	1.2000	1.4400	70	56	66	27.8	1035	A316PA1040GCBK08IMR
35	sm	0.8680	1.0430	95	75	88	27.9	1115	A417PA1040GCBK08IMR
50	sm	0.6410	0.7710	115	85	105	32.7	1475	A418PA1040GCBK08IMR
70	sm	0.4430	0.5330	135	110	132	37.5	2225	A419PA1040GCBK08IMR
95	sm	0.3200	0.3850	165	130	160	42.4	2830	A445PA1040GCBK08IMR
120	sm	0.2530	0.3050	185	150	187	46.2	3360	A446PA1040GCBK08IMF
150	sm	0.2060	0.2490	210	170	215	50.9	3975	A447PA1040GCBK08IMF
185	sm	0.1640	0.1990	235	195	248	56.1	4815	A448PA1040GCBK08IMF
240	sm	0.1250	0.1510	275	225	292	62.6	5925	A449PA1040GCBK08IMS
300	sm	0.1000	0.1230	310	260	347	68.7	7125	A450PA1040GCBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.0430 / 2.2900	95	75	88	26.8	1030	A435PA1040GCBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.7710 / 1.4400	115	85	105	30.9	1330	A436PA1040GCBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5330 / 1.0430	135	110	132	34.6	1675	A437PA1040GCBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.3850 / 0.7710	165	130	160	40.7	2585	A438PA1040GCBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3050 / 0.5330	185	150	187	44.5	3100	A439PA1040GCBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2490 / 0.5330	210	170	215	48.5	3590	A440PA1040GCBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.1990 / 0.3850	235	195	248	53.2	4300	A441PA1040GCBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1510 / 0.3050	275	225	292	59.6	5325	A442PA1040GCBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1230 / 0.2490	310	260	347	65.4	6365	A443PA1040GCBK08IMS

Supplied by

Multi-Core Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

4	rm	4.6100	5.5400	40	32	39	17.8	645	C212PA1020WCBK01IMR
6	rm	3.0800	3.6900	50	40	50	18.8	735	C213PA1020WCBK01IMR
10	rm	1.8300	2.1900	65	55	66	21.6	800	C314PA1020WCBK01IMR
16	rm	1.1500	1.3900	85	65	88	22.4	1085	C315PA1020WCBK01IMR
25	rm	0.7270	0.8700	110	85	116	26.9	1760	C316PA1020WCBK01IMR
35	rm	0.5240	0.6280	130	105	143	29.5	2120	C317PA1020WCBK01IMR

Three Core Cables

4	rm	4.6100	5.5400	35	30	31	18.5	730	C212PA1030WCBK04IMR
6	rm	3.0800	3.6900	45	36	39	19.6	835	C213PA1030WCBK04IMR
10	rm	1.8300	2.1900	60	48	53	21.8	1080	C314PA1030WCBK04IMR
16	rm	1.1500	1.3900	75	60	72	23.9	1350	C315PA1030WCBK04IMR
25	rm	0.7270	0.8700	100	80	94	28.6	1985	C316PA1030WCBK04IMR
35	sm	0.5240	0.6280	120	100	110	28.8	2420	C417PA1030WCBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

4	rm	4.6100	5.5400	37	29	29	19.7	840	C212PA1040WCBK08IMR
6	rm	3.0800	3.6900	47	37	37	20.9	965	C213PA1040WCBK08IMR
10	rm	1.8300	2.1900	63	50	50	23.4	1275	C314PA1040WCBK08IMR
16	rm	1.1500	1.3900	79	68	68	26.5	1780	C315PA1040WCBK08IMR
25	rm	0.7270	0.8700	105	89	89	30.6	2380	C316PA1040WCBK08IMR
35	sm	0.5240	0.6280	120	95	116	30.9	2690	C417PA1040WCBK08IMR
50	sm	0.3870	0.4640	145	115	143	37.1	3870	C418PA1040WCBK08IMR
70	sm	0.2680	0.3220	175	145	176	40.7	4900	C419PA1040WCBK08IMR
95	sm	0.1930	0.2320	210	165	215	46.6	6665	C445PA1040WCBK08IMF
120	sm	0.1530	0.1850	240	195	248	50.6	7990	C446PA1040WCBK08IMF
150	sm	0.1240	0.1510	270	220	281	55.1	9445	C447PA1040WCBK08IMF
185	sm	0.0991	0.1210	300	245	319	60.5	11425	C448PA1040WCBK08IMS
240	sm	0.0754	0.0840	345	290	380	66.8	14205	C449PA1040WCBK08IMS
300	sm	0.0601	0.0770	390	320	446	72.9	17870	C450PA1040WCBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6280 / 1.3900	120	95	116	29.8	2460	C435PA1040WCBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4640 / 0.8700	145	115	143	35.5	3550	C436PA1040WCBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3220 / 0.6280	175	145	176	39.2	4480	C437PA1040WCBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2320 / 0.4640	210	165	215	42.6	5475	C438PA1040WCBK08IMF
120 sm	70 sm	0.1530 / 0.2680	0.1850 / 0.3220	240	195	248	48.9	7385	C439PA1040WCBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1510 / 0.3220	270	220	281	52.7	8505	C440PA1040WCBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1210 / 0.2320	300	245	319	57.6	10260	C441PA1040WCBK08IMS
240 sm	120 sm	0.0754 / 0.1530	0.0840 / 0.1850	345	290	380	64.0	12755	C442PA1040WCBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0770 / 0.1510	390	320	446	69.8	15330	C443PA1040WCBK08IMS

Multi-Core Cables, with Stranded Aluminum Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

10	rm	3.0800	3.3000	46	39	46	21.6	680	A314PA1020WCBK01IMR
16	rm	1.9100	2.2900	60	46	62	22.4	825	A315PA1020WCBK01IMR
25	rm	1.2000	1.4400	77	60	81	26.9	1450	A316PA1020WCBK01IMR
35	rm	0.8680	1.0430	103	83	115	29.5	2250	A317PA1020WCBK01IMR

Three Core Cables

10	rm	3.0800	3.3000	42	34	37	21.8	915	A314PA1030WCBK04IMR
16	rm	1.9100	2.2900	53	42	50	23.9	1525	A315PA1030WCBK04IMR
25	rm	1.2000	1.4400	70	56	66	28.6	1875	A316PA1030WCBK04IMR
35	sm	0.8680	1.0430	95	75	88	28.8	2330	A417PA1030WCBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

10	rm	3.0800	3.3000	42	34	37	23.4	1420	A314PA1040WCBK08IMR
16	rm	1.9100	2.2900	53	42	50	26.5	1720	A315PA1040WCBK08IMR
25	rm	1.2000	1.4400	70	56	66	30.6	2110	A316PA1040WCBK08IMR
35	sm	0.8680	1.0430	95	75	88	30.9	1780	A417PA1040WCBK08IMR
50	sm	0.6410	0.7710	115	85	105	37.1	3040	A418PA1040WCBK08IMR
70	sm	0.4430	0.5330	135	110	138	40.7	3750	A419PA1040WCBK08IMR
95	sm	0.3200	0.3850	165	130	165	46.6	4730	A445PA1040WCBK08IMR
120	sm	0.2530	0.3050	185	150	193	50.6	5570	A446PA1040WCBK08IMF
150	sm	0.2060	0.2490	210	170	220	55.1	6430	A447PA1040WCBK08IMF
185	sm	0.1640	0.1990	235	195	253	60.5	7790	A448PA1040WCBK08IMF
240	sm	0.1250	0.1510	275	225	297	66.8	9180	A449PA1040WCBK08IMS
300	sm	0.1000	0.1230	310	260	352	72.9	10590	A450PA1040WCBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.0430 / 2.2900	95	75	94	29.8	1550	A435PA1040WCBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.7710 / 1.4400	115	85	110	35.5	2300	A436PA1040WCBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5330 / 1.0430	135	110	138	39.2	2820	A437PA1040WCBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.3850 / 0.7710	165	130	165	42.6	3410	A438PA1040WCBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3050 / 0.5330	185	150	193	48.9	4370	A439PA1040WCBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2490 / 0.5330	210	170	220	52.7	5080	A440PA1040WCBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.1990 / 0.3850	235	195	253	57.6	5950	A441PA1040WCBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1510 / 0.3050	275	225	297	64.0	7230	A442PA1040WCBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1230 / 0.2490	310	260	352	69.8	8540	A443PA1040WCBK08IMS

Supplied by

Single-Core Cables, with Stranded Circular Copper Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.

APPLICATION







For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds



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Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 90 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A			
4	4.6100	5.8800	55	51	40	53	47	40	6.8	80	C212XA10100MBK51IMR
6	3.0800	3.9300	68	65	53	65	59	53	7.3	102	C213XA10100MBK51IMR
10	1.8300	2.3300	98	86	68	84	79	68	8.3	150	C314XA10100MBK51IMR
16	1.1500	1.4700	116	111	87	116	110	95	9.3	210	C315XA10100MBK51IMR
25	0.7270	0.9270	150	142	110	143	137	121	11.0	315	C316XA10100MBK51IMR
35	0.5240	0.6690	179	172	137	179	173	152	12.1	410	C317XA10100MBK51IMR
50	0.3870	0.4940	210	200	163	221	210	184	13.8	555	C318XA10100MBK51IMR
70	0.2680	0.3430	263	247	200	278	268	236	15.7	760	C319XA10100MBK51IMR
95	0.1930	0.2480	310	294	242	347	336	289	17.7	1015	C345XA10100MBK51IMR
120	0.1530	0.1970	357	336	273	404	394	341	19.6	1280	C346XA10100MBK51IMR
150	0.1240	0.1600	394	373	310	457	446	389	21.8	1570	C347XA10100MBK51IMR
185	0.0991	0.1290	452	425	352	530	520	441	23.9	1920	C348XA10100MBK51IMR
240	0.0754	0.0990	520	488	404	651	641	536	27.1	2530	C349XA10100MBK51IMR
300	0.0601	0.0810	588	546	457	824	756	620	29.7	3105	C350XA10100MBK51IMR
400	0.0470	0.0638	672	620	515	893	872	714	33.9	4135	C351XA10100MBK51IMF
500	0.0366	0.0517	761	693	572	1008	987	814	37.4	5110	C352XA10100MBK51IMF
630	0.0283	0.0425	872	777	651	1155	1134	956	41.9	6455	C353XA10100MBK51IMF
800	0.0221	0.0292	957	861	735	1313	1292	1092	46.8	8260	C354XA10100MBK51IMF
1000	0.0176	0.0234	1082	935	798	1449	1428	1208	51.5	10075	C355XA10100MBK51IMF

Supplied by Digital Storage Solutions Training Center

Single-Core Cables, with Stranded Circular Aluminum Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.

APPLICATION







For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds



Supplied by Digital Stout Innovation & Training FZE

Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 90 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A			
16	1.9100	2.4500	89	87	66	89	84	63	9.3	115	A315XA10100MBK51IMR
25	1.2000	1.5400	113	110	84	116	110	95	11.0	165	A316XA10100MBK51IMR
35	0.8680	1.1130	137	131	105	142	137	121	12.1	205	A317XA10100MBK51IMR
50	0.6410	0.8220	163	155	121	173	168	147	13.8	260	A318XA10100MBK51IMR
70	0.4430	0.5690	200	189	152	221	215	179	15.7	340	A319XA10100MBK51IMR
95	0.3200	0.4110	236	226	179	284	273	215	17.7	450	A345XA10100MBK51IMR
120	0.2530	0.3250	278	263	215	326	315	242	19.6	550	A346XA10100MBK51IMR
150	0.2060	0.2650	310	294	236	373	362	299	21.8	670	A347XA10100MBK51IMR
185	0.1640	0.2120	352	336	267	436	420	336	23.9	830	A348XA10100MBK51IMR
240	0.1250	0.1630	410	389	315	515	499	399	27.1	1050	A349XA10100MBK51IMR
300	0.1000	0.1310	467	436	357	578	567	462	29.7	1300	A350XA10100MBK51IMR
400	0.0778	0.1000	541	504	410	693	677	541	33.9	1610	A351XA10100MBK51IMR
500	0.0605	0.0870	609	567	467	809	788	630	37.4	2000	A352XA10100MBK51IMF
630	0.0469	0.0620	698	646	536	945	924	746	41.9	2520	A353XA10100MBK51IMF
800	0.0367	0.0560	788	704	599	1071	1050	851	46.8	3150	A354XA10100MBK51IMF
1000	0.0291	0.0470	872	767	651	1176	1155	966	51.5	3870	A355XA10100MBK51IMF

Supplied by Digital Stout Innovation & Training LLC

Multi-Core Cables, with Stranded Copper Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

Conductor : Plain annealed stranded circular (rm) or sector shaped (sm) copper Conductor, as per Class 2 of IEC 60228.

Insulation : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.

Outer sheath : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area	ELECTRICAL DATA						DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight		
	DC at 20 °C	AC at 90 °C	Laid in ground	Laid in ducts	Laid in free air				
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km		

Two Core Cables

1.5	rm	12.1000	15.4000	30	25	25	9.6	105	C208XA10200MBK01MR
2.5	rm	7.4100	9.4500	37	32	34	10.5	135	C210XA10200MBK01MR
4	rm	4.6100	5.8800	50	40	46	11.7	175	C212XA10200MBK01MR
6	rm	3.0800	3.9300	63	52	60	12.7	225	C213XA10200MBK01MR
10	rm	1.8300	2.3300	82	69	79	14.7	340	C314XA10200MBK01MR
16	rm	1.1500	1.4700	106	83	105	16.7	470	C315XA10200MBK01MR
25	rm	0.7270	0.9270	139	107	139	20.1	695	C316XA10200MBK01MR
35	rm	0.5240	0.6690	166	134	166	22.3	875	C317XA10200MBK01MR

Three Core Cables

1.5	rm	12.1000	15.4000	26	23	22	10.1	130	C208XA10300MBK04IMR
2.5	rm	7.4100	9.4500	35	29	32	11.0	165	C210XA10300MBK04IMR
4	rm	4.6100	5.8800	45	36	41	12.3	225	C212XA10300MBK04IMR
6	rm	3.0800	3.9300	57	45	50	13.4	295	C213XA10300MBK04IMR
10	rm	1.8300	2.3300	75	60	68	15.6	455	C314XA10300MBK04IMR
16	rm	1.1500	1.4700	97	75	89	17.7	645	C315XA10300MBK04IMR
25	rm	0.7270	0.9270	128	102	120	21.4	965	C316XA10300MBK04IMR
35	sm	0.5240	0.6690	155	120	145	21.5	1260	C417XA10300MBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

1.5	rm	12.1000	15.4000	26	23	22	10.6	150	C208XA10400MBK08IMR
2.5	rm	7.4100	9.4500	35	29	32	11.9	205	C210XA10400MBK08IMR
4	rm	4.6100	5.8800	45	36	41	13.4	280	C212XA10400MBK08IMR
6	rm	3.0800	3.9300	57	45	50	14.6	365	C213XA10400MBK08IMR
10	rm	1.8300	2.3300	75	60	68	17.0	575	C314XA10400MBK08IMR
16	rm	1.1500	1.4700	97	75	89	19.4	825	C315XA10400MBK08IMR
25	rm	0.7270	0.9270	128	102	120	23.5	1245	C316XA10400MBK08IMR
35	sm	0.5240	0.6690	155	120	145	23.6	1530	C417XA10400MBK08IMR
50	sm	0.3870	0.4940	185	145	179	27.1	2060	C418XA10400MBK08IMR
70	sm	0.2680	0.3430	220	180	225	31.4	2905	C419XA10400MBK08IMR
95	sm	0.1930	0.2480	265	210	268	35.1	3910	C445XA10400MBK08IMR
120	sm	0.1530	0.1970	305	245	310	39.2	4915	C446XA10400MBK08IMF
150	sm	0.1240	0.1600	335	275	352	43.7	6035	C447XA10400MBK08IMF
185	sm	0.0991	0.1290	375	310	404	48.7	7540	C448XA10400MBK08IMF
240	sm	0.0754	0.0990	435	365	483	54.5	9785	C449XA10400MBK08IMS
300	sm	0.0601	0.0810	490	405	562	60.1	12190	C450XA10400MBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6690 / 1.4700	155	120	142	22.5	1360	C435XA10400MBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4940 / 0.9270	185	145	179	25.9	1835	C436XA10400MBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3430 / 0.6690	220	180	215	29.7	2540	C437XA10400MBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2480 / 0.4940	265	210	268	33.6	3435	C438XA10400MBK08IMR
120 sm	70 sm	0.1530 / 0.2680	0.1970 / 0.3430	305	245	310	37.5	4400	C439XA10400MBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1600 / 0.3430	335	275	352	41.3	5255	C440XA10400MBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1290 / 0.2480	375	310	404	46.2	6640	C441XA10400MBK08IMF
240 sm	120 sm	0.0754 / 0.1530	0.0990 / 0.1970	435	365	483	51.5	8555	C442XA10400MBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0810 / 0.1600	490	405	562	56.8	10640	C443XA10400MBK08IMS

Multi-Core Cables, with Stranded Aluminum Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 90 °C	Laid in ground	Laid in ducts	Laid in free air			
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	

Two Core Cables

10	rm	3.0800	3.9500	57	48	55	14.7	335	A314XA10200MBK01IMR
16	rm	1.9100	2.4500	74	58	73	16.7	450	A315XA10200MBK01IMR
25	rm	1.2000	1.5400	97	75	97	20.1	640	A316XA10200MBK01IMR
35	rm	0.8680	1.1130	128	106	120	22.3	780	A317XA10200MBK01IMR

Three Core Cables

10	rm	3.0800	3.9500	52	42	48	15.6	375	A314XA10300MBK04IMR
16	rm	1.9100	2.4500	68	52	62	17.7	605	A315XA10300MBK04IMR
25	rm	1.2000	1.5400	90	71	84	21.4	835	A316XA10300MBK04IMR
35	sm	0.8680	1.1130	120	95	105	21.5	1050	A417XA10300MBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

10	rm	3.0800	3.9500	52	42	48	17.0	450	A314PA10400MBK08IMR
16	rm	1.9100	2.4500	68	52	62	19.4	700	A315PA10400MBK08IMR
25	rm	1.2000	1.5400	90	71	84	23.5	925	A316PA10400MBK08IMR
35	sm	0.8680	1.1130	120	95	110	23.6	800	A417PA10400MBK08IMR
50	sm	0.6410	0.8220	145	110	136	27.1	950	A418PA10400MBK08IMR
70	sm	0.4430	0.5690	175	140	168	31.4	1260	A419PA10400MBK08IMR
95	sm	0.3200	0.4110	210	165	205	35.1	1650	A445XA10400MBK08IMR
120	sm	0.2530	0.3250	235	190	236	39.2	2060	A446XA10400MBK08IMF
150	sm	0.2060	0.2650	265	215	278	43.7	2520	A447XA10400MBK08IMF
185	sm	0.1640	0.2120	290	240	315	48.7	3140	A448XA10400MBK08IMF
240	sm	0.1250	0.1630	340	280	378	54.5	4020	A449XA10400MBK08IMS
300	sm	0.1000	0.1310	390	315	446	60.1	4930	A450XA10400MBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.1130 / 2.4500	121	96	110	22.5	610	A435XA10400MBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.8220 / 1.5400	145	116	136	25.9	925	A436XA10400MBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5690 / 1.1130	178	142	171	29.7	1255	A437XA10400MBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.4110 / 0.8220	214	171	211	33.6	1630	A438XA10400MBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3250 / 0.5690	243	195	246	37.5	2030	A439XA10400MBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2650 / 0.5690	272	220	282	41.3	2515	A440XA10400MBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.2120 / 0.4110	309	250	326	46.2	3095	A441XA10400MBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1630 / 0.3250	359	292	388	51.5	3900	A442XA10400MBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1310 / 0.2650	406	331	449	56.8	4795	A443XA10400MBK08IMS

Supplied by Data Sheet International Trading FZE

Multi-Core Cables, with Stranded Copper Conductors, XLPE Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tapes.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

6	rm	3.0800	3.9300	62	51	59	15.5	405	C213XA1020GMBK01IMR
10	rm	1.8300	2.3300	81	68	78	17.5	530	C314XA1020GMBK01IMR
16	rm	1.1500	1.4700	105	82	103	19.5	685	C315XA1020GMBK01IMR
25	rm	0.7270	0.9270	138	106	137	22.1	930	C316XA1020GMBK01IMR
35	rm	0.5240	0.6690	164	132	164	23.8	1245	C317XA1020GMBK01IMR

Three Core Cables

6	rm	3.0800	3.9300	56	44	49	16.2	465	C213XA1030GMBK04IMR
10	rm	1.8300	2.3300	74	59	67	18.4	650	C314XA1030GMBK04IMR
16	rm	1.1500	1.4700	96	74	88	20.5	870	C315XA1030GMBK04IMR
25	rm	0.7270	0.9270	127	100	120	24.2	1235	C316XA1030GMBK04IMR
35	sm	0.5240	0.6690	153	119	143	22.8	1370	C417XA1030GMBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

6	rm	3.0800	3.9300	56	44	49	17.4	555	C213XA1040GMBK08IMR
10	rm	1.8300	2.3300	74	59	67	19.8	795	C314XA1040GMBK08IMR
16	rm	1.1500	1.4700	96	74	88	22.2	1075	C315XA1040GMBK08IMR
25	rm	0.7270	0.9270	127	100	120	26.3	1540	C316XA1040GMBK08IMR
35	sm	0.5240	0.6690	153	119	143	26.4	1830	C417XA1040GMBK08IMR
50	sm	0.3870	0.4940	185	145	178	30.1	2415	C418XA1040GMBK08IMR
70	sm	0.2680	0.3430	220	180	215	34.6	3335	C419XA1040GMBK08IMR
95	sm	0.1930	0.2480	265	210	268	39.7	4815	C445XA1040GMBK08IMF
120	sm	0.1530	0.1970	305	245	310	43.8	5910	C446XA1040GMBK08IMF
150	sm	0.1240	0.1600	335	275	352	48.7	7195	C447XA1040GMBK08IMF
185	sm	0.0991	0.1290	375	310	404	53.7	8830	C448XA1040GMBK08IMS
240	sm	0.0754	0.0990	435	365	483	60.0	11285	C449XA1040GMBK08IMS
300	sm	0.0601	0.0810	490	405	562	65.5	13835	C450XA1040GMBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6690 / 1.4700	153	119	143	25.3	1640	C435XA1040GMBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4940 / 0.9270	185	145	178	28.7	2160	C436XA1040GMBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3430 / 0.6690	220	180	215	33.1	2960	C437XA1040GMBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2480 / 0.4940	265	210	268	38.0	4280	C438XA1040GMBK08IMF
120 sm	70 sm	0.1530 / 0.2680	0.1970 / 0.3430	305	245	310	42.1	5365	C439XA1040GMBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1600 / 0.3430	335	275	352	46.3	6355	C440XA1040GMBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1290 / 0.2480	375	310	404	51.2	7865	C441XA1040GMBK08IMS
240 sm	120 sm	0.0754 / 0.1530	0.0990 / 0.1970	435	365	483	57.1	10000	C442XA1040GMBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0810 / 0.1600	490	405	562	62.2	12205	C443XA1040GMBK08IMS

Supplied by

Multi-Core Cables, with Stranded Aluminum Conductors, XLPE Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tapes.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA						DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km		
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A				
Two Core Cables									
10	rm	3.0800	3.9500	56	47	55	17.5	480	A314XA1020GMBK01IMR
16	rm	1.9100	2.4500	73	57	72	19.5	595	A315XA1020GMBK01IMR
25	rm	1.2000	1.5400	96	74	96	22.1	810	A316XA1020GMBK01IMR
35	rm	0.8680	1.1130	129	105	126	25.1	950	A317XA1020GMBK01IMR
Three Core Cables									
10	rm	3.0800	3.9500	52	41	47	18.4	555	A314XA1030GMBK04IMR
16	rm	1.9100	2.4500	67	52	62	20.5	685	A315XA1030GMBK04IMR
25	rm	1.2000	1.5400	89	70	84	24.2	925	A316XA1030GMBK04IMR
35	sm	0.8680	1.1130	120	95	110	24.5	1110	A417XA1030GMBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

10	rm	3.0800	3.9500	52	41	47	19.8	635	A314XA1040GMBK08IMR
16	rm	1.9100	2.4500	67	52	62	22.2	795	A315XA1040GMBK08IMR
25	rm	1.2000	1.5400	89	70	84	26.3	1090	A316XA1040GMBK08IMR
35	sm	0.8680	1.1130	120	95	110	26.4	970	A417XA1040GMBK08IMR
50	sm	0.6410	0.8220	145	110	136	30.1	1490	A418XA1040GMBK08IMR
70	sm	0.4430	0.5690	175	140	168	34.6	1750	A419XA1040GMBK08IMR
95	sm	0.3200	0.4110	210	165	205	39.7	2540	A445XA1040GMBK08IMR
120	sm	0.2530	0.3250	235	190	236	43.8	3020	A446XA1040GMBK08IMF
150	sm	0.2060	0.2650	265	215	278	48.7	3670	A447XA1040GMBK08IMF
185	sm	0.1640	0.2120	290	240	315	53.7	4380	A448XA1040GMBK08IMF
240	sm	0.1250	0.1630	340	280	378	60.0	4430	A449XA1040GMBK08IMS
300	sm	0.1000	0.1310	390	315	446	65.5	6510	A450XA1040GMBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.1130 / 2.4500	120	95	110	25.3	895	A435XA1040GMBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.8220 / 1.5400	145	110	136	28.7	1200	A436XA1040GMBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5690 / 1.1130	175	140	168	33.1	1550	A437XA1040GMBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.4110 / 0.8220	210	165	205	38.0	1970	A438XA1040GMBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3250 / 0.5690	235	190	236	42.1	2710	A439XA1040GMBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2650 / 0.5690	265	215	278	46.3	3290	A440XA1040GMBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.2120 / 0.4110	290	240	315	51.2	3980	A441XA1040GMBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1630 / 0.3250	340	280	378	57.1	4910	A442XA1040GMBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1310 / 0.2650	390	315	446	62.2	5920	A443XA1040GMBK08IMS

Supplied by Distribution Innovation Trading FZE

Multi-Core Cables, with Stranded Copper Conductors, XLPE Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

4	rm	4.6100	5.8800	51	41	47	16.6	580	C212XA1020WMBK01IMR
6	rm	3.0800	3.9300	64	53	61	17.6	660	C213XA1020WMBK01IMR
10	rm	1.8300	2.3300	83	70	80	19.6	835	C314XA1020WMBK01IMR
16	rm	1.1500	1.4700	107	84	106	21.6	1020	C315XA1020WMBK01IMR
25	rm	0.7270	0.9270	140	108	140	24.2	1335	C316XA1020WMBK01IMR
35	rm	0.5240	0.6690	168	135	168	27.5	1755	C317XA1020WMBK01IMR

Three Core Cables

4	rm	4.6100	5.8800	46	37	42	17.2	650	C212XA1030WMBK04IMR
6	rm	3.0800	3.9300	58	46	51	18.3	755	C213XA1030WMBK04IMR
10	rm	1.8300	2.3300	76	61	69	20.5	965	C314XA1030WMBK04IMR
16	rm	1.1500	1.4700	98	76	90	22.6	1240	C315XA1030WMBK04IMR
25	rm	0.7270	0.9270	130	103	120	27.0	1850	C316XA1030WMBK04IMR
35	sm	0.5240	0.6690	158	122	147	27.3	2220	C417XA1030WMBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

4	rm	4.6100	5.8800	46	37	42	18.3	740	C212XA1040WMBK08IMR
6	rm	3.0800	3.9300	58	46	51	19.5	860	C213XA1040WMBK08IMR
10	rm	1.8300	2.3300	76	61	69	21.9	1155	C314XA1040WMBK08IMR
16	rm	1.1500	1.4700	98	76	90	25.0	1630	C315XA1040WMBK08IMR
25	rm	0.7270	0.9270	130	103	122	29.1	2220	C316XA1040WMBK08IMR
35	sm	0.5240	0.6690	158	122	147	29.4	2520	C417XA1040WMBK08IMR
50	sm	0.3870	0.4940	185	145	184	33.1	3200	C418XA1040WMBK08IMR
70	sm	0.2680	0.3430	220	180	220	39.2	4645	C419XA1040WMBK08IMR
95	sm	0.1930	0.2480	265	210	273	42.9	5870	C445XA1040WMBK08IMF
120	sm	0.1530	0.1970	305	245	315	48.4	7555	C446XA1040WMBK08IMF
150	sm	0.1240	0.1600	335	275	375	53.1	8985	C447XA1040WMBK08IMF
185	sm	0.0991	0.1290	375	310	410	57.9	10760	C448XA1040WMBK08IMS
240	sm	0.0754	0.0990	435	365	488	64.1	13480	C449XA1040WMBK08IMS
300	sm	0.0601	0.0810	490	405	562	69.7	16215	C450XA1040WMBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.5240 / 1.1500	0.6690 / 1.4700	158	122	147	27.7	2250	C435XA1040WMBK08IMR
50 sm	25 rm	0.3870 / 0.7270	0.4940 / 0.9270	185	145	184	31.3	2860	C436XA1040WMBK08IMR
70 sm	35 sm	0.2680 / 0.5240	0.3430 / 0.6690	220	180	220	37.5	4240	C437XA1040WMBK08IMR
95 sm	50 sm	0.1930 / 0.3870	0.2480 / 0.4940	265	210	273	41.2	5290	C438XA1040WMBK08IMF
120 sm	70 sm	0.1530 / 0.2680	0.1970 / 0.3430	305	245	315	45.3	6475	C439XA1040WMBK08IMF
150 sm	70 sm	0.1240 / 0.2680	0.1600 / 0.3430	335	275	375	50.5	8055	C440XA1040WMBK08IMF
185 sm	95 sm	0.0991 / 0.1930	0.1290 / 0.2480	375	310	410	55.4	9735	C441XA1040WMBK08IMS
240 sm	120 sm	0.0754 / 0.1530	0.0990 / 0.1970	435	365	488	60.3	11780	C442XA1040WMBK08IMS
300 sm	150 sm	0.0601 / 0.1240	0.0810 / 0.1600	490	405	562	66.4	14435	C443XA1040WMBK08IMS

Multi-Core Cables, with Stranded Aluminum Conductors, XLPE Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST2 to IEC 60502-1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

10	rm	3.0800	3.9500	56	47	60	19.6	635	A314XA1020WMBK01IMR
16	rm	1.9100	2.4500	73	57	79	21.6	770	A315XA1020WMBK01IMR
25	rm	1.2000	1.5400	96	74	101	24.2	1370	A316XA1020WMBK01IMR
35	rm	0.8680	1.1130	129	105	131	27.5	1560	A317XA1020WMBK01IMR

Three Core Cables

10	rm	3.0800	3.9500	52	41	52	20.5	715	A314XA1030WMBK04IMR
16	rm	1.9100	2.4500	67	52	67	22.6	870	A315XA1030WMBK04IMR
25	rm	1.2000	1.5400	89	70	89	27.0	1515	A316XA1030WMBK04IMR
35	sm	0.8680	1.1130	120	95	115	27.3	1770	A417XA1030WMBK04IMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

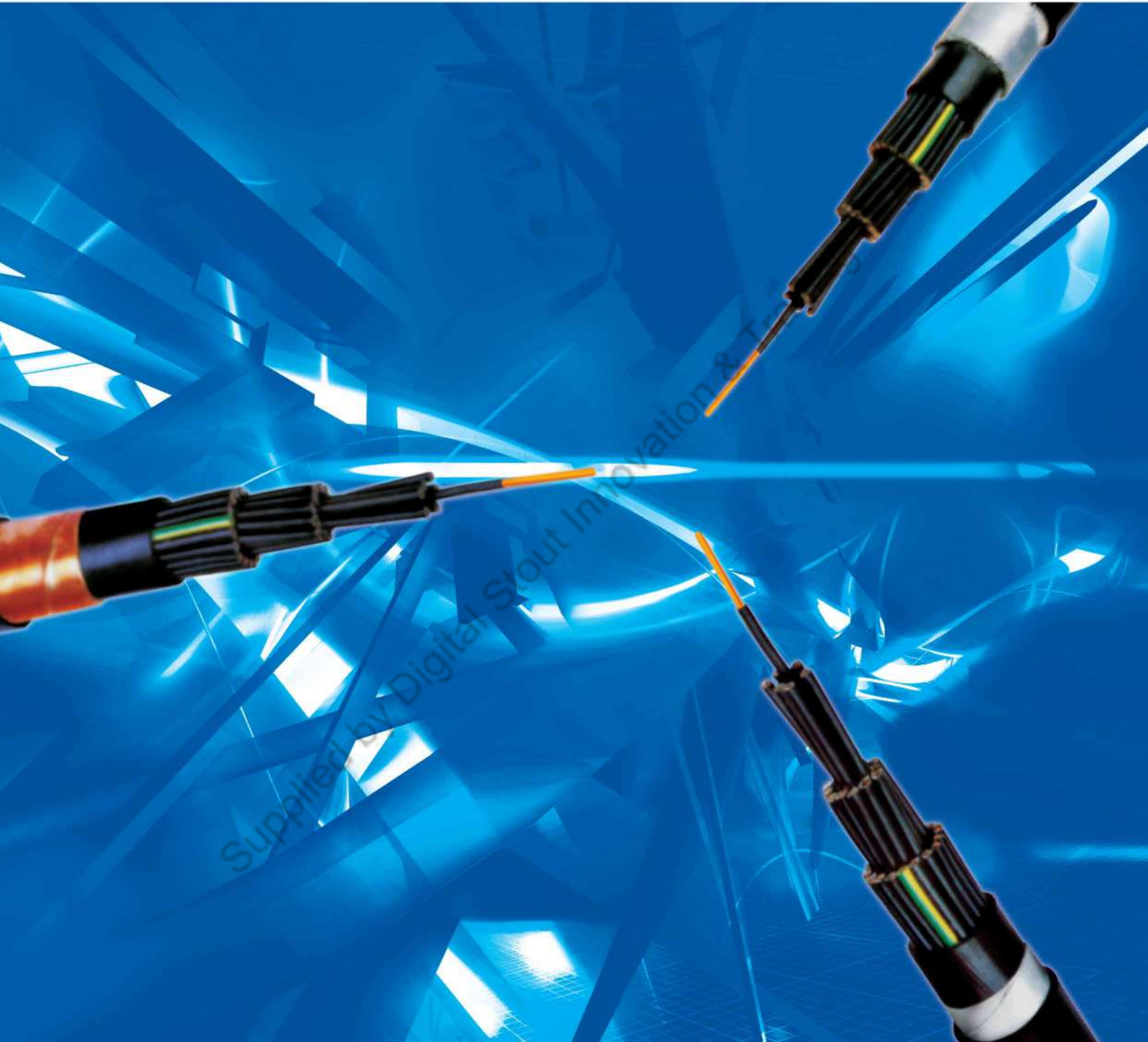
10	rm	3.0800	3.9500	52	41	52	21.9	785	A314XA1040WMBK08IMR
16	rm	1.9100	2.4500	67	52	67	25.0	1335	A315XA1040WMBK08IMR
25	rm	1.2000	1.5400	89	70	89	29.1	1630	A316XA1040WMBK08IMR
35	sm	0.8680	1.1130	120	95	115	29.4	1700	A417XA1040WMBK08IMR
50	sm	0.6410	0.8220	145	110	141	33.1	2330	A418XA1040WMBK08IMR
70	sm	0.4430	0.5690	175	140	173	39.2	2760	A419XA1040WMBK08IMR
95	sm	0.3200	0.4110	210	165	210	42.9	3340	A445XA1040WMBK08IMR
120	sm	0.2530	0.3250	235	190	241	48.4	4320	A446XA1040WMBK08IMF
150	sm	0.2060	0.2650	265	215	283	53.1	5080	A447XA1040WMBK08IMF
185	sm	0.1640	0.2120	290	240	320	57.9	5990	A448XA1040WMBK08IMF
240	sm	0.1250	0.1630	340	280	383	64.1	7220	A449XA1040WMBK08IMS
300	sm	0.1000	0.1310	390	315	451	69.7	8440	A450XA1040WMBK08IMS

Four Core Cables with Reduced Neutral

35 sm	16 rm	0.8680 / 1.9100	1.1130 / 2.4500	120	95	115	27.7	1500	A435XA1040WMBK08IMR
50 sm	25 rm	0.6410 / 1.2000	0.8220 / 1.5400	145	110	141	31.3	1870	A436XA1040WMBK08IMR
70 sm	35 sm	0.4430 / 0.8680	0.5690 / 1.1130	175	140	173	37.5	2600	A437XA1040WMBK08IMR
95 sm	50 sm	0.3200 / 0.6410	0.4110 / 0.8220	210	165	210	41.2	3090	A438XA1040WMBK08IMR
120 sm	70 sm	0.2530 / 0.4430	0.3250 / 0.5690	235	190	241	45.3	3690	A439XA1040WMBK08IMF
150 sm	70 sm	0.2060 / 0.4430	0.2650 / 0.5690	265	215	283	50.5	4700	A440XA1040WMBK08IMF
185 sm	95 sm	0.1640 / 0.3200	0.2120 / 0.4110	290	240	320	55.4	5550	A441XA1040WMBK08IMF
240 sm	120 sm	0.1250 / 0.2530	0.1630 / 0.3250	340	280	383	60.3	6560	A442XA1040WMBK08IMS
300 sm	150 sm	0.1000 / 0.2060	0.1310 / 0.2650	390	315	451	66.4	7820	A443XA1040WMBK08IMS

Supplied by

Control Cables To **IEC** Standard





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Control Cables, with Solid Copper Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

Conductor : Plain annealed solid copper conductor, as per Class 1 of IEC 60228.

Insulation : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.

Outer sheath : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.

APPLICATION

For use indoors – in cable trenches or ducts; and outdoors - for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds



Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	11.8	200	C108PA10500CBK12IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	12.7	250	C108PA10700CBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	15.7	340	C108PA11000CBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	16.2	385	C108PA11200CBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	17.0	435	C108PA11400CBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	17.8	490	C108PA11600CBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	18.7	560	C108PA11900CBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	21.7	700	C108PA12400CBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	23.8	850	C108PA13000CBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	24.7	1000	C108PA13700CBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	12.9	260	C110PA10500CBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	13.8	330	C110PA10700CBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	17.2	450	C110PA11000CBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	17.7	540	C110PA11200CBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	18.6	600	C110PA11400CBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	19.6	670	C110PA11600CBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	20.6	780	C110PA11900CBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	24.0	1030	C110PA12400CBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	25.4	1160	C110PA13000CBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	27.4	1410	C110PA13700CBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	15.3	430	C112PA10500CBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	16.5	480	C112PA10700CBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	20.8	670	C112PA11000CBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	21.5	780	C112PA11200CBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	22.6	890	C112PA11400CBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	23.8	1000	C112PA11600CBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	25.1	1170	C112PA11900CBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	29.6	1460	C112PA12400CBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	31.6	1830	C112PA13000CBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	34.1	2320	C112PA13700CBK21IMF

Supplied by Digital Subst. Innovation & Training FZE

Control Cables, with Stranded Copper Conductors, PVC Insulated and PVC Sheathed

CONSTRUCTION

Conductor : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.

Insulation : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.

Outer sheath : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For use indoors – in cable trenches or ducts; and outdoors - for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	12.3	215	C208PA10500CBK12IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	13.3	265	C208PA10700CBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	16.5	360	C208PA11000CBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	17.0	410	C208PA11200CBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	17.8	465	C208PA11400CBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	18.7	530	C208PA11600CBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	19.7	600	C208PA11900CBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	22.9	740	C208PA12400CBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	24.2	890	C208PA13000CBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	26.1	1070	C208PA13700CBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	13.4	275	C210PA10500CBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	14.5	350	C210PA10700CBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	18.1	480	C210PA11000CBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	18.7	555	C210PA11200CBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	19.6	630	C210PA11400CBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	20.6	710	C210PA11600CBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	21.7	820	C210PA11900CBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	25.3	1020	C210PA12400CBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	26.8	1235	C210PA13000CBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	28.9	1495	C210PA13700CBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	16.1	410	C212PA10500CBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	17.4	520	C212PA10700CBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	22.0	720	C212PA11000CBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	22.7	840	C212PA11200CBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	23.9	950	C212PA11400CBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	25.2	1070	C212PA11600CBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	26.6	1260	C212PA11900CBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	31.4	1580	C212PA12400CBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	33.5	1965	C212PA13000CBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	36.2	2510	C212PA13700CBK21IMF

Supplied by Digital Subst. Innovation & Trading FZE

Control Cables, with Solid Copper Conductors, PVC Insulated, Copper Tape Shielded and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed solid copper conductor, as per Class 1 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Shielding** : Copper tape applied helically with suitable overlap.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For use indoors – in cable trenches or ducts; and outdoors - for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	14.2	305	C108PA105N0CBK12IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	15.1	350	C108PA107N0CBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	18.1	465	C108PA110N0CBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	18.6	520	C108PA112N0CBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	19.4	575	C108PA114N0CBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	20.2	635	C108PA116N0CBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	21.1	715	C108PA119N0CBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	25.3	930	C108PA124N0CBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	27.5	1115	C108PA130N0CBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	29.4	1205	C108PA137N0CBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	15.1	380	C110PA105N0CBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	16.2	450	C110PA107N0CBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	19.6	560	C110PA110N0CBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	20.1	650	C110PA112N0CBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	21.0	750	C110PA114N0CBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	22.0	830	C110PA116N0CBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	23.0	970	C110PA119N0CBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	26.4	1260	C110PA124N0CBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	27.8	1380	C110PA130N0CBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	30.0	1670	C110PA137N0CBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	18.5	540	C112PA105N0CBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	19.9	670	C112PA107N0CBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	23.2	800	C112PA110N0CBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	23.9	920	C112PA112N0CBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	25.0	1080	C112PA114N0CBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	26.2	1230	C112PA116N0CBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	27.5	1430	C112PA119N0CBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	32.0	1780	C112PA124N0CBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	34.0	2210	C112PA130N0CBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	36.7	2790	C112PA137N0CBK21IMF

Supplied by Digital Subst Innovation & Training LLC

Control Cables, with Stranded Copper Conductors, PVC Insulated, Copper Tape Shielded and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Shielding** : Copper tape applied helically with suitable overlap.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For use indoors – in cable trenches or ducts; and outdoors - for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	15.7	340	C208PA105N0CBK21IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	16.5	370	C208PA107N0CBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	18.9	495	C208PA110N0CBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	19.4	550	C208PA112N0CBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	20.2	610	C208PA114N0CBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	21.1	670	C208PA116N0CBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	22.1	760	C208PA119N0CBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	25.3	930	C208PA124N0CBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	27.5	1115	C208PA130N0CBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	28.5	1290	C208PA137N0CBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	15.8	390	C210PA105N0CBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	16.9	470	C210PA107N0CBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	20.5	630	C210PA110N0CBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	21.1	710	C210PA112N0CBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	22.0	800	C210PA114N0CBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	23.0	875	C210PA116N0CBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	24.1	1000	C210PA119N0CBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	27.7	1225	C210PA124N0CBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	26.8	1240	C210PA130N0CBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	31.5	1750	C210PA137N0CBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	18.5	540	C212PA105N0CBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	19.9	670	C212PA107N0CBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	24.4	850	C212PA110N0CBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	25.2	980	C212PA112N0CBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	26.3	1160	C212PA114N0CBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	27.6	1310	C212PA116N0CBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	29.0	1520	C212PA119N0CBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	33.8	1900	C212PA124N0CBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	35.9	2350	C212PA130N0CBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	38.8	2970	C212PA137N0CBK21IMF

Supplied by Digital Subst

Control Cables, with Solid Copper Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed solid copper conductor, as per Class 1 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tape.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations, for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is required, or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	15.0	355	C108PA1050GCBK21IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	15.5	410	C108PA1070GCBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	18.5	540	C108PA1100GCBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	19.0	590	C108PA1120GCBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	20.6	670	C108PA1140GCBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	21.0	720	C108PA1160GCBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	21.5	800	C108PA1190GCBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	24.5	970	C108PA1240GCBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	25.8	1170	C108PA1300GCBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	27.5	1315	C108PA1370GCBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	15.5	340	C110PA1050GCBK21IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	16.6	495	C110PA1070GCBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	20.0	650	C110PA1100GCBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	20.5	760	C110PA1120GCBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	21.4	820	C110PA1140GCBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	22.4	920	C110PA1160GCBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	23.4	1030	C110PA1190GCBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	27.0	1260	C110PA1240GCBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	28.2	1520	C110PA1300GCBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	30.5	1830	C110PA1370GCBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	18.9	610	C112PA1050GCBK21IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	20.3	710	C112PA1070GCBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	23.6	890	C112PA1100GCBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	24.1	1140	C112PA1120GCBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	25.4	1180	C112PA1140GCBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	26.6	1300	C112PA1160GCBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	28.1	1500	C112PA1190GCBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	32.6	1890	C112PA1240GCBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	34.4	2480	C112PA1300GCBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	37.3	3030	C112PA1370GCBK21IMF

Supplied by Digital Shift Innovation & Trading FZC

Control Cables, with Stranded Copper Conductors, PVC Insulated, Steel Tape Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Double layer of galvanized steel tape.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations, for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is required, or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	15.3	350	C208PA1050GCBK12IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	17.0	430	C208PA1070GCBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	19.3	570	C208PA1100GCBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	19.8	625	C208PA1120GCBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	21.0	690	C208PA1140GCBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	21.9	800	C208PA1160GCBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	22.5	850	C208PA1190GCBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	25.7	1030	C208PA1240GCBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	27.3	1185	C208PA1300GCBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	28.9	1400	C208PA1370GCBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	16.2	440	C210PA1050GCBK21IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	17.3	530	C210PA1070GCBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	20.9	710	C210PA1100GCBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	21.5	790	C210PA1120GCBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	22.4	880	C210PA1140GCBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	23.4	970	C210PA1160GCBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	24.5	1090	C210PA1190GCBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	28.1	1340	C210PA1240GCBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	30.3	1630	C210PA1300GCBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	31.9	1875	C210PA1370GCBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	19.1	660	C212PA1050GCBK21IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	20.4	740	C212PA1070GCBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	24.9	960	C212PA1100GCBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	25.6	1120	C212PA1120GCBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	26.7	1270	C212PA1140GCBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	28.0	1390	C212PA1160GCBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	29.4	1610	C212PA1190GCBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	34.4	2030	C212PA1240GCBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	36.5	2660	C212PA1300GCBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	39.4	3250	C212PA1370GCBK21IMF

Supplied by Digital Spout Innovation & Trading FZC

Control Cables, with Solid Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed solid copper conductor, as per Class 1 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.

APPLICATION

For outdoor installations, for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is required, or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds



Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	16.0	470	C108PA1050WCBK21IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	17.2	530	C108PA1070WCBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	20.2	740	C108PA1100WCBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	22.5	1050	C108PA1120WCBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	23.3	1110	C108PA1140WCBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	24.2	1220	C108PA1160WCBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	25.2	1320	C108PA1190WCBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	28.0	1530	C108PA1240WCBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	30.1	1800	C108PA1300WCBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	33.0	2180	C108PA1370WCBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	17.2	570	C110PA1050WCBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	18.4	640	C110PA1070WCBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	22.9	1125	C110PA1100WCBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	24.2	1240	C110PA1120WCBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	25.1	1350	C110PA1140WCBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	26.1	1470	C110PA1160WCBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	27.4	1620	C110PA1190WCBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	30.5	1970	C110PA1240WCBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	33.7	2380	C110PA1300WCBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	36.6	2790	C110PA1370WCBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	20.2	750	C112PA1050WCBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	22.7	1150	C112PA1070WCBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	26.3	1460	C112PA1100WCBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	28.2	1650	C112PA1120WCBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	29.2	1790	C112PA1140WCBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	30.8	1980	C112PA1160WCBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	32.1	2150	C112PA1190WCBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	37.5	3010	C112PA1240WCBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	40.4	3430	C112PA1300WCBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	43.3	4020	C112PA1370WCBK21IMF

Supplied by Digital Subst. Innovation & Trading FZC

Control Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of IEC 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to IEC 60502-1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type ST1 to IEC 60502-1.



APPLICATION

For outdoor installations, for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is required, or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

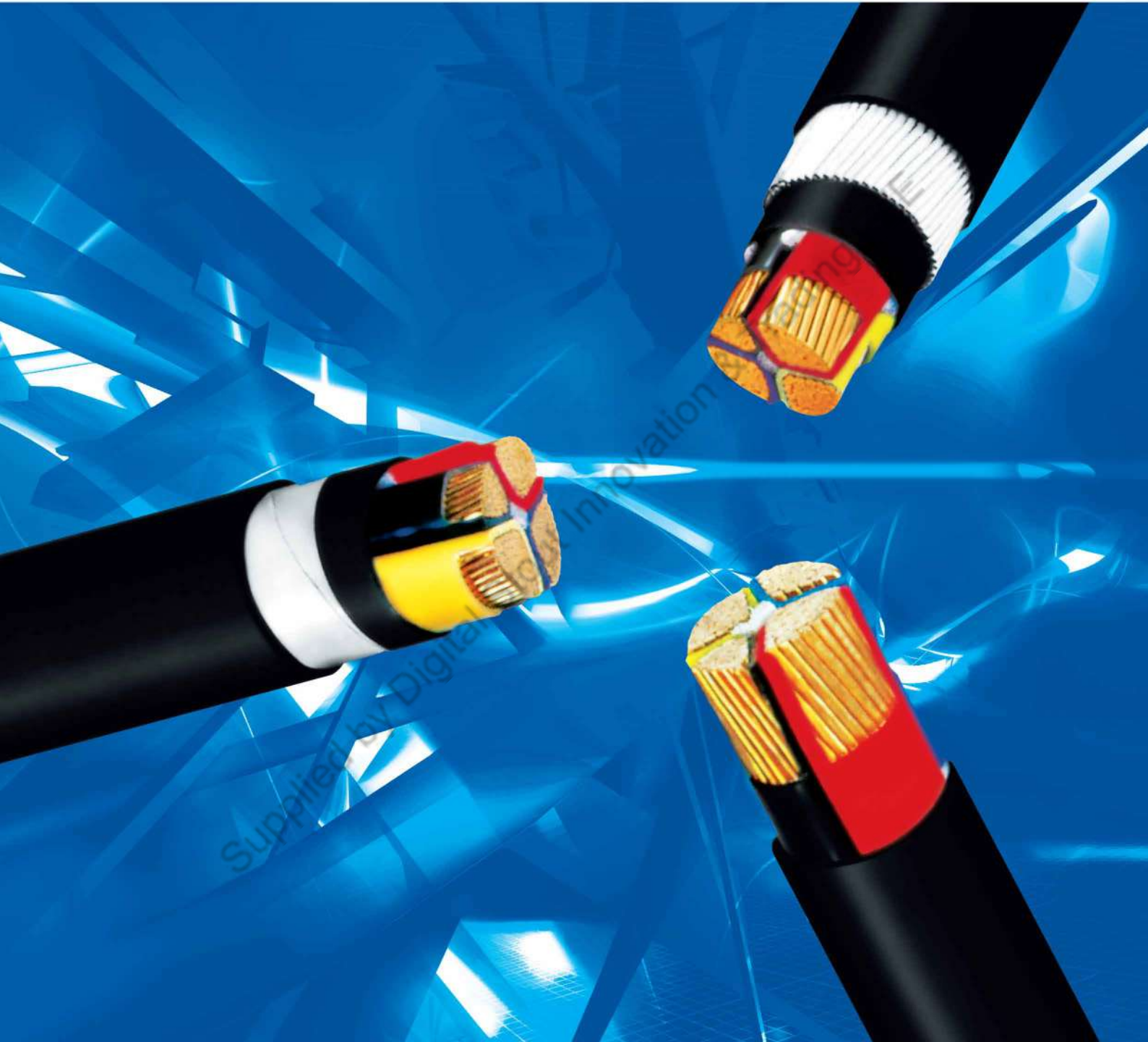
- Nominal voltage $U_0/U = 0.6/1$ kV
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
5 X 1.5	12.1000	14.6000	18.0	15.5	13.5	16.6	500	C208PA1050WCBK21IMR
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	18.0	550	C208PA1070WCBK21IMR
10 X 1.5	12.1000	14.6000	14.0	12.5	11.5	21.0	770	C208PA1100WCBK21IMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	23.3	1080	C208PA1120WCBK21IMR
14 X 1.5	12.1000	14.6000	12.0	10.5	9.5	24.2	1140	C208PA1140WCBK21IMR
16 X 1.5	12.1000	14.6000	11.0	10.0	9.0	25.0	1260	C208PA1160WCBK21IMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	26.0	1370	C208PA1190WCBK21IMR
24 X 1.5	12.1000	14.6000	9.0	8.0	7.5	28.9	1620	C208PA1240WCBK21IMF
30 X 1.5	12.1000	14.6000	8.0	7.5	6.5	31.0	1850	C208PA1300WCBK21IMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	34.0	2250	C208PA1370WCBK21IMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
5 X 2.5	7.4100	8.8700	24.0	20.5	18.0	17.8	600	C210PA1050WCBK12IMR
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	19.2	660	C210PA1070WCBK21IMR
10 X 2.5	7.4100	8.8700	20.0	16.5	14.5	23.8	960	C210PA1100WCBK21IMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	25.0	1280	C210PA1120WCBK21IMR
14 X 2.5	7.4100	8.8700	16.0	14.0	12.0	26.0	1390	C210PA1140WCBK21IMR
16 X 2.5	7.4100	8.8700	15.0	13.0	11.0	27.0	1510	C210PA1160WCBK21IMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	28.3	1670	C210PA1190WCBK21IMR
24 X 2.5	7.4100	8.8700	13.0	11.0	9.5	31.4	2030	C210PA1240WCBK21IMF
30 X 2.5	7.4100	8.8700	11.5	10.0	8.5	34.5	2450	C210PA1300WCBK21IMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	37.4	2870	C210PA1370WCBK21IMF
4.0 mm²								
5 X 4.0	4.6100	5.5100	31.0	25.5	24.0	20.8	780	C212PA1050WCBK12IMR
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	23.5	1190	C212PA1070WCBK21IMR
10 X 4.0	4.6100	5.5100	25.0	21.0	19.5	27.2	1510	C212PA1100WCBK21IMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	29.0	1700	C212PA1120WCBK21IMR
14 X 4.0	4.6100	5.5100	20.5	17.0	16.0	30.0	1850	C212PA1140WCBK21IMR
16 X 4.0	4.6100	5.5100	19.5	16.0	15.0	31.6	2040	C212PA1160WCBK21IMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	33.0	2260	C212PA1190WCBK21IMR
24 X 4.0	4.6100	5.5100	16.0	13.5	12.5	38.4	3070	C212PA1240WCBK21IMF
30 X 4.0	4.6100	5.5100	14.5	12.0	11.0	41.3	3560	C212PA1300WCBK21IMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	44.5	4120	C212PA1370WCBK21IMF

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Power Cables To **BS** Standard



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Multi-Core Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to BS 7655-3.1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type TM1 to BS 7655-4.1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

4	rm	4.6100	5.5400	40	32	39	15.1	470	C212PA1020WCBK01BMR
6	rm	3.0800	3.6900	50	40	50	16.3	560	C213PA1020WCBK01BMR
10	rm	1.8300	2.1900	65	55	66	19.2	815	C314PA1020WCBK01BMR
16	rm	1.1500	1.3900	85	65	88	21.2	1035	C315PA1020WCBK01BMR
25	rm	0.7270	0.8700	110	85	116	25.7	1595	C316PA1020WCBK01BMR
35	rm	0.5240	0.6280	130	105	143	27.9	1910	C317PA1020WCBK01BMR

Three Core Cables

4	rm	4.6100	5.5400	35	30	31	15.8	535	C212PA1030WCBK04BMR
6	rm	3.0800	3.6900	45	36	39	17.8	735	C213PA1030WCBK04BMR
10	rm	1.8300	2.1900	60	48	53	20.6	910	C314PA1030WCBK04BMR
16	rm	1.1500	1.3900	75	60	72	22.8	1160	C315PA1030WCBK04BMR
25	rm	0.7270	0.8700	100	80	94	27.5	1785	C316PA1030WCBK04BMR
35	sm	0.5240	0.6280	120	100	110	26.9	2000	C417PA1030WCBK04BMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

4	rm	4.6100	5.5400	37	29	29	17.8	720	C212PA1040WCBK08BMR
6	rm	3.0800	3.6900	47	37	37	19.0	850	C213PA1040WCBK08BMR
10	rm	1.8300	2.1900	63	50	50	22.1	1085	C314PA1040WCBK08BMR
16	rm	1.1500	1.3900	79	68	68	25.8	1585	C315PA1040WCBK08BMR
25	rm	0.7270	0.8700	105	89	89	29.9	2165	C316PA1040WCBK08BMR
35	sm	0.5240	0.6280	120	95	116	30.4	2515	C417PA1040WCBK08BMR
50	sm	0.3870	0.4640	145	115	143	35.3	3545	C418PA1040WCBK08BMR
70	sm	0.2680	0.3220	175	145	176	38.9	4515	C419PA1040WCBK08BMR
95	sm	0.1930	0.2320	210	165	215	42.6	5757	C445PA1040WCBK08BMF
120	sm	0.1530	0.1850	240	195	248	47.6	7430	C446PA1040WCBK08BMF
150	sm	0.1240	0.1510	270	220	281	52.1	8755	C447PA1040WCBK08BMF
185	sm	0.0991	0.1210	300	245	319	57.3	10710	C448PA1040WCBK08BMS
240	sm	0.0754	0.0840	345	290	380	63.6	13380	C449PA1040WCBK08BMS
300	sm	0.0601	0.0770	390	320	446	69.7	16176	C450PA1040WCBK08BMS

Supplied by Digital Stout Innovation & Trading LLC

Multi-Core Cables, with Stranded Aluminum Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to BS 7655-3.1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type TM1 to BS 7655-4.1.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

16	rm	1.9100	2.2900	60	46	62	21.2	845	A315PA1020WCBK01BMR
25	rm	1.2000	1.4400	77	60	81	25.7	1285	A316PA1020WCBK01BMR
35	rm	0.8680	1.0430	103	83	115	27.9	1485	A317PA1020WCBK01BMR

Three Core Cables

16	rm	1.9100	2.2900	53	42	50	22.8	875	A315PA1030WCBK04BMR
25	rm	1.2000	1.4400	70	56	66	27.5	1325	A316PA1030WCBK04BMR
35	sm	0.8680	1.0430	95	75	88	26.9	1380	A417PA1030WCBK04BMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 70 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

16	rm	1.9100	2.2900	53	42	50	25.8	1205	A315PA1040WCBK08BMR
25	rm	1.2000	1.4400	70	56	66	29.9	1550	A316PA1040WCBK08BMR
35	sm	0.8680	1.0430	95	75	88	30.4	1695	A417PA1040WCBK08BMR
50	sm	0.6410	0.7710	115	85	105	35.3	2405	A418PA1040WCBK08BMR
70	sm	0.4430	0.5330	135	110	138	38.9	2915	A419PA1040WCBK08BMR
95	sm	0.3200	0.3850	165	130	165	42.6	3490	A445PA1040WCBK08BMR
120	sm	0.2530	0.3050	185	150	193	47.6	4530	A446PA1040WCBK08BMF
150	sm	0.2060	0.2490	210	170	220	52.1	5255	A447PA1040WCBK08BMF
185	sm	0.1640	0.1990	235	195	253	57.3	6170	A448PA1040WCBK08BMF
240	sm	0.1250	0.1510	275	225	297	63.6	7450	A449PA1040WCBK08BMS
300	sm	0.1000	0.1230	310	260	352	69.7	8815	A450PA1040WCBK08BMS

Supplied by Digital Stout Innovation & Trading LLC

Single-Core Cables, with Stranded Circular Copper Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to BS 7655-3.1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type 9 to BS 7655-4.2.

APPLICATION







For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds



Supplied by Digital Stock Innovation & Trading FZE

Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 90 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A			
50	0.3870	0.4940	210	200	163	221	210	184	12.9	530	C318XA10100MBK51BMR
70	0.2680	0.3430	263	247	200	278	268	236	14.7	730	C319XA10100MBK51BMR
95	0.1930	0.2480	310	294	242	347	336	289	16.5	980	C345XA10100MBK51BMR
120	0.1530	0.1970	357	336	273	404	394	341	18.0	1225	C346XA10100MBK51BMR
150	0.1240	0.1600	394	373	310	457	446	389	20.1	1490	C347XA10100MBK51BMR
185	0.0991	0.1290	452	425	352	530	520	441	22.2	1870	C348XA10100MBK51BMR
240	0.0754	0.0990	520	488	404	651	641	536	24.9	2420	C349XA10100MBK51BMR
300	0.0601	0.0810	588	546	457	824	756	620	27.7	3020	C350XA10100MBK51BMR
400	0.0470	0.0638	672	620	515	893	872	714	30.9	3855	C351XA10100MBK51BMR
500	0.0366	0.0517	761	693	572	1008	987	814	34.9	4985	C352XA10100MBK51BMF
630	0.0283	0.0425	872	777	651	1155	1134	956	39.3	6290	C353XA10100MBK51BMF
800	0.0221	0.0292	957	861	735	1313	1292	1092	43.8	8090	C354XA10100MBK51BMF
1000	0.0176	0.0234	1082	935	798	1449	1428	1208	51.5	10075	C355XA10100MBK51BMF

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Single-Core Cables, with Stranded Circular Aluminum Conductors, XLPE Insulated and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular aluminum conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to BS 7655-3.1.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type 9 to BS 7655-4.2.

APPLICATION







For use indoors - in cable trenches or ducts; and outdoors - in power stations, industrial plants and switchgears if mechanical protection is not required, or in applications where the cable is not exposed to mechanical damage.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds



Supplied by Digital Stout Innovation & Training FZE

Nominal cross sectional area	ELECTRICAL DATA								DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating						Approx. overall diameter	Approx. overall weight	
			Laid in ground			Laid in free air					
	DC at 20 °C	AC at 90 °C							mm	Kg / km	
mm ²	Ω / km	Ω / km	A	A	A	A	A	A	mm	Kg / km	
50	0.6410	0.8220	163	155	121	173	168	147	12.9	235	A318XA10100MBK51BMR
70	0.4430	0.5690	200	189	152	221	215	179	14.7	310	A319XA10100MBK51BMR
95	0.3200	0.4110	236	226	179	284	273	215	16.5	405	A345XA10100MBK51BMR
120	0.2530	0.3250	278	263	215	326	315	242	18.0	495	A346XA10100MBK51BMR
150	0.2060	0.2650	310	294	236	373	362	299	20.1	605	A347XA10100MBK51BMR
185	0.1640	0.2120	352	336	267	436	420	336	22.2	740	A348XA10100MBK51BMR
240	0.1250	0.1630	410	389	315	515	499	399	24.9	945	A349XA10100MBK51BMR
300	0.1000	0.1310	467	436	357	578	567	462	27.7	1160	A350XA10100MBK51BMR
400	0.0778	0.1000	541	504	410	693	677	541	30.9	1465	A351XA10100MBK51BMR
500	0.0605	0.0870	609	567	467	809	788	630	34.9	1855	A352XA10100MBK51BMR
630	0.0469	0.0620	698	646	536	945	924	746	39.3	2355	A353XA10100MBK51BMF
800	0.0367	0.0560	788	704	599	1071	1050	851	43.8	2990	A354XA10100MBK51BMF
1000	0.0291	0.0470	872	767	651	1176	1155	966	51.5	3870	A355XA10100MBK51BMF

Supplied by Digital Stout Innovations Training EPC

Multi-Core Cables, with Stranded Copper Conductors, XLPE Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular (rm) or sector shaped (sm) copper conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to BS 7655-1.3.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type 9 to BS 7655-4.2.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Two Core Cables

4	rm	4.6100	5.8800	51	41	47	14.7	445	C212XA1020WMBK01BMR
6	rm	3.0800	3.9300	64	53	61	15.7	520	C213XA1020WMBK01BMR
10	rm	1.8300	2.3300	83	70	80	17.1	640	C314XA1020WMBK01BMR
16	rm	1.1500	1.4700	107	84	106	19.8	930	C315XA1020WMBK01BMR
25	rm	0.7270	0.9270	140	108	140	23.2	1290	C316XA1020WMBK01BMR
35	rm	0.5240	0.6690	168	135	168	26.5	1770	C317XA1020WMBK01BMR

Three Core Cables

4	rm	4.6100	5.8800	46	37	42	15.3	500	C212XA1030WMBK04BMR
6	rm	3.0800	3.9300	58	46	51	16.4	595	C213XA1030WMBK04BMR
10	rm	1.8300	2.3300	76	61	69	19.1	815	C314XA1030WMBK04BMR
16	rm	1.1500	1.4700	98	76	90	21.5	1065	C315XA1030WMBK04BMR
25	rm	0.7270	0.9270	130	103	120	26.2	1665	C316XA1030WMBK04BMR
35	sm	0.5240	0.6690	158	122	147	25.7	1865	C417XA1030WMBK04BMR

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km	
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A			

Four Core Cables

4	rm	4.6100	5.8800	46	37	42	16.4	575	C212XA1040WMBK08BMR
6	rm	3.0800	3.9300	58	46	51	18.5	795	C213XA1040WMBK08BMR
10	rm	1.8300	2.3300	76	61	69	20.4	960	C314XA1040WMBK08BMR
16	rm	1.1500	1.4700	98	76	90	23.1	1280	C315XA1040WMBK08BMR
25	rm	0.7270	0.9270	130	103	122	28.2	1990	C316XA1040WMBK08BMR
35	sm	0.5240	0.6690	158	122	147	28.7	2335	C417XA1040WMBK08BMR
50	sm	0.3870	0.4940	185	145	184	32.4	2975	C418XA1040WMBK08BMR
70	sm	0.2680	0.3430	220	180	220	37.4	4270	C419XA1040WMBK08BMR
95	sm	0.1930	0.2480	265	210	273	40.1	5375	C445XA1040WMBK08BMF
120	sm	0.1530	0.1970	305	245	315	45.4	6980	C446XA1040WMBK08BMF
150	sm	0.1240	0.1600	335	275	375	49.9	8280	C447XA1040WMBK08BMF
185	sm	0.0991	0.1290	375	310	410	54.9	10103	C448XA1040WMBK08BMS
240	sm	0.0754	0.0990	435	365	488	60.9	12660	C449XA1040WMBK08BMS
300	sm	0.0601	0.0810	490	405	562	66.5	15305	C450XA1040WMBK08BMS

Supplied by Digital Stout Innovation & Trading LLC

Multi-Core Cables, with Stranded Aluminum Conductors, XLPE Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Stranded circular (rm) or sector shaped (sm) aluminum conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Cross linked polyethylene (XLPE) insulation, rated 90 °C at normal operation to BS 7655-1.3.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of round galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type 9 to BS 7655-4.2.



APPLICATION

For outdoor installations in power stations, industrial plants and switchgears if mechanical protection is required or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 90 °C
- Max. admissible temperature of conductor at short circuit 250 °C for 5 seconds

Nominal cross sectional area mm ²	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code	
	Max. Conductor Resistance		Current Rating			Approx. overall diameter mm	Approx. overall weight Kg / km		
	DC at 20 °C Ω / km	AC at 90 °C Ω / km	Laid in ground A	Laid in ducts A	Laid in free air A				
Two Core Cables									
16	rm	1.9100	2.4500	73	57	79	19.8	740	A315XA1020WMBK01BMR
25	rm	1.2000	1.5400	96	74	101	23.2	980	A316XA1020WMBK01BMR
35	rm	0.8680	1.1130	129	105	131	26.5	1340	A317XA1020WMBK01BMR
Three Core Cables									
16	rm	1.9100	2.4500	67	52	67	21.5	780	A315XA1030WMBK04BMR
25	rm	1.2000	1.5400	89	70	89	26.2	1205	A316XA1030WMBK04BMR
35	sm	0.8680	1.1130	120	95	115	25.7	1245	A417XA1030WMBK04BMR

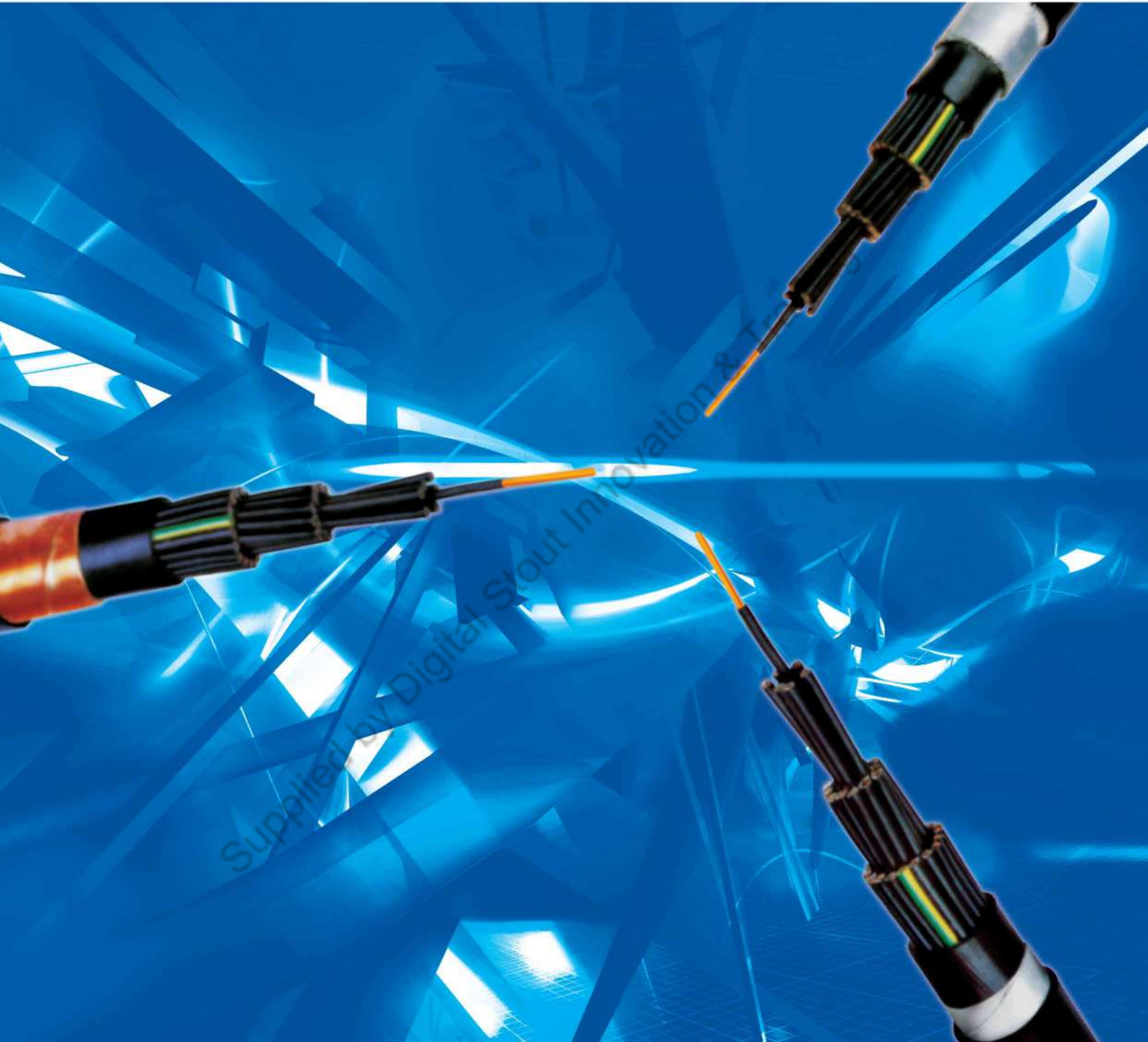
Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 90 °C	Laid in ground	Laid in ducts	Laid in free air			
mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	

Four Core Cables

16	rm	1.9100	2.4500	67	52	67	23.1	900	A315XA1040WMBK08BMR
25	rm	1.2000	1.5400	89	70	89	28.2	1370	A316XA1040WMBK08BMR
35	sm	0.8680	1.1130	120	95	115	28.7	1510	A417XA1040WMBK08BMR
50	sm	0.6410	0.8220	145	110	141	32.4	1835	A418XA1040WMBK08BMR
70	sm	0.4430	0.5690	175	140	173	37.4	2665	A419XA1040WMBK08BMR
95	sm	0.3200	0.4110	210	165	210	40.1	3095	A445XA1040WMBK08BMR
120	sm	0.2530	0.3250	235	190	241	45.4	4070	A446XA1040WMBK08BMF
150	sm	0.2060	0.2650	265	215	283	49.9	4775	A447XA1040WMBK08BMF
185	sm	0.1640	0.2120	290	240	320	54.9	5550	A448XA1040WMBK08BMF
240	sm	0.1250	0.1630	340	280	383	60.9	6720	A449XA1040WMBK08BMS
300	sm	0.1000	0.1310	390	315	451	66.5	7925	A450XA1040WMBK08BMS

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Control Cables To **BS** Standard





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Control Cables, with Stranded Copper Conductors, PVC Insulated, Steel Wire Armoured and PVC Sheathed

CONSTRUCTION

- Conductor** : Plain annealed stranded circular copper conductor, as per Class 2 of BS EN 60228.
- Insulation** : An extruded layer of Polyvinyl chloride (PVC) insulation, rated 70 °C at normal operation to BS 7655-3.1.
- Bedding** : An extruded layer of Polyvinyl chloride (PVC).
- Armouring** : Single layer of galvanized steel wires.
- Outer sheath** : An extruded layer of Polyvinyl chloride (PVC) sheathing compound type TM1 to BS 7655-4.1.



APPLICATION

For outdoor installations, for connecting signaling and control units in industries, railways, traffic signals, power stations, industrial plants and switchgears if mechanical protection is required, or in applications where mechanical damages are expected to occur.

TECHNICAL DATA

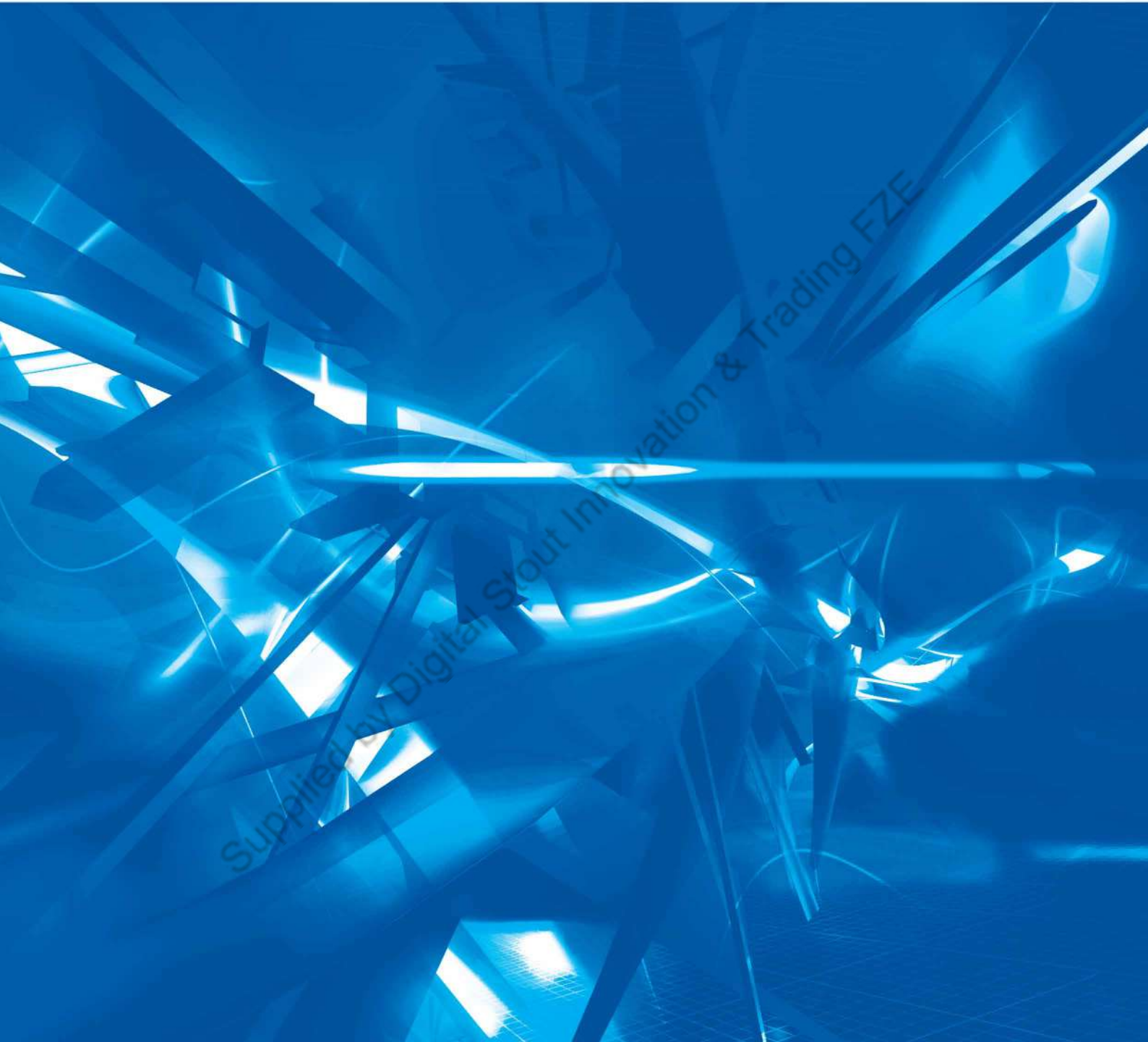
- Nominal voltage $U_0/U = 600 / 1000$ V
- Power frequency test voltage 3.5 kV for 5 minutes
- Max. admissible temperature of conductor at normal operation 70 °C
- Max. admissible temperature of conductor at short circuit 160 °C for 5 seconds

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
1.5 mm²								
7 X 1.5	12.1000	14.6000	16.0	14.0	12.5	15.6	490	C208PA1070WCBK21BMR
12 X 1.5	12.1000	14.6000	13.0	11.5	10.5	19.7	790	C208PA1120WCBK21BMR
19 X 1.5	12.1000	14.6000	10.0	9.0	8.0	22.6	1040	C208PA1190WCBK21BMR
27 X 1.5	12.1000	14.6000	8.0	7.5	6.5	27.1	1515	C208PA1270WCBK21BMF
37 X 1.5	12.1000	14.6000	7.5	6.5	6.0	30.0	1860	C208PA1370WCBK21BMF

Number & Nominal cross sectional area	ELECTRICAL DATA					DIMENSIONS AND WEIGHTS		AES Code
	Max. Conductor Resistance		Current Rating			Approx. overall diameter	Approx. overall weight	
	DC at 20 °C	AC at 70 °C	Laid in ground	Laid in ducts	Laid in free air			
No. X mm ²	Ω / km	Ω / km	A	A	A	mm	Kg / km	
2.5 mm²								
7 X 2.5	7.4100	8.8700	22.0	18.5	16.0	18.3	725	C210PA1070WCBK21BMR
12 X 2.5	7.4100	8.8700	18.0	15.5	13.5	22.4	1025	C210PA1120WCBK21BMR
19 X 2.5	7.4100	8.8700	14.0	12.0	10.5	26.9	1575	C210PA1190WCBK21BMR
27 X 2.5	7.4100	8.8700	11.5	10.0	8.5	31.0	2020	C210PA1270WCBK21BMF
37 X 2.5	7.4100	8.8700	10.0	9.0	7.5	34.4	2495	C210PA1370WCBK21BMF
4.0 mm²								
7 X 4.0	4.6100	5.5100	28.0	23.0	21.5	20.9	940	C212PA1070WCBK21BMR
12 X 4.0	4.6100	5.5100	23.0	19.5	18.0	27.1	1570	C212PA1120WCBK21BMR
19 X 4.0	4.6100	5.5100	18.0	15.0	14.0	31.1	2115	C212PA1190WCBK21BMR
27 X 4.0	4.6100	5.5100	14.5	12.0	11.0	37.1	3110	C212PA1270WCBK21BMF
37 X 4.0	4.6100	5.5100	13.0	11.0	10.0	41.1	3840	C212PA1370WCBK21BMF

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Cables For Special Applications





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Cables For Special Applications

Lead Sheathed Cables

Construction

Main constructions are as explained for low voltage power and control cables in accordance with IEC 60502-1 or BS 6346 / BS 5467 standards. Lead sheath is applied over an extruded bedding layer.

Application

For outdoor installations in damp and wet locations in chemical and petrol plants in which mechanical protection is required or in applications where mechanical damages are expected to occur.

Main properties

- Radially watertight
- Corrosion resistant
- Where necessary, it is available with the longitudinal watertight protection
- Suitable for use in hostile environment or underground
- Especially suitable for submarine installation
- Resistant to aggressive chemical substances
- Offer good protection against rodents



Low Smoke Halogen Free Cables

Construction

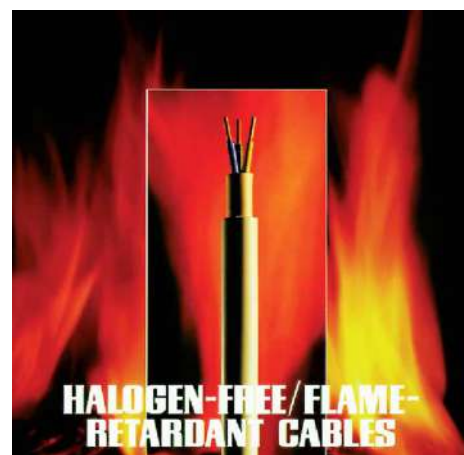
Main constructions are as explained for low voltage power and control cables in accordance with IEC 60502-1 or BS 6724 standards, except that the cables are specially constructed using low smoke, halogen free materials / compounds.

Application

Low smoke halogen free power cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e.g. in industrial installations, commercial establishments, hotels, airports, underground stations, railway stations, hospitals, banks, schools, etc.

Main properties

- Reduced smoke and toxic gases emission in the event of fire
- Reduced acid gases emission in the event of fire
- Excellent flame retardant properties



Other Types / Characteristics

Various types of constructions can be applied to meet special requirements of the customers, that is:

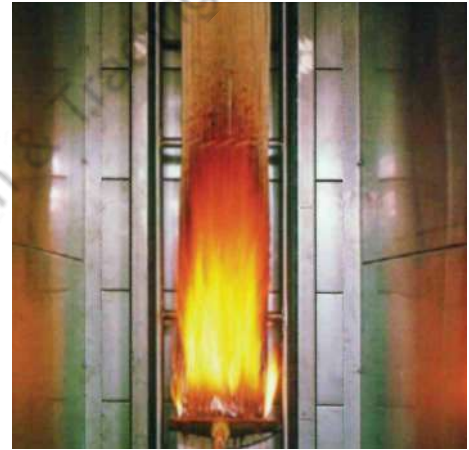
- Copper wires screen for control cables
- Non-magnetic armour (Aluminium) for single-core cables
- Shielded, armoured and lead sheathed power and control cables
- Cross linked polyethylene (XLPE) insulation for control cables
- Polyvinyl chloride (PVC) insulation, rated 85 °C for power and control cables
- Fire resistant cables

Cables can also be designed for specific requirements, that is:

- Flexibility
- Oil resistance
- UV resistance
- Termite resistance
- Hydro-carbon resistance
- Acid and alkaline resistance
- Installation in wet locations
- Flame retardant to IEC 60332-3 or BS EN 50266-2 standards, Category A, B, C or D

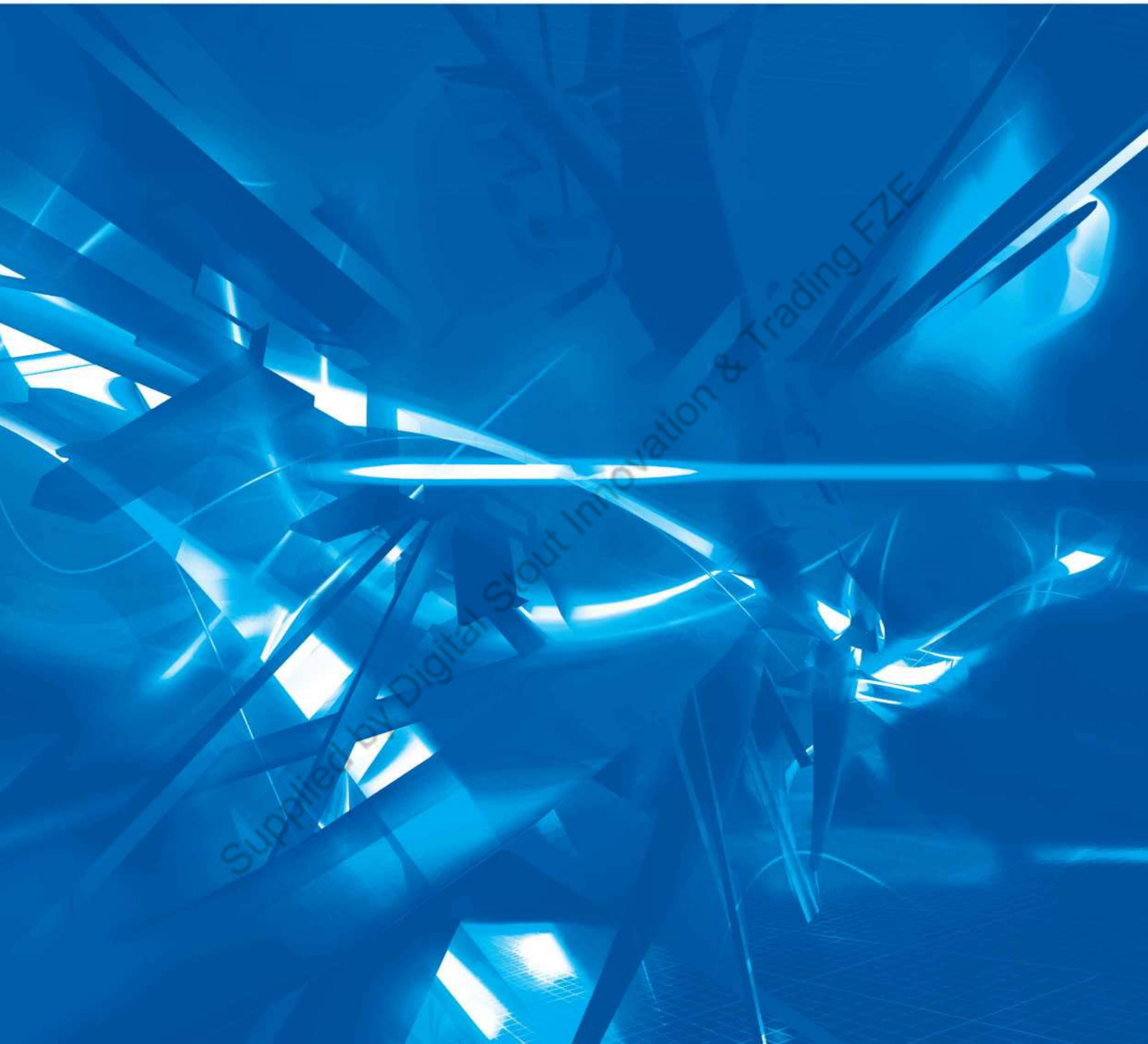
Other possibilities:

- Delivery lengths other than standard lengths
- Products as per other national and international norms/standards



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Technical Data





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Recommendations

Installation of Cables

A. Minimum installation radius

None of the low voltage power or control cables should be bent during installation to a radius smaller than the following:

- All multi-core cables : 12 D
- All single-core cables : 15 D

Where D is the overall diameter of the cable.

Wherever possible, larger installation radius should be used, except that the minimum bending radius where the cables are placed in position adjacent to joints and terminations may be reduced to 50% of the above values, provided that the bending is carefully controlled, e.g. by the use of a former.



B. Minimum temperature during installation

It is recommended that the cables are installed only when both the cable and the ambient temperature are above 0 °C and have been so for the past 24 hours, or where special precautions have been taken to maintain the cable above this temperature.

C. Prevention of moisture ingress

Care should be exercised during installation to avoid any damage to cable coverings. This is important in wet or other hostile environments. The protective end cap should not be removed from the ends of the cable until immediately prior to termination or jointing, especially for cables that do not have an extruded bedding. When the caps have been removed, the unprotected ends of the cable should not be exposed to moisture.

D. Maximum pulling tension

The maximum pulling tension is dependent on the cable design, the mechanical limitations, the conductor material, and the method of laying and pulling the cables. The maximum permissible pulling force can be calculated based on the method of pulling as follows:

D.1 Pulling eye attached to the conductor

With pulling eye attached to copper conductors, the maximum pulling tension should not exceed 0.036 times circular-mil area of conductor (C_m). With pulling eye attached to aluminum conductors, the maximum pulling tension should not exceed 0.027 times circular-mil area of conductor (C_m). Or in other words:

$$T_m = 0.036 \times n \times C_m \quad (\text{Copper})$$

$$T_m = 0.027 \times n \times C_m \quad (\text{Aluminum})$$

Where

T_m : Maximum pulling tension in N

n : The number of conductors

C_m : Circular mil area of each conductor

The maximum limitation for this calculation is **22240 N** for single conductor (1/C) cables, and **44480 N** for multi-core cables. This limitation is due to unequal distribution of tension forces when pulling multiple conductors.

When the calculated pulling tension is close to (or within 10% of) the maximum pulling tension, the use of a tension gauge during the pulling is recommended.

D.2 Cable grip over lead sheath

With cable grip over lead sheath, with commercial lead, the maximum pulling tension on the lead sheath should not exceed **10.33 N/mm²**.

D.3 Cable grip over non-lead cable

With cable grip over non-lead cable, the maximum pulling tension should not exceed **4400 N**.

E. Sidewall pressure

One of the limitations to be considered for the installation of electrical cables is sidewall pressure. The sidewall pressure is the force exerted on the insulation and sheath of the cable at a bend point when the cable is under tension, and is normally the limiting factor in an installation where cable bends are involved. The sidewall pressure in general is expressed as the tension out of a bend expressed in newtons divided by the inside radius of the bend expressed in meters.

$$P = \left[\frac{T_o}{r} \right]$$

Where

P : Sidewall pressure in N/m

T_o : Tension leaving the bend in N

r : Inside radius of conduit in m

The normal maximum sidewall pressure per meter of radius is as given below. However, in order to minimize cable damage due to excessive sidewall pressure, the installer should check the proper recommendations for each type of cables to be installed.

Cable type	Maximum sidewall pressure (N/m)
Non-shielded multi-core cables	7300
Single core cables	7300
Armoured cables	4400

Formulas

1. Resistance

The values of conductor DC resistance given in the previous tables are based on 20 °C. In case the DC resistance is required at any other temperature the following formula is used :

$$R_{\theta} = R_{20} \times [1 + \alpha(\theta - 20)] \quad \Omega / Km$$

Where

R_{θ}	: Conductor DC resistance at θ °C	Ω / Km
R_{20}	: Conductor DC resistance at 20 °C	Ω / Km
θ	: Operating temperature	°C
α	: Resistance temperature coefficient	$1 / ^\circ C$
	= 0.00393 for Copper	
	= 0.00403 for Aluminum	

To get the AC resistance of the conductor at its operating temperature the following formula is used

$$R_{a.c} = R_{\theta} \times (1 + y_p + y_s) \quad \Omega / Km$$

Where

y_p and y_s are the proximity and skin effect factors respectively which depend on the laying and operating frequency of the cable.

2. Inductance

Self and mutual inductance are formulated as follow :

$$L = K + 0.2 \ln \left(\frac{2S}{d} \right) \quad mH / Km$$

Where

L	: Inductance	mH / Km
K	: Constant depends on the conductor's number of wires	
D	: Conductor diameter	mm
S	: Axial spacing between cables	mm
	= 1 x S in case of trefoil formation	
	= 1.26 x S in case of flat formation	

3. Capacitance

$$C = \frac{\epsilon_r}{18 \ln \frac{D}{d}} \quad \mu F / Km$$

Where

C	: Operating capacitance	$\mu F / Km$
ϵ_r	: Relative permittivity of insulation	
D	: Diameter over insulation	mm
d	: Diameter under insulation	mm

4. Insulation Resistance

$$R = K \ln \left(\frac{D}{d} \right) \quad M\Omega / Km$$

Where

R	: Insulation resistance	$M\Omega / Km$
K	: Constant depends on the insulation	
d	: Diameter of the conductor	mm
D	: Diameter of the insulated core	mm

5. Charging Current

The charging current is the capacitive current which flows when an AC voltage is applied to the cables as a result of the capacitance between the conductor and earth, and for a multi-core cable in which cores are not screened, between conductors. The value can be derived from following the equation :

$$I_c = U_o \omega C 10^{-6} \quad A / Km$$

Where

I_c	: Charging current	A / Km
U_o	: Phase voltage	V
ω	: $2 \pi f$	
f	: Operating frequency	Hz
C	: Capacitance to neutral	$\mu F / Km$

6. Dielectric Losses

The dielectric losses of an AC cable are proportional to the capacitance, the frequency, the phase voltage and the power factor. The value can be derived from the following equation :

$$W_d = \omega C U_o^2 \tan \delta 10^{-6} \quad W/Km/Ph$$

Where

W_d	: Dielectric Losses	$W/Km/Ph$
ω	: $2 \pi f$	
f	: Operating frequency	Hz
C	: Capacitance to neutral	$\mu F / Km$
U_o	: Phase voltage	V
$\tan \delta$: Dielectric power factor	

7. Cable Ampacity

Cable Ampacity is defined as the continuous maximum current the cable can carry at its maximum operating temperature.

In the technical information tables the following installation conditions were assumed during the current calculation :

- Ambient air temperature = 40 °C
- Ambient ground temperature = 35 °C
- Soil thermal resistivity = 1.2 °C.m / W
- Burial depth = 0.5 Mt.

In case the installation conditions are different from the stated, the derating factors tabulated in tables 3 to 12 must be used in calculating the new current carrying capacity.

All the cable Ampacities are based on IEC 60287.

8. Short Circuit Capacity

Tables 14-17 give the short circuit current for conductor based on the following conditions :

- A. Short circuit starts from the maximum operating conductor temperature

XLPE	=	90	°C
PVC	=	70	°C

- B. Maximum temperature during short circuit

XLPE	=	250	°C
PVC	=	160	°C
	=	140	°C

for C.S.A ≤ 300 mm²
for C.S.A > 300 mm²

- C. Maximum short circuit current duration is 5 seconds.

If the short circuit current is required at duration not mentioned in the catalogue, it is obtained by dividing the short circuit current for 1 second by the square root of the required duration as follows :

$$I_{s.c.t} = \frac{I_{s.c.1}}{\sqrt{t}}$$

Where

- $I_{s.c.t}$: Short circuit current for t second kA
- $I_{s.c.1}$: Short circuit current for 1 second kA
- t : Duration $Sec.$

9. Voltage Drop

When current flows in a cable conductor there is a voltage drop between the ends of the conductors which is the product of the current and impedance. The following equations should be used to calculate the voltage drop :

- A. Single phase circuit :

$$V_d = 2 I \ell (R \cos \Phi + X \sin \Phi) \quad V$$

- B. Three phase circuit :

$$V_d = \sqrt{3} I \ell (R \cos \Phi + X \sin \Phi) \quad V$$

Where

- V_d : Voltage drop V
- I : Load current A
- ℓ : Route length Km
- R : AC Resistance Ω / Km
- X : Reactance Ω / Km
- $\cos \Phi$: Power factor

Where

$$X = \omega L 10^{-3} \quad \Omega / Km$$

Where

- ω : $2 \pi f$
- f : Operating frequency Hz
- L : Inductance mH/Km

Relation between $\cos \Phi$ and $\sin \Phi$:

$\cos \Phi$	1.0	0.9	0.85	0.8	0.6
$\sin \Phi$	0.0	0.44	0.53	0.6	0.8

- LV cable systems should be planned so as not to exceed voltage drop of 3-5% in normal operating conditions
- Voltage drop data for LV Single & Multi-core cables are tabulated in tables 18 & 19

Material Properties

Metals Used For Cables

Table 1

ELECTRICAL PROPERTIES			
Metal	Relative Conductivity Copper 100	Electrical Resistivity at 20 °C $\Omega \cdot m (10^{-8})$	Temperature Coefficient of Resistance per °C
Copper (Annealed)	100	1.7241	0.00393
Copper (Hard drawn)	97	1.7770	0.00393
Tinned Copper	95 – 97	1.741 – 1.814	0.00393
Aluminum	61	2.8264	0.00403
Lead	8	21.40	0.00400

PHYSICAL PROPERTIES				
Property	Unit	Copper	Aluminum	Lead
Density at 20 °C	Kg/m ³	8890.0	2703.0	11340.0
Coeff. of thermal expansion	°C x 10 ⁻⁶	17.0	23.0	29.0
Melting point	°C	1083.0	659.0	327.0
Thermal conductivity	W/Cm.°C	3.8	2.4	0.34

Insulation Materials Used For Cables

Table 2

Properties		XLPE	PVC	EPR
Rated Temp.	Nominal	90	70	90
	Emergency	130	95	130
	Short Circuit	250	140 * or 160 **	250
Mechanical Strength	Min. Tensile Strength (N/mm ²)	12.5	12.5	4.2
	Min. Elongation %	200	150	200
Heat deformation at 150 °C		Good	Poor	Excellent
Relative permittivity		2.5	8.0	3.0
Specific gravity g/cm ³		0.93	1.5	1.4
Solvent resistance		Good	Poor	Poor
Volume Resistivity at max. conductor temperature in normal operation $\Omega \cdot cm$		10 ¹²	10 ¹⁰	10 ¹²
Splicing & termination		Easy	Easy	Easy
Environmental stress cracking		Good	Good	Poor

* For sizes > 300 mm²

** For sizes ≤ 300 mm²

Derating Factors

Table 3

Ground temperature derating factors

Max. Conductor temperature °C	Ambient ground temperature °C						
	25	30	35	40	45	50	55
70 °C	1.13	1.07	1.00	0.93	0.85	0.76	0.65
90 °C	1.09	1.04	1.00	0.95	0.90	0.85	0.80

Table 4

Air temperature derating factors

Max. Conductor temperature °C	Ambient air temperature °C						
	25	30	35	40	45	50	55
70 °C	1.22	1.15	1.08	1.00	0.95	0.82	0.71
90 °C	1.14	1.10	1.05	1.00	0.95	0.89	0.84

Table 5

Burial depth derating factors

Depth of laying mt.	Cables cross section		
	Up to 70 mm ²	95 up to 240 mm ²	300 mm ² & above
0.50	1.00	1.00	1.00
0.60	0.99	0.98	0.97
0.80	0.97	0.96	0.94
1.00	0.95	0.93	0.92
1.25	0.94	0.92	0.89
1.50	0.93	0.90	0.87
1.75	0.92	0.89	0.86
2.00	0.91	0.88	0.85

Derating Factors

Table 6

Soil thermal resistivity derating factors

Rating factor	Soil thermal resistivity °C.m / Watt						
	0.8	0.9	1.0	1.2	1.5	2.0	2.5
	1.17	1.12	1.07	1.00	0.91	0.80	0.73

Table 7

PVC rated temperature derating factors

Rating factor	PVC rated temperature °C			
	70	85	95	105
	1.000	1.195	1.309	1.414

Table 8

Trefoil or flat formation derating factors for three single core cables laid direct in ground

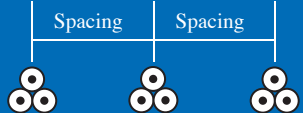
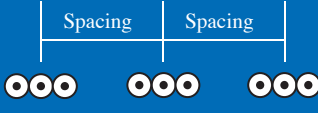
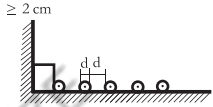
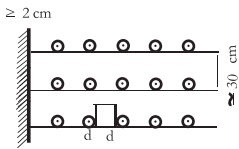
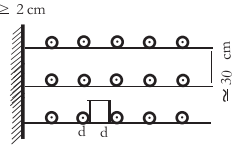
Number of circuits	 Trefoil formation			 Flat formation			
	Touching		Spacing = 0.15 Mt.		Spacing = 0.30 Mt.		
	Trefoil	Flat	Trefoil	Flat	Trefoil	Flat	
	2	0.77	0.80	0.82	0.85	0.88	0.91
3	0.66	0.69	0.73	0.76	0.80	0.83	
4	0.60	0.63	0.68	0.71	0.74	0.77	
5	0.56	0.59	0.64	0.67	0.72	0.75	
6	0.53	0.57	0.61	0.64	0.70	0.73	

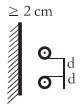
Table 9


Flat formation derating factors for three single core cables laid in free air

Laid on the ground				Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits			
	1	2	3	
Rating factor	0.92	0.89	0.88	

Laid on cables troughs (circulation of air is restricted)				Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits			
	Number of troughs	1	2	
1	0.92	0.89	0.88	
2	0.87	0.84	0.83	
3	0.84	0.82	0.81	
6	0.82	0.80	0.79	

Laid on cables racks				Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits			
	Number of racks	1	2	
1	1.00	0.97	0.96	
2	0.97	0.94	0.93	
3	0.96	0.93	0.92	
6	0.94	0.91	0.90	

Arranged near the wall				Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits			
	1	2	3	
Rating factor	0.94	0.91	0.89	

Arranged on the wall				Laying form
Clearance = cable diameter (d)	Number of circuits			
	1	2	3	
Rating factor	0.89	0.86	0.84	

Derating Factors

Table 10

Trefoil touching formation derating factors for three single core cables laid in free air

Laid on the ground				Laying form
Clearance = 2 cable diameter (2d) Clearance from the wall \geq 2 cm	Number of circuits			
	1	2	3	
Rating factor	0.95	0.90	0.88	

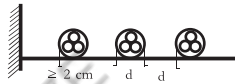
Laid on cables troughs (circulation of air is restricted)				Laying form
Clearance = 2 cable diameter (2d) Clearance from the wall \geq 2 cm	Number of circuits			
	Number of troughs	1	2	
1	0.95	0.90	0.88	
2	0.90	0.85	0.83	
3	0.88	0.83	0.81	
6	0.86	0.81	0.79	

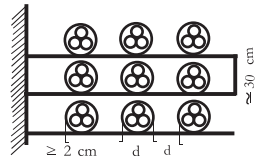
Laid on cables racks				Laying form
Clearance = 2 cable diameter (2d) Clearance from the wall \geq 2 cm	Number of circuits			
	Number of racks	1	2	
1	1.00	0.98	0.96	
2	1.00	0.95	0.93	
3	1.00	0.94	0.92	
6	1.00	0.93	0.90	

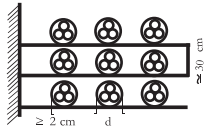
Arrangement for zero reduction				Laying form
Clearance = 4 cable diameter (4d) Clearance from the wall \geq 2 cm	Number of circuits			
	1	2	3	
Rating factor	1.00	1.00	1.00	

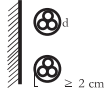
Table 11

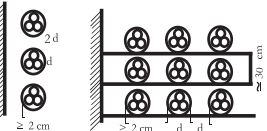
Horizontal or vertical formation derating factors for multi-core cables laid in free air

Laid on the ground						Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits					
	1	2	3	6	9	
Rating factor	0.95	0.90	0.88	0.85	0.84	

Laid on cables troughs (circulation of air is restricted)						Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits					
	Number of troughs	1	2	3	6	
1	0.95	0.90	0.88	0.85	0.84	
2	0.90	0.85	0.83	0.81	0.80	
3	0.88	0.83	0.81	0.79	0.78	
6	0.86	0.81	0.79	0.77	0.76	

Laid on cables racks						Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits					
	Number of racks	1	2	3	6	
1	1.00	0.98	0.96	0.93	0.92	
2	1.00	0.95	0.93	0.90	0.89	
3	1.00	0.94	0.92	0.89	0.88	
6	1.00	0.93	0.90	0.87	0.86	

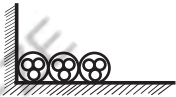
Arranged near the wall						Laying form
Clearance = cable diameter (d) Clearance from the wall ≥ 2 cm	Number of circuits					
	1	2	3	6	9	
Rating factor	1.00	0.93	0.90	0.87	0.86	

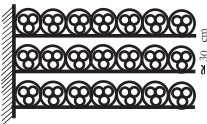
Arrangement for zero reduction						Laying form
Clearance = 2 cable diameter (2d) Clearance from the wall ≥ 2 cm	Number of circuits					
	1	2	3	6	9	
Rating factor	1.00	1.00	1.00	1.00	1.00	

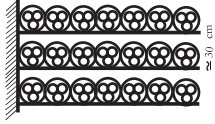
Derating Factors


Table 12

Derating factors for multi-core cables touching and in contact with the wall in air

Laid on the ground						Laying form
Cables are touched together and in contact with the wall	Number of circuits					
	1	2	3	6	9	
Rating factor	0.90	0.84	0.80	0.75	0.73	

Laid on cables troughs (circulation of air is restricted)						Laying form
Cables are touched together and in contact with the wall	Number of circuits					
	Number of troughs	1	2	3	6	
1	0.95	0.84	0.80	0.75	0.73	
2	0.95	0.80	0.76	0.71	0.69	
3	0.95	0.78	0.74	0.70	0.68	
6	0.95	0.76	0.72	0.68	0.66	

Laid on cables racks						Laying form
Cables are touched together and in contact with the wall	Number of circuits					
	Number of racks	1	2	3	6	
1	0.95	0.84	0.80	0.75	0.73	
2	0.95	0.80	0.76	0.71	0.69	
3	0.95	0.78	0.74	0.70	0.68	
6	0.95	0.76	0.72	0.68	0.66	

Arranged on the wall						Laying form
Cables are touched together and in contact with the wall	Number of circuits					
	1	2	3	6	9	
Rating factor	0.95	0.78	0.73	0.68	0.66	

Short Circuit Current

Table 13

Max. short circuit temperature for cable components

Material	Cable component	Max. short circuit temp. °C
Insulation	PVC Insulation	140 For C.S.A > 300 mm ² 160 For C.S.A ≤ 300 mm ²
	XLPE Insulation	250
Sheathing	PVC Sheath	200
	LDPE Sheath	150
	HDPE Sheath	180
	Lead Sheath	170
	Lead Alloy Sheath	200

Table 14

kA short circuit current - copper conductor - PVC insulated

C.S.A mm ²	Short circuit duration sec.									
	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
1.5	0.55	0.39	0.31	0.27	0.24	0.17	0.12	0.10	0.09	0.08
2.5	0.91	0.64	0.52	0.45	0.41	0.29	0.20	0.17	0.14	0.13
4	1.45	1.03	0.84	0.73	0.65	0.46	0.33	0.27	0.23	0.21
6	2.18	1.54	1.26	1.09	0.98	0.69	0.49	0.40	0.35	0.31
10	3.6	2.6	2.1	1.8	1.6	1.2	0.8	0.7	0.6	0.5
16	5.8	4.1	3.4	2.9	2.6	1.8	1.3	1.1	0.9	0.8
25	9.1	6.4	5.2	4.5	4.1	2.9	2.0	1.7	1.4	1.3
35	12.7	9.0	7.3	6.4	5.7	4.0	2.8	2.3	2.0	1.8
50	18.2	12.9	10.5	9.1	8.1	5.8	4.1	3.3	2.9	2.6
70	25.5	18.0	14.7	12.7	11.4	8.1	5.7	4.6	4.0	3.6
95	34.5	24.4	19.9	17.3	15.5	10.9	7.7	6.3	5.5	4.9
120	43.6	30.9	25.2	21.8	19.5	13.8	9.8	8.0	6.9	6.2
150	54.5	38.6	31.5	27.3	24.4	17.3	12.2	10.0	8.6	7.7
185	67.3	47.6	38.8	33.6	30.1	21.3	15.0	12.3	10.6	9.5
240	87.3	61.7	50.4	43.6	39.0	27.6	19.5	15.9	13.8	12.3
300	109.1	77.1	63.0	54.5	48.8	34.5	24.4	19.9	17.3	15.4
400	130.0	91.9	75.1	65.0	58.2	41.1	29.1	23.7	20.6	18.4
500	162.5	114.9	93.8	81.3	72.7	51.4	36.3	29.7	25.7	23.0
630	204.8	144.8	118.2	102.4	91.6	64.8	45.8	37.4	32.4	29.0
800	260.1	183.9	150.1	130.0	116.3	82.2	58.2	47.5	41.1	36.8
1000	325.1	229.9	187.7	162.5	145.4	102.8	72.7	59.4	51.4	46.0

Short Circuit Current

Table 15

kA short circuit current - aluminum conductor - PVC insulated

C.S.A	Short circuit duration sec.									
	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
mm ²										
16	3.8	2.7	2.2	1.9	1.7	1.2	0.9	0.7	0.6	0.5
25	6.0	4.2	3.5	3.0	2.7	1.9	1.3	1.1	1.0	0.8
35	8.4	5.9	4.9	4.2	3.8	2.7	1.9	1.5	1.3	1.2
50	12.0	8.5	6.9	6.0	5.4	3.8	2.7	2.2	1.9	1.7
70	16.8	11.9	9.7	8.4	7.5	5.3	3.8	3.1	2.7	2.4
95	22.8	16.1	13.2	11.4	10.2	7.2	5.1	4.2	3.6	3.2
120	28.8	20.4	16.7	14.4	12.9	9.1	6.4	5.3	4.6	4.1
150	36.0	25.5	20.8	18.0	16.1	11.4	8.1	6.6	5.7	5.1
185	44.5	31.4	25.7	22.2	19.9	14.1	9.9	8.1	7.0	6.3
240	57.7	40.8	33.3	28.8	25.8	18.2	12.9	10.5	9.1	8.2
300	72.1	51.0	41.6	36.0	32.2	22.8	16.1	13.2	11.4	10.2
400	86.0	60.8	49.7	43.0	38.5	27.2	19.2	15.7	13.6	12.2
500	107.5	76.0	62.1	53.8	48.1	34.0	24.0	19.6	17.0	15.2
630	135.5	95.8	78.2	67.7	60.6	42.8	30.3	24.7	21.4	19.2
800	172.0	121.6	99.3	86.0	76.9	54.4	38.5	31.4	27.2	24.3
1000	215.0	152.1	124.2	107.5	96.2	68.0	48.1	39.3	34.0	30.4

Table 16

kA short circuit current - aluminum conductor - XLPE insulated

C.S.A	Short circuit duration sec.									
	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
mm ²										
16	4.7	3.4	2.7	2.4	2.1	1.5	1.1	0.9	0.75	0.67
25	7.4	5.2	4.3	3.7	3.3	2.3	1.7	1.4	1.2	1.0
35	10.4	7.3	6.0	5.2	4.6	3.3	2.3	1.9	1.6	1.5
50	14.8	10.5	8.6	7.4	6.6	4.7	3.3	2.7	2.3	2.1
70	20.7	14.7	12.0	10.4	9.3	6.6	4.6	3.8	3.3	2.9
95	28.1	19.9	16.3	14.1	12.6	8.9	6.3	5.1	4.5	4.0
120	35.6	25.1	20.5	17.8	15.9	11.2	8.0	6.5	5.6	5.0
150	44.4	31.4	25.7	22.2	19.9	14.1	9.9	8.1	7.0	6.3
185	54.8	38.8	31.6	27.4	24.5	17.3	12.3	10.0	8.7	7.8
240	71.1	50.3	41.1	35.6	31.8	22.5	15.9	13.0	11.2	10.1
300	88.9	62.9	51.3	44.4	39.8	28.1	19.9	16.2	14.1	12.6
400	118.5	83.8	68.4	59.3	53.0	37.5	26.5	21.6	18.7	16.8
500	148.2	104.8	85.5	74.1	66.3	46.9	33.1	27.0	23.4	21.0
630	186.7	132.0	107.8	93.3	83.5	59.0	41.7	34.1	29.5	26.4
800	237.0	167.6	136.9	118.5	106.0	75.0	53.0	43.3	37.5	33.5
1000	296.3	209.5	171.1	148.2	132.5	93.7	66.3	54.1	46.9	41.9

Table 17

kA short circuit current - copper conductor - XLPE insulated





C.S.A mm ²	Short circuit duration sec.									
	0.1	0.2	0.3	0.4	0.5	1.0	2.0	3.0	4.0	5.0
1.5	0.7	0.5	0.4	0.3	0.3	0.21	0.15	0.12	0.11	0.10
2.5	1.1	0.8	0.7	0.6	0.5	0.36	0.25	0.21	0.18	0.16
4	1.8	1.3	1.0	0.9	0.8	0.57	0.40	0.33	0.29	0.26
6	2.7	1.9	1.6	1.4	1.2	0.86	0.61	0.50	0.43	0.38
10	4.5	3.2	2.6	2.3	2.0	1.4	1.0	0.8	0.7	0.6
16	7.2	5.1	4.2	3.6	3.2	2.3	1.6	1.3	1.1	1.0
25	11.3	8.0	6.5	5.7	5.1	3.6	2.5	2.1	1.8	1.6
35	15.8	11.2	9.1	7.9	7.1	5.0	3.5	2.9	2.5	2.2
50	22.6	16.0	13.1	11.3	10.1	7.2	5.1	4.1	3.6	3.2
70	31.7	22.4	18.3	15.8	14.2	10.0	7.1	5.8	5.0	4.5
95	43.0	30.4	24.8	21.5	19.2	13.6	9.6	7.8	6.8	6.1
120	54.3	38.4	31.3	27.1	24.3	17.2	12.1	9.9	8.6	7.7
150	67.8	48.0	39.2	33.9	30.3	21.5	15.2	12.4	10.7	9.6
185	83.7	59.2	48.3	41.8	37.4	26.5	18.7	15.3	13.2	11.8
240	108.5	76.7	62.7	54.3	48.5	34.3	24.3	19.8	17.2	15.3
300	135.7	95.9	78.3	67.8	60.7	42.9	30.3	24.8	21.5	19.2
400	180.9	127.9	104.4	90.4	80.9	57.2	40.4	33.0	28.6	25.6
500	226.1	159.9	130.5	113.1	101.1	71.5	50.6	41.3	35.8	32.0
630	284.9	201.4	164.5	142.4	127.4	90.1	63.7	52.0	45.0	40.3
800	361.8	255.8	208.9	180.9	161.8	114.4	80.9	66.0	57.2	51.2
1000	452.2	319.8	261.1	226.1	202.2	143.0	101.1	82.6	71.5	64.0





Supplied by Digital Steel, Innovation & Trading FZC

Voltage Drop

Table 18

Voltage drop for single core LV cables

C.S.A mm ²	Copper Conductors			
	Voltage drop (mV / Amp / Meter)			
	PVC 85 °C Insulated & PVC Sheathed		XLPE Insulated & PVC Sheathed	
	Flat 	Trefoil 	Flat 	Trefoil 
1.5	22.6	22.5	22.9	22.8
2.5	13.9	13.8	14.1	14.1
4	8.7	8.7	8.8	8.8
6	5.9	5.48	5.9	5.9
10	3.5	3.5	3.6	3.6
16	2.3	2.2	2.3	2.3
25	1.5	1.5	1.5	1.5
35	1.1	1.1	1.1	1.1
50	0.83	0.82	0.84	0.83
70	0.61	0.60	0.61	0.60
95	0.47	0.45	0.47	0.46
120	0.39	0.38	0.39	0.38
150	0.34	0.33	0.34	0.33
185	0.29	0.28	0.29	0.28
240	0.25	0.24	0.25	0.24
300	0.22	0.21	0.22	0.21
400	0.20	0.18	0.19	0.18
500	0.18	0.17	0.17	0.16
630	0.16	0.15	0.16	0.15

C.S.A mm ²	Aluminum Conductors			
	Voltage drop (mV / Amp / Meter)			
	PVC 85 °C Insulated & PVC Sheathed		XLPE Insulated & PVC Sheathed	
	Flat 	Trefoil 	Flat 	Trefoil 
16	3.7	3.7	3.7	3.7
25	2.4	2.3	2.4	2.4
35	1.7	1.7	1.8	1.7
50	1.3	1.3	1.3	1.3
70	0.94	0.92	0.95	0.93
95	0.71	0.69	0.71	0.70
120	0.58	0.56	0.58	0.57
150	0.49	0.48	0.5	0.48
185	0.41	0.40	0.42	0.40
240	0.34	0.33	0.34	0.33
300	0.29	0.28	0.29	0.28
400	0.25	0.24	0.25	0.24
500	0.22	0.21	0.22	0.21
630	0.19	0.18	0.19	0.18

The above data is based on the following :

- Max. operating temp : 90 °C for XLPE & 85 °C for PVC
- Power factor : 0.85
- Rated frequency : 60 Hz

Table 19

Voltage drop for multi core LV cables

C.S.A mm ²	Copper Conductors	
	Voltage drop (mV / Amp / Meter)	
	PVC 85°C Insulated & PVC Sheathed	XLPE Insulated & PVC Sheathed
1.5	22.5	22.8
2.5	13.8	14.0
4	8.6	8.7
6	5.8	5.9
10	3.5	3.5
16	2.2	2.2
25	1.4	1.5
35	1.1	1.1
50	0.8	0.81
70	0.58	0.58
95	0.44	0.44
120	0.37	0.37
150	0.32	0.31
185	0.27	0.27
240	0.23	0.23
300	0.20	0.2
400	0.18	0.18
500	0.15	0.15

C.S.A mm ²	Aluminum Conductors	
	Voltage drop (mV / Amp / Meter)	
	PVC 85°C Insulated & PVC Sheathed	XLPE Insulated & PVC Sheathed
16	3.6	3.7
25	2.3	2.4
35	1.7	1.7
50	1.3	1.3
70	0.91	0.92
95	0.68	0.68
120	0.55	0.56
150	0.47	0.47
185	0.39	0.39
240	0.32	0.32
300	0.27	0.27
400	0.23	0.23
500	0.20	0.20

The above data is based on the following :

- Max. operating temp: 90 °C for XLPE & 85 °C for PVC
- Power factor : 0.85
- Rated frequency : 60 Hz

Coding Key

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

The type designation provides information on the type of cable, the conductor material, the insulation and sheath materials, the no. of cores, and the principle design features in abbreviated and simplified form.

The type designation is made up of 19 digits or characters. The type of the conductor is specified first and then the cable construction from inside to outside.

You can order our product either by giving the AES item code stated in the catalogue or if the required cable construction is not included in our catalogue, you can use the following codes to determine the type of cable you require.

1. Type of conductor material

C:	Copper
A:	Aluminum

2. Type of conductor

1:	Solid
2:	Stranded - Circular round
3:	Stranded - Circular compacted
4:	Stranded - Sector shaped
5:	Flexible
6:	Extra-flexible

3 & 4. Size of conductor

08:	1.5 mm ²
10:	2.5 mm ²
12:	4 mm ²
13:	6 mm ²
14:	10 mm ²
15:	16 mm ²
16:	25 mm ²
17:	35 mm ²
18:	50 mm ²
19:	70 mm ²
32:	3 x 10 + 6 mm ²
33:	3 x 16 + 10 mm ²
34:	3 x 25 + 16 mm ²
35:	3 x 35 + 16 mm ²
36:	3 x 50 + 25 mm ²
37:	3 x 70 + 35 mm ²
38:	3 x 95 + 50 mm ²
39:	3 x 120 + 70 mm ²
40:	3 x 150 + 70 mm ²
41:	3 x 185 + 95 mm ²
42:	3 x 240 + 120 mm ²
43:	3 x 300 + 150 mm ²
44:	3 x 400 + 185 mm ²
45:	95 mm ²

46:	120 mm ²
47:	150 mm ²
48:	185 mm ²
49:	240 mm ²
50:	300 mm ²
51:	400 mm ²
52:	500 mm ²
53:	630 mm ²
54:	800 mm ²
55:	1000 mm ²

5. Type of insulation material

X:	XLPE Insulation
P:	PVC Insulation rated 70 °C
H:	PVC Insulation rated 85 °C

6. Rated voltage

A:	0.6 / 1 kV
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7. Cable construction

1:	Cores
2:	Pairs

8 & 9. Number of cores

01:	1 Core
02:	2 Cores
03:	3 Cores
04:	4 Cores
05:	5 Cores
≈	≈
37:	37 Cores

10. Shielding

N:	Copper tape
C:	Copper wires
0:	Without shielding

11. Armouring

0:	Without armouring
L:	Pure lead sheathed
N:	Lead alloy sheathed
A:	Aluminum wire armoured
B:	Aluminum tape armoured
G:	Galvanized steel tape armoured
W:	Galvanized steel wire armoured
T:	Non-Galva. steel tape armoured
S:	Lead + G. steel tape armoured
D:	Lead + G. steel wire armoured

X:	Lead + Aluminum wire armoured
R:	Lead + Aluminum tape armoured

12. Outer sheath material

C:	PVC Sheath rated 80 °C
M:	PVC Sheath rated 90 °C
L:	LSHF Sheath rated 90 °C

13 & 14. Outer sheath color

BK:	Black
RD:	Red
GY:	Grey
GR:	Green
YG:	Yellow / Green
GL:	Green / Yellow

15 & 16. Core identification

51:	1C - Red
01:	2C - Red, Black
04:	3C - Red, Yellow, Blue
08:	4C - Red, Yellow, Blue, Black
12:	5C - Red, Yellow, Blue, Black, G/Y
21:	6C & Above - Black + No.

Note: The mentioned colors are the most common for core identification. However, any other colors for core identification can be used upon a customer's request.

17. Design standard

I:	IEC Standard
B:	BS Standard
C:	Customer request

18. Packing type

M:	Wooden drum
T:	Steel drum

19. Cutting length

S:	250 Meter
F:	500 Meter
R:	1000 Meter

Note: The mentioned cutting lengths are the most common. However, any other cutting lengths can be supplied as per a customer's drum schedule.

Selection of Conductor Cross-section

Conductor cross-section should be selected with a sustained current rating under the conditions of installation not less than the maximum current it will be required to carry during normal operation, and a short circuit current rating adequate for the prospective short-circuit current and time for which it may persist.

Especially in low-voltage networks, it is necessary to check the conductor cross-section, chosen with respect to the current carrying capacity, by the permissible voltage drop. It is also recommended to carry out this check for long connections in medium and high voltage networks.

Example for selection of conductor cross-section

0.05 MVA at an operating voltage of 380V have to be transmitted by 4 cores cable with copper conductor, XLPE insulated and PVC sheathed direct buried in the ground under the following laying conditions :

Burial depth	:	0.5	m
Soil thermal resistivity	:	1.2	K.m/W
Ambient ground temp.	:	35	°C
Cable route length	:	50	m

Calculating cross-section according to load current

The load current can be calculated based on the following formula :

$$I = \frac{S \times 10^6}{\sqrt{3} \times U} = \frac{0.05 \times 10^6}{\sqrt{3} \times 380} = 76A$$

Where

- I : Load current in A
- S : KVA rating
- U : Line voltage in volts

According to the relevant current carrying capacity values for the used cable type, it has been found that the current carrying capacity value for 4 X 16 mm² cable under the required installation conditions is 97A, which is greater than the required load current (76A). So, cable 4 X 16 mm² can be used to carry the required load current.

Calculating cross-section according to voltage drop

The tabulated voltage drop values in this catalogue are based on a load power factor of 85% lagging and given for a current one ampere for a one meter run. For any cable length, the values should be multiplied by the cable route length in meters and by the load current in amperes.

The applicable formula to calculate the approximate voltage drop/ampere/meter is the following :

$$V_{ap} = \frac{V_p \times 1000}{I \times L} \quad \text{mV/Amp/Meter}$$

Where

- V_{ap} : Approximate voltage drop/ampere/meter
- I : Load current in A
- L : Cable route length
- V_p : Maximum permissible voltage drop (say 2.5% of 380 V)

By substituting current, cable route length, and maximum permissible voltage drop.

$$V_{ap} = \frac{9.5 \times 1000}{76 \times 50} = 2.5 \quad \text{mV/Amp/Meter}$$

To determine a suitable size of conductor, select a cable from the voltage drop tables, such that the selected voltage drop value from the tables is less than the calculated value of 2.5 mv/amp/m. Also ensure that it will carry the desired current. In this example, the nearest voltage drop value is 2.2 mv/amp/m, which is corresponding to size 16 mm².

In situations where the load power factor is other than 85% lagging, the voltage drop equations shown in the formula section should be used to calculate the voltage drop.

Conversion Table

Multiply	By	To obtain	Multiply	By	To obtain
Weight-Imperial			inches	1000	Mils
Ounces	28.3495	grams	inches	25.40	mm
Pounds(Av)	453.59	grams	inches	2.54	cm
Pounds(Av)	0.45359	Kilograms	Feet	30.48	cm
Tons (short)	907.19	Kilograms	Feet	0.3048	Meters
Tons (long)	1016.05	Kilograms	Feet (thousand of)	0.3048	kilometers
Weight-Metric			Yards	0.9144	Meters
Grams	0.03527	Ounces	Miles	1.6093	kilometers
Grams	0.002205	Pounds	Length-Metric		
Kilograms	35.274	Ounces	Millimeters	39.37	Mils
Kilograms	2.2046	Pounds	Millimeters	0.03937	inches
kilograms	0.001102	Tons (short)	Centimeters	0.3937	inches
Kilograms	0.0009842	Tons (long)	Centimeters	0.032808	Feet
Miscellaneous-Imperial			Meters	39.37	inches
Pounds per 1000 feet	1.48816	kg/km	Meters	3.2808	Feet
Pounds per mile	0.28185	kg/km	Meters	1.0936	Yards
Pounds per square inch	0.0007031	kg. per square mm	Kilometers	3280.83	Feet
Pounds per square inch	0.07031	kg. per square cm	Kilometers	0.62137	Miles
Pounds per cubic	27.68	grams per cubic cm	Area-Imperial		
Feet per second	18.288	meters per minute	Square mils	1.2732	Circular mils
Feet per second	1.09728	Kilometers per hour	Square mils	0.000001	Square inches
Miles per hour	1.60935	Kilometers per hour	Circular mils	0.7854	Square mils
Ohms per 1000 feet	3.28083	Ohms per Kilometer	Circular mils	0.0000007854	Square inches
Ohms per mile	0.62137	Ohms per Kilometer	Square mils	0.0005067	Square mm
Decibels per 1000 feet	3.28083	Decibels per kilomter	Square inches	1000000	Square mils
Decibels per mile	0.62137	Decibels per kilomter	Square inches	1273240	Circular mils
Decibels	0.1153	nepers	Square inches	645.16	Square mm
Miscellaneous-Metric			Square inches	6.4516	Square cm
kg/km	0.67197	Pounds per 1000 feet	Square feet	0.09290	Square meters
kg/km	3.54795	Pounds per mile	Square yards	0.8361	Square meters
kg.per square mm	1422.34	Pounds per square inch	Area-Metric		
kg.per square cm	14.2234	Pounds per square inch	Square millimeters	1973.52	Circular mils
Grams per cubic cm	0.03613	Pounds per cubic inch	Square millimeters	0.00155	Square inches
Meters per minute	0.05468	Feet per second	Square centimeters	0.155	Square inches
Kilometers per hour	0.91134	Feet per second	Square meters	10.7639	Square feet
Kilometer per hour	0.62137	Miles per hour	Square meters	1.19599	Square yards
Ohms per Kilometer	0.3048	Ohms per 1000 feet	Volume-Imperial		
Ohms per Kilometer	1.6093	Ohms per mile	Cubic inches	16.38706	Cubic cm
Decibels per kilomter	0.3048	Decibels per 1000 feet	Cubic feet	0.028317	Cubic meters
Decibels per kilometer	1.6093	Decibels per mile	Gallons	4.54609	Liters
Temperature			Volume-U.S.		
° Fahrenheit	5/9(°F)-32	°Celsius	Quarts (liquid)	0.9463	Liters
° Celsius	9/5(°C)+32	° Fahrenheit	Gallons	3.7854	Liters
Lenght-Imperial			Volume-Metric		
Mils	0.001	inches	Cubic cm	0.06102	Cubic inches
Mils	0.0254	mm	Cubic meters	35.3145	Cubic feet
			Liters	1.05668	quarts (liquid U.S)
			Liters	0.26417	gallons (U.S.)

Certificates



1. BASEC (BRITISH APPROVALS SERVICE FOR CABLES)

- a. Certificate of conformity, ISO 9001–2008
- b. Certification Schedule

2. Type Test Certificates

Certificates

- a. Bare soft copper conductor
- b. Power cable with extruded insulation with rated voltage of 0.6 / 1KV

Applicable Standards

- a. IEC 60228: 2004
- b. IEC 60502-1: 2004
- c. IEC 60332-1-2: 2004
- d. IEC 60332-3-24: 2000 (Category C)
- e. IEC 60332-3-22: 2000 (Category A)

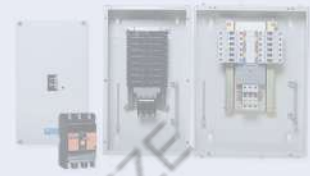
Product Range

alfanar manufactures a wide range of low, medium and high voltage electrical products under 50 categories. Listed below is alfanar's comprehensive product classification:

POWER & CONTROL

Low Voltage Products

- Load Center
- Circuit Breaker Enclosures (Indoor – Outdoor)
- Busbar Chamber with Main / Outdoor
- Breakers



Low Voltage Systems

- Switch Boards – MF Type
- Distribution Boards – MB Type
- Motor Control Centres
- Capacitor Banks – Power Factor Correction Panels
- Automatic Transfer Switch (ATS Panels)
- Distribution Boards for Substations
- Synchronizing Panels
- Control & Automation Panels



Package & Unit Substations

- Indoor Package Substation
- Outdoor Package Substation
- Indoor Unit Substation
- Outdoor Unit Substation



Medium Voltage Systems

- Switchgear (Metal clad, Metal enclosed)
- Control gear
- Ring Main Unit (RMU)
- Retrofit solution



METAL ENCLOSURES

Service Box Enclosures

Modular Enclosures

Extendable Cubicles

Telephone Box

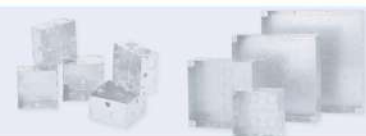
Busbar Chamber w/o Main



METAL ACCESSORIES

Switch Boxes

Junction Boxes



CABLES & WIRES

Building Wires

- American Standards (UL)
- British Standards (BS)
- International Electro-technical Commission Standards (IEC)
- Low Smoke, Halogen Free Wires



Overhead conductors

- Bare Stranded Soft Drawn Copper Conductors (SDC)
- Bare Stranded Hard Drawn Copper Conductors (HDC)
- All Aluminum Conductors (AAC)
- All Aluminum Alloy Conductors (AAAC)
- Aluminum Conductors, Steel Reinforced (ACSR)
- Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR / AW)
- Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR)
- Weather Resistant XLPE Insulated Service Drop Cables



Power Cables

- Low Voltage Power & Control Cables
- Low Smoke, Halogen Free Cables
- Cables for Special Applications



Signal, Communication & Data Cables

- Telephone Cables
- Coaxial Cables (RG6 / U)
- Local Area Network Cables (LAN)



LIGHTING

Halogen

Florescent

Energy Saving



COMMUNICATION SYSTEMS

Audio Intercom





alfanar markets and sells over 800 electrical construction products in the Saudi Arabian markets and exports them to several countries in the Middle East, Europe, Asia and Africa.

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