

Overhead

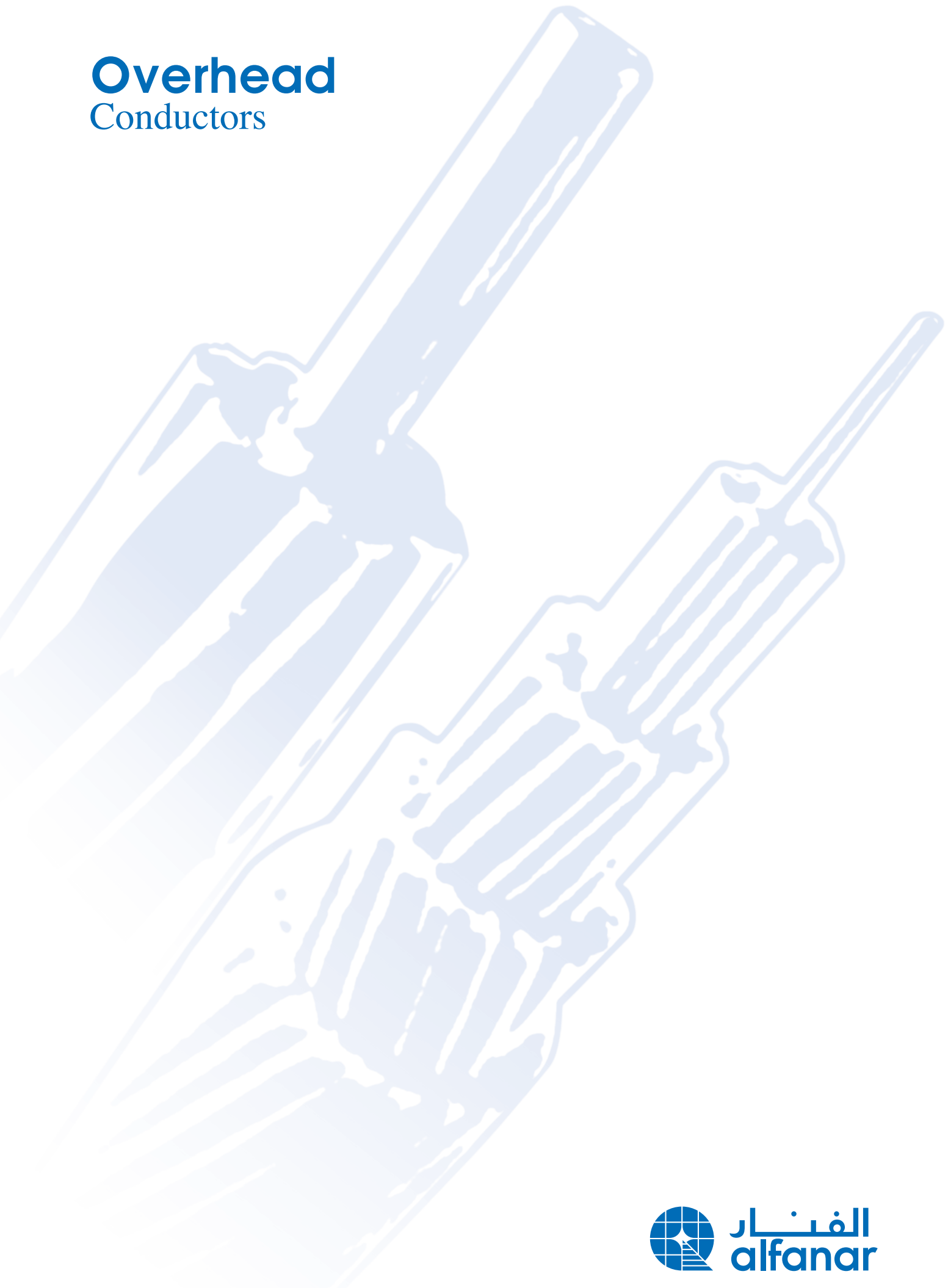
Conductors



الفيصار
alfanar

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Overhead Conductors



Preface

alfanar Overhead Conductors are used in overhead transmission and distribution network applications. They are also used for un-insulated hook ups, jumpers, grounding conductors and other applications. Our Conductors conform to ASTM, IEC, BS, BS EN and DIN standards.

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 Overhead Conductors 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.

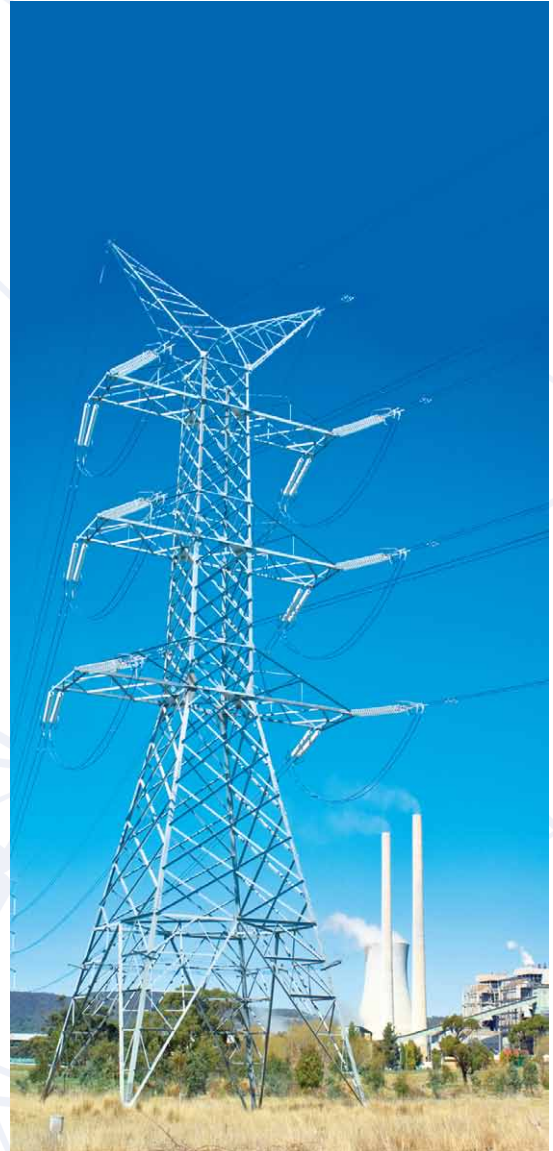
Scope

In recent years, the evolution of underground cables with extruded insulations, like crosslinked polyethylene (XLPE), and their enhanced performance has shifted the focus of attention from the installation of ordinary overhead lines to the installation of underground Extra-High Voltage (EHV) and High Voltage (HV) transmission circuits. The liberalization of the energy market and the need to connect new power plants to grids has stimulated growing requirements to extend existing transmission systems.

However, the choice of whether to use overhead line (OHL) or underground cable (UGC) must be consistent with safety, reliability and operational constraints to ensure that the capacity of the transmission grid efficiently matches the supply and demand of electrical energy. The choice between OHL and UGC is driven by technical, environmental and economic considerations.

Today's transmission system is being operated at power flow levels that reach the voltage, stability and thermal limits of cables and conductors. Transmission constraints and instabilities can cause negative impacts on the entire power system. Transmission lines require endurance against higher electrical and mechanical stresses in order to maintain the reliability of system operations.

Overhead transmission networks are an essential part of a country's infrastructure and are generally massive undertakings implemented in the developing regions.



Overhead conductors are classified by the types of materials used for conductors, types of reinforcing cores used, and either it is bare or insulated.

This catalogue contains design, construction and technical data of **alfanar**'s whole range of overhead conductors including bare soft or hard drawn copper conductors; aluminum conductors; aluminum-alloy conductors; aluminum conductors, steel reinforced; aluminum conductors, aluminum-clad steel reinforced; aluminum conductors, aluminum-alloy reinforced; and weather-resistant XLPE insulated service drop cables.

The conductors designs detailed in this catalogue are in accordance with the relevant DIN, IEC, ASTM, BS and BS EN standards. However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.

It is essential that the type of conductor ordered is suitable for its intended use. Conductor choice will be based on the whole range of factors including transmission voltages, installation specifications, environmental conditions in the project terrain, and the performance characteristics of appropriate conductor types. It is therefore not possible to provide a conclusive guide to conductor selection. Contact us for specialist advice on suitable conductor designs that meet your specific needs.

Approximate conductor diameters are provided in this catalogue in order to give you an idea for selecting appropriate installation accessories. However, as finished diameters may sometimes vary, please contact our technical department for actual dimensions of all finished products. Similarly, conductor weights may vary and the data supplied in this catalogue should be considered approximate.



Definitions

1. Aluminum

Aluminum is used as a generic term to mean hard drawn aluminum and aluminum alloy.

2. Wire

Filament of drawn metal having constant circular cross-section.

3. Conductor

Material intended to be used for carrying electric current consisting of multiple uninsulated wires twisted together.

4. Concentric-lay-stranded conductor

A conductor composed of a central core surrounded by one or more adjacent layers of wires laid helically in opposite directions.

5. Direction of lay

The direction of twist of a layer of wires as it moves away from the viewer. A right-hand lay is in clockwise direction and a left-hand lay is in anti-clockwise direction.

6. Lay length

The axial length of one complete turn of the helix formed by an individual wire in a stranded conductor.

7. Lay ratio

Means the ratio of the lay length to the external diameter of the corresponding layer of wires in the stranded conductor.

8. Steel ratio

The ratio of steel area to aluminum area as a percentage in ACSR conductors.

9. Rated tensile strength

Estimate of the conductor breaking load calculated using the specified tensile properties of the component wires.

Materials Properties

Metals Used For Conductors

ELECTRICAL PROPERTIES			
Metal	Relative Conductivity Copper 100	Electrical Resistivity at 20 °C $\Omega \cdot \text{mm}^2 / \text{m}$	Temperature Coefficient of Resistance per °C
Annealed copper	100	0.017241	0.00393
Hard drawn copper	97.0	0.017770	0.00393
Hard drawn aluminum	61.0	0.028264	0.00403
Aluminum alloy - Type A	52.5	0.032840	0.00360
Aluminum alloy - Type B	53.0	0.032530	0.00360
Alumoweld - 20SA - A	20.3	0.084800	0.00360
Galvanized steel	-	-	-

PHYSICAL PROPERTIES			
Metal	Density at 20 °C kg / m^3	Coeff. of Linear Expansion Per °C x 10^{-6}	Final Modulus of Elasticity MPa *
Annealed copper	8.890	17.0	98 100
Hard drawn copper	8.890	17.0	122 600
Hard drawn aluminum	2.703	23.0	68 000
Aluminum alloy - Type A	2.703	23.0	68 000
Aluminum alloy - Type B	2.703	23.0	68 000
Alumoweld - 20SA - A	6.590	13.0	162 000
Galvanized steel	7.780	11.5	207 000

* $1 \text{ MPa} = 1 \text{ N/mm}^2$

Bare Stranded Soft-Drawn Copper Conductors

CONSTRUCTION

Bare stranded soft-drawn (annealed) copper conductor is a concentric-lay-stranded conductor consisting of annealed copper wires available in both single layer and multi-layer constructions.

APPLICATION

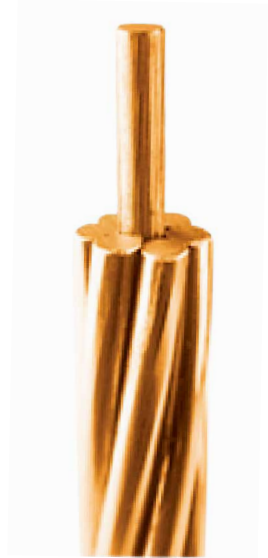
Bare stranded soft-drawn (annealed) copper conductor is suitable for uninsulated hook up, jumpers and grounding conductors in electrical construction, where high conductivity and flexibility are required.

APPLICABLE STANDARD

Bare stranded soft-drawn (annealed) copper conductor can be supplied to meet various International Standards as follows:

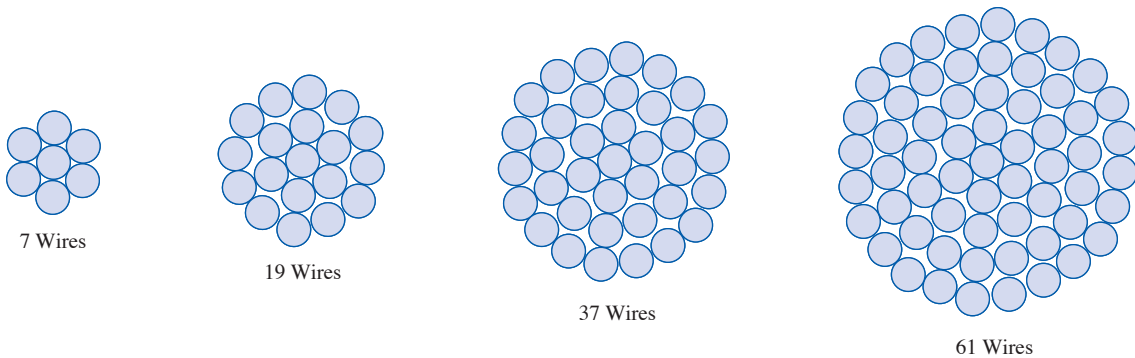
- IEC 60228
- BS EN 60228

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.



TECHNICAL DATA

Composition	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
7	17.0
19	17.0
37	17.0
61	17.0



Bare Stranded Soft-Drawn Copper Conductors

IEC 60228 / BS EN 60228 Standards

Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	AES Code
mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	
1.5	7 x 0.52	1.56	13.5	12.1000	C02000070IMX
2.5	7 x 0.67	2.01	22.4	7.41000	C020100070IMX
4	7 x 0.85	2.55	36.0	4.61000	C020200070IMX
6	7 x 1.04	3.12	54.0	3.08000	C020300070IMX
10	7 x 1.34	4.02	90.0	1.83000	C020400070IMX
16	7 x 1.68	5.04	141.0	1.15000	C020700070IMX
25	7 x 2.14	6.42	228.0	0.72700	C021400070IMX
35	7 x 2.52	7.56	317.0	0.52400	C022000070IMX
50	19 x 1.78	8.90	429.0	0.38700	C022700190IMX
70	19 x 2.14	10.70	619.0	0.26800	C023700190IMX
95	19 x 2.50	12.50	845.0	0.19300	C024600190IMX
120	37 x 2.05	14.35	1109.0	0.15300	C025500370IMX
150	37 x 2.25	15.75	1336.0	0.12400	C026200370IMX
185	37 x 2.50	17.50	1649.0	0.09910	C027300370IMX
240	61 x 2.25	20.25	2206.0	0.07540	C028300610IMX
300	61 x 2.50	22.50	2724.0	0.06010	C029200610IMX
400	61 x 2.90	26.10	3665.0	0.04700	C02A900610IMX
500	61 x 3.23	29.00	4546.0	0.03660	C02B800610IMX

Bare Stranded Hard-Drawn Copper Conductors

CONSTRUCTION

Bare stranded hard-drawn copper conductor is a concentric-lay-stranded conductor consisting of hard-drawn copper wires available in both single layer and multi-layer constructions.

APPLICATION

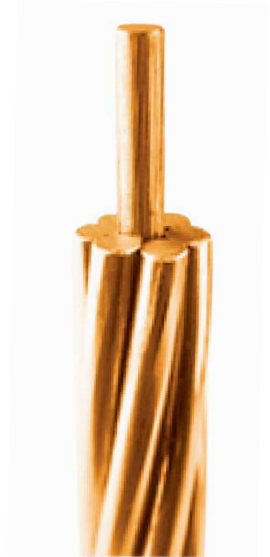
Bare stranded hard-drawn copper conductor is suitable for overhead transmission and distribution networks applications, where the highest electrical conductivity per unit area and good strength-to-weight ratio are required.

APPLICABLE STANDARD

Bare stranded hard-drawn copper conductor can be supplied to meet various International Standards as follows :

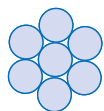
- BS 7884
- DIN 48201 / 1

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.

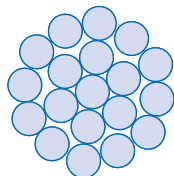


TECHNICAL DATA

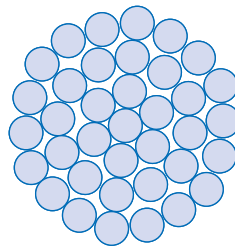
Composition	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
7	112 800	17.0
19	104 900	17.0
37	104 900	17.0
61	100 000	17.0



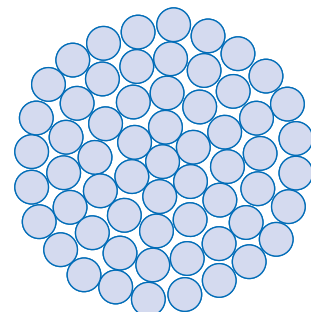
7 Wires



19 Wires



37 Wires



61 Wires

Bare Stranded Hard-Drawn Copper Conductors

BS 7884 Standard

Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Minimum breaking load	AES Code
mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	N	
10	7 x 1.35	4.05	89.8	1.82900	3752	D020400070BMX
14	7 x 1.60	4.80	126.2	1.30300	5267	D020600070BMX
16	3 x 2.65	5.70	148.3	1.10600	6194	D020700030BMX
16	7 x 1.70	5.10	142.4	1.15400	5946	D020700070BMX
25	7 x 2.10	6.30	217.3	0.75630	9073	D021400070BMX
32	3 x 3.75	8.06	296.9	0.55200	12 400	D021800030BMX
32	7 x 2.46	7.38	298.2	0.54970	12 442	D021800070BMX
35	7 x 2.50	7.50	308.0	0.53370	12 860	D022000070BMX
50	7 x 3.00	9.00	443.5	0.37060	18 520	D022700070BMX
50	19 x 1.80	9.00	435.8	0.38190	17 700	D022700190BMX
70	7 x 3.55	10.65	621.1	0.26460	25 930	D023700070BMX
70	19 x 2.10	10.50	593.2	0.28060	24 090	D023700190BMX
95	19 x 2.50	12.50	840.7	0.19800	34 140	D024600190BMX
100	7 x 4.30	12.90	911.2	0.18100	36 540	D024900070BMX
120	19 x 2.80	14.00	1055.0	0.15780	42 830	D025500190BMX
125	19 x 2.90	14.50	1131.0	0.14710	45 940	D025600190BMX
150	19 x 3.20	16.00	1377.0	0.12080	55 940	D026200190BMX
150	37 x 2.25	15.75	1334.0	0.12640	53 880	D026200370BMX
185	19 x 3.55	17.75	1695.0	0.09815	68 860	D027300190BMX
185	37 x 2.50	17.50	1647.0	0.10240	66 490	D027300370BMX

Bare Stranded Hard-Drawn Copper Conductors

DIN 48201/1 Standard

Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Ampacity (*)	Calculated breaking load	AES Code
mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	A	KN	
10	7 x 1.35	4.1	90	1.80600	90	4.02	D020400070DMX
16	7 x 1.70	5.1	143	1.13850	125	6.37	D020700070DMX
25	7 x 2.10	6.3	218	0.74610	160	9.72	D021400070DMX
35	7 x 2.50	7.5	310	0.52640	200	13.77	D022000070DMX
50	7 x 3.00	9.0	446	0.37590	250	19.84	D022700070DMX
50	19 x 1.80	9.0	437	0.38880	250	19.38	D022700190DMX
70	19 x 2.10	10.5	594	0.27620	310	26.38	D023700190DMX
95	19 x 2.50	12.5	845	0.19490	380	37.39	D024600190DMX
120	37 x 2.00	14.0	1060	0.15540	425	46.90	D025500370DMX
150	37 x 2.25	15.8	1337	0.12380	510	58.93	D026200370DMX
185	37 x 2.50	17.5	1640	0.10030	585	72.76	D027300370DMX
240	61 x 2.25	20.3	2209	0.07530	700	97.23	D028300610DMX
300	61 x 2.50	22.5	2725	0.06100	800	120.04	D029200610DMX
400	61 x 2.89	26.0	3640	0.04560	960	160.42	D02A900610DMX
500	61 x 3.23	29.1	4545	0.03650	1110	200.38	D02B800610DMX

* Standard values applicable up to 60 Hz at wind velocity of 0.6 m/s and solar effects for an original ambient temperature of 35 °C and a final conductor temperature of 70 °C. Reduce the values by an average of approximately 30% in case of special locations at still air.

All Aluminum Conductors

CONSTRUCTION

All Aluminum Conductors (AAC) is a concentric-lay-stranded conductor consisting of hard drawn aluminum wires available in both single layer and multi-layer constructions.

APPLICATION

All Aluminum Conductors (AAC) can be used as a bare overhead conductor for distribution lines. Because of its low strength-to-weight ratio, (AAC) has limited use in transmission lines. AAC is extensively used in urban areas where spans are usually short but high conductivity is required.

APPLICABLE STANDARD

All Aluminum Conductors (AAC) can be supplied to meet various International Standards as follows:

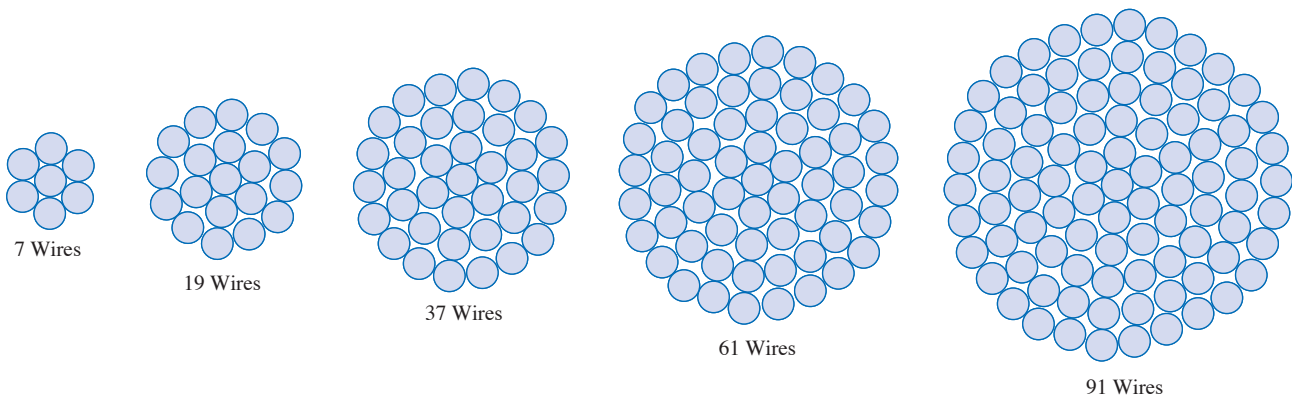
- BS 215 / 1
- IEC 61089
- ASTM B 231
- DIN 48201 / 5

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.



TECHNICAL DATA

Composition	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
7	63 300	23.0
19	61 200	23.0
37	58 900	23.0
61	58 300	23.0
91	58 300	23.0



All Aluminum Conductors (AAC)

BS 215 / 1 Standard

Code Name	Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Calculated breaking load	AES Code
	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
MIDGE	22	7 x 2.06	6.18	64	1.22700	3.99	H021100070BMX
ANT	50	7 x 3.10	9.30	145	0.54190	8.28	H022700070BMX
FLY	60	7 x 3.40	10.20	174	0.45050	9.90	H023200070BMX
WASP	100	7 x 4.39	13.17	290	0.27020	16.00	H024900070BMX
HORNET	150	19 x 3.25	16.25	434	0.18250	25.70	H026200190BMX
CHAFER	200	19 x 3.78	18.90	587	0.13490	32.40	H027500190BMX
COCKROACH	250	19 x 4.22	21.10	731	0.10830	40.40	H028500190BMX
BUTTERFLY	300	19 x 4.65	23.25	888	0.08916	48.75	H029200190BMX
CENTIPEDE	400	37 x 3.78	26.46	1145	0.06944	63.10	H02A900370BMX

All Aluminum Conductors (AAC) - A1 Conductors

IEC 61089 Standard

Code Number	Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Rated strength	AES Code
	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
16	16	7 x 1.71	5.12	43.8	1.78960	3.04	H020700070IMX
25	25	7 x 2.13	6.40	68.4	1.14530	4.50	H021400070IMX
40	40	7 x 2.70	8.09	109.4	0.71580	6.80	H022300070IMX
63	63	7 x 3.39	10.20	172.3	0.45450	10.39	H023400070IMX
100	100	19 x 2.59	12.90	274.8	0.28770	17.00	H024900190IMX
125	125	19 x 2.89	14.50	343.6	0.23020	21.25	H025600190IMX
160	160	19 x 3.27	16.40	439.8	0.17980	26.40	H026600190IMX
200	200	19 x 3.66	18.30	549.7	0.14390	32.00	H027500190IMX
250	250	19 x 4.09	20.50	687.1	0.11510	40.00	H028500190IMX
315	315	37 x 3.29	23.00	867.9	0.09160	51.97	H029600370IMX
400	400	37 x 3.71	26.00	1102.0	0.07210	64.00	H02A900370IMX
450	450	37 x 3.94	27.50	1239.8	0.06410	72.00	H02B200370IMX
500	500	37 x 4.15	29.00	1377.6	0.05770	80.00	H02B800370IMX
560	560	37 x 4.39	30.70	1542.9	0.05150	89.60	H02C200370IMX
630	630	61 x 3.63	32.60	1738.3	0.04580	100.80	H02C700610IMX
710	710	61 x 3.85	34.60	1959.1	0.04070	113.60	H02D300610IMX
800	800	61 x 4.09	36.80	2207.4	0.03610	128.00	H02D700610IMX
900	900	61 x 4.33	39.00	2483.3	0.03210	144.00	H02E200610IMX
1000	1000	61 x 4.57	41.10	2759.2	0.02890	160.00	H02E500610IMX
1120	1120	91 x 3.96	43.50	3093.5	0.02580	179.20	H02E900910IMX

All Aluminum Conductors

All Aluminum Conductors (AAC)

ASTM B 231 Standard

Code Word	Nominal cross sectional area		Conductor construction	Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	AWG / MCM *	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
Rose	4	21.1	7 x 1.96	5.88	58.2	1.36505	3.91	H021000070AMX
Iris	2	33.6	7 x 2.47	7.41	92.6	0.85954	5.99	H021900070AMX
Pansy	1	42.4	7 x 2.78	8.34	116.6	0.67853	7.30	H022500070AMX
Poppy	1/0	53.5	7 x 3.12	9.36	147.2	0.53871	8.84	H022900070AMX
Aster	2/0	67.4	7 x 3.50	10.50	185.7	0.42808	11.10	H023500070AMX
Phlox	3/0	85.0	7 x 3.93	11.79	233.9	0.33953	13.50	H024400070AMX
Oxlip	4/0	107.2	7 x 4.42	13.26	295.2	0.26842	17.00	H025200070AMX
Valerian	250.0	126.7	19 x 2.91	14.55	348.6	0.22815	20.70	H025900190AMX
Sneezewort	250.0	126.7	7 x 4.80	14.40	348.8	0.22760	20.10	H025910070AMX
Laurel	266.8	135.2	19 x 3.01	15.05	372.2	0.21324	22.10	H026000190AMX
Daisy	266.8	135.2	7 x 4.96	14.88	372.3	0.21316	21.40	H026010070AMX
Peony	300.0	152.0	19 x 3.19	15.95	418.3	0.18986	24.30	H026400190AMX
Tulip	336.4	170.5	19 x 3.38	16.90	469.5	0.16911	27.30	H026700190AMX
Daffodil	350.0	177.3	19 x 3.45	17.25	487.9	0.16232	28.40	H026900190AMX
Canna	397.5	201.4	19 x 3.67	18.35	554.9	0.14344	31.60	H027600190AMX
Goldentuft	450.0	228.0	19 x 3.91	19.55	627.6	0.12637	35.00	H028000190AMX
Syringa	477.0	241.7	37 x 2.88	20.16	664.8	0.11961	38.60	H028400370AMX
Cosmos	477.0	241.7	19 x 4.02	20.10	664.8	0.11955	37.00	H028410190AMX
Hyacinth	500.0	253.3	37 x 2.95	20.65	696.8	0.11400	40.50	H028600370AMX
Zinnia	500.0	253.3	19 x 4.12	20.60	697.1	0.11382	38.90	H028610190AMX
Mistletoe	556.5	282.0	37 x 3.12	21.84	775.7	0.10192	44.30	H029000370AMX
Dahlia	556.5	282.0	19 x 4.35	21.75	775.8	0.10210	43.30	H029010190AMX
Meadowsweet	600.0	304.0	37 x 3.23	22.61	836.3	0.09509	47.50	H029400370AMX
Orchid	636.0	322.3	37 x 3.33	23.31	886.9	0.08947	50.40	H029700370AMX
Heuchera	650.0	329.4	37 x 3.37	23.59	907.4	0.08736	51.70	H029800370AMX
Flag	700.0	354.7	61 x 2.72	24.48	975.8	0.08134	57.10	H02A200610AMX
Verbena	700.0	354.7	37 x 3.49	24.43	975.7	0.08145	55.40	H02A210370AMX
Nasturtium	715.5	362.6	61 x 2.75	24.75	998.5	0.07959	58.40	H02A500610AMX
Violet	715.5	362.6	37 x 3.53	24.71	998.5	0.07962	56.70	H02A510370AMX
Cattail	750.0	380.0	61 x 2.82	25.38	1046.0	0.07567	60.30	H02A700610AMX
Petunia	750.0	380.0	37 x 3.62	25.34	1046.0	0.07571	58.60	H02A710370AMX
Lilac	795.0	402.8	61 x 2.90	26.10	1110.0	0.07155	63.80	H02B000610AMX
Arbutus	795.0	402.8	37 x 3.72	26.04	1109.0	0.07169	61.80	H02B010370AMX
Snapdragon	900.0	456.0	61 x 3.09	27.81	1256.0	0.06302	70.80	H02B300610AMX
Cockscomb	900.0	456.0	37 x 3.96	27.72	1256.0	0.06327	68.40	H02B310370AMX
Goldenrod	954.0	483.4	61 x 3.18	28.62	1331.0	0.05951	75.00	H02B600610AMX
Magnolia	954.0	483.4	37 x 4.08	28.56	1331.0	0.05960	72.60	H02B610370AMX
Camellia	1000.0	506.7	61 x 3.25	29.25	1394.0	0.05697	78.30	H02B900610AMX
Hawkweed	1000.0	506.7	37 x 4.18	29.26	1395.0	0.05678	76.20	H02B910370AMX
Larkspur	1033.5	523.7	61 x 3.31	29.79	1442.0	0.05493	81.30	H02C100610AMX
Bluebell	1033.5	523.7	37 x 4.25	29.75	1441.0	0.05493	78.80	H02C110370AMX
Marigold	1113.0	564.0	61 x 3.43	30.87	1553.0	0.05115	87.30	H02C300610AMX
Hawthorn	1192.5	604.2	61 x 3.55	31.95	1662.0	0.04775	93.50	H02C500610AMX
Narcissus	1272.0	644.5	61 x 3.67	33.03	1774.0	0.04468	98.10	H02C900610AMX
Columbine	1351.0	694.8	61 x 3.78	34.02	1884.0	0.04212	104.00	H02D200610AMX

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All Aluminum Conductors (AAC)

ASTM B 231 Standard

Code Word	Nominal cross sectional area		Conductor construction	Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	AWG / MCM *	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
Carnation	1431.0	725.1	61 x 3.89	35.01	1997.0	0.03977	108.00	H02D400610AMX
Gladiolus	1510.5	765.4	61 x 4.00	36.00	2108.0	0.03761	114.00	H02D600610AMX
Coreopsis	1590.0	805.7	61 x 4.10	36.90	2216.0	0.03580	120.00	H02D800610AMX
Jessamine	1750.0	886.7	61 x 4.30	38.70	2442.0	0.03255	132.00	H02E100610AMX
Cowslip	2000.0	1013.0	91 x 3.77	41.47	2787.0	0.02866	153.00	H02E600910AMX
Sagebrush	2250.0	1140.0	91 x 3.99	43.89	3166.0	0.02559	167.00	H02F000910AMX
Lupine	2500.0	1267.0	91 x 4.21	46.31	3519.0	0.02298	186.00	H02F300910AMX
Bitterroot	2750.0	1393.0	91 x 4.42	48.62	3872.0	0.02085	205.00	H02F400910AMX

* For small sizes the conductor cross-section is expressed in AWG number (American Wire Gauge) and for large sizes in MCM (milli-circular-mil)

All Aluminum Conductors (AAC)

DIN 48201 / 5 Standard

Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Ampacity (*)	Calculated breaking load	AES Code
mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	A	KN	
16	7 x 1.70	5.1	43	1.80180	110	2.84	H020700070DMX
25	7 x 2.10	6.3	66	1.18080	145	4.17	H021400070DMX
35	7 x 2.50	7.5	94	0.83320	180	5.78	H022000070DMX
50	7 x 3.00	9.0	135	0.57860	225	7.94	H022700070DMX
50	19 x 1.80	9.0	133	0.59500	225	8.45	H022700190DMX
70	19 x 2.10	10.5	181	0.43710	270	11.32	H023700190DMX
95	19 x 2.50	12.5	256	0.30840	340	15.68	H024600190DMX
120	19 x 2.80	14.0	322	0.24590	390	18.78	H025500190DMX
150	37 x 2.25	15.8	406	0.19600	455	25.30	H026200370DMX
185	37 x 2.50	17.5	500	0.15870	520	30.54	H027300370DMX
240	61 x 2.25	20.3	670	0.11910	625	39.51	H028300610DMX
300	61 x 2.50	22.5	827	0.09649	710	47.70	H029200610DMX
400	61 x 2.89	26.0	1104	0.07221	855	60.86	H02A900610DMX
500	61 x 3.23	29.1	1379	0.05781	990	74.67	H02B800610DMX
625	91 x 2.96	32.6	1732	0.04625	1140	95.25	H02C600910DMX
800	91 x 3.35	36.9	2218	0.03611	1340	118.39	H02D700910DMX
1000	91 x 3.74	41.1	2767	0.02897	1540	145.76	H02E500910DMX

* Standard values applicable up to 60 Hz at wind velocity of 0.6 m/s and solar effects for an original ambient temperature of 35 °C and a final conductor temperature of 80 °C. Reduce the values by an average of approximately 30% in case of special locations at still air.

All Aluminum-Alloy Conductors

CONSTRUCTION

All Aluminum-Alloy Conductors (AAAC) is a concentric-lay-stranded conductor consisting of aluminum-alloy wires available in both single layer and multi-layer constructions.

APPLICATION

All Aluminum-Alloy Conductors (AAAC) can be used in Medium, High and Extra-High voltage transmission lines. AAAC offers better sag performance due to the high strength-to-weight ratio provided by the aluminum-alloy. In addition, AAAC provides a higher corrosion resistance than ACSR conductors.

APPLICABLE STANDARD

All Aluminum-Alloy Conductors (AAAC) can be supplied to meet various International Standards as follows :

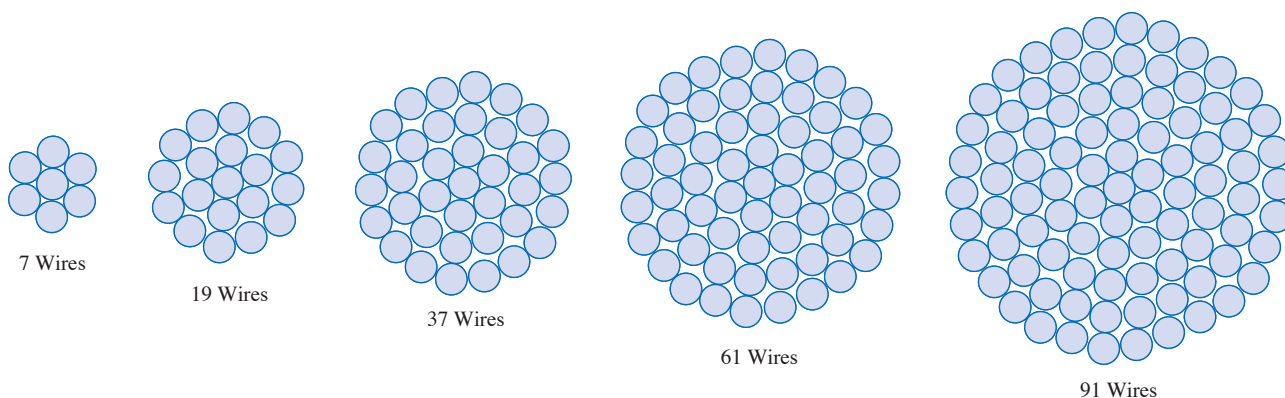
- IEC 61089
- ASTM B 399
- BS EN 50182
- DIN 48201 / 6

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.



TECHNICAL DATA

Composition	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
7	63 300	23.0
19	61 200	23.0
37	58 900	23.0
61	58 300	23.0
91	58 300	23.0



All Aluminum-Alloy Conductors (AAAC) - A2 Conductors

IEC 61089 Standard

Code Number	Nominal cross sectional area		Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Rated strength	AES Code
	mm ²		No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
16	18.4		7 x 1.83	5.49	50.4	1.78960	5.43	L020700070IMX
25	28.8		7 x 2.29	6.86	78.7	1.14530	8.49	L021400070IMX
40	46.0		7 x 2.89	8.68	125.9	0.71580	13.58	L022300070IMX
63	72.5		7 x 3.63	10.90	198.3	0.45450	21.39	L023400070IMX
100	115.0		19 x 2.78	13.90	316.3	0.28770	33.95	L024900190IMX
125	144.0		19 x 3.10	15.50	395.4	0.23020	42.44	L025600190IMX
160	184.0		19 x 3.51	17.60	506.1	0.17980	54.32	L026600190IMX
200	230.0		19 x 3.93	19.60	632.7	0.14390	67.91	L027500190IMX
250	288.0		19 x 4.39	22.00	790.8	0.11510	84.88	L028500190IMX
315	363.0		37 x 3.53	24.70	998.9	0.09160	106.95	L029600370IMX
400	460.0		37 x 3.98	27.90	1268.4	0.07210	135.81	L02A900370IMX
450	518.0		37 x 4.22	29.60	1426.9	0.06410	152.79	L02B200370IMX
500	575.0		37 x 4.45	31.20	1585.5	0.05770	169.76	L02B800370IMX
560	645.0		61 x 3.67	33.00	1778.4	0.05160	190.14	L02C200610IMX
630	725.0		61 x 3.89	35.00	2000.7	0.04580	213.90	L02C700610IMX
710	817.0		61 x 4.13	37.20	2254.8	0.04070	241.07	L02D300610IMX
800	921.0		61 x 4.38	39.50	2540.6	0.03610	271.62	L02D700610IMX
900	1036.0		91 x 3.81	41.80	2861.1	0.03210	305.58	L02E200910IMX
1000	1151.0		91 x 4.01	44.10	3179.0	0.02890	339.53	L02E500910IMX
1120	1289.0		91 x 4.25	46.70	3560.5	0.02580	380.27	L02E900910IMX
1250	1439.0		91 x 4.49	49.40	3973.7	0.02310	424.41	L02F200910IMX

All Aluminum-Alloy Conductors (AAAC)

ASTM B 399 Standard

Code Word	Nominal cross sectional area		Conductor construction	Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	MCM	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
Alton	48.69	24.7	7 x 2.12	6.36	67.8	1.35568	7.83	L021300070AMX
Ames	77.47	39.2	7 x 2.67	8.02	107.5	0.85469	12.40	L022200070AMX
Azusa	123.30	62.4	7 x 3.37	10.11	171.3	0.53650	18.90	L023300070AMX
Anaheim	155.40	78.6	7 x 3.78	11.35	215.6	0.42643	23.80	L023900070AMX
Amherst	195.70	99.3	7 x 4.25	12.75	272.5	0.33733	30.00	L024800070AMX
Alliance	246.90	125.0	7 x 4.77	14.31	343.2	0.26779	37.80	L025600070AMX
Butte	312.80	159.0	19 x 3.26	16.30	435.1	0.21122	46.50	L026500190AMX
Canton	394.50	200.0	19 x 3.66	18.30	548.5	0.16758	58.60	L027500190AMX
Cairo	465.40	236.0	19 x 3.98	19.88	648.6	0.14171	69.20	L028100190AMX
Darien	559.50	284.0	19 x 4.36	21.79	778.3	0.11809	83.10	L029100190AMX
Elgin	652.40	331.0	19 x 4.71	23.54	908.3	0.10119	97.00	L02A000190AMX
Flint	740.80	375.0	37 x 3.59	25.16	1028.0	0.08944	107.00	L02A600370AMX
Greeley	927.20	470.0	37 x 4.02	28.14	1289.0	0.07133	135.00	L02B400370AMX

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All Aluminum-Alloy Conductors

All Aluminum-Alloy Conductors (AAAC)

ASTM B 399 Standard

Nominal cross sectional area		Conductor construction	Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
MCM	mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
41.74	21.1	7 x 1.96	5.88	57.9	1.58600	6.69	L021000070AMX
66.36	33.5	7 x 2.47	7.41	92.0	0.99870	10.60	L021900070AMX
105.60	53.5	7 x 3.12	9.36	146.8	0.62592	17.00	L022900070AMX
133.10	67.3	7 x 3.50	10.50	184.8	0.49738	20.40	L023500070AMX
167.80	84.9	7 x 3.93	11.79	233.0	0.39450	25.70	L024300070AMX
211.60	107.0	7 x 4.42	13.26	294.7	0.31188	32.50	L025200070AMX
250.00	126.0	19 x 2.91	14.55	346.7	0.26509	38.80	L025800190AMX
300.00	152.0	19 x 3.19	15.95	416.7	0.22059	46.60	L026400190AMX
350.00	178.0	19 x 3.45	17.25	487.3	0.18860	52.00	L027000190AMX
400.00	203.0	19 x 3.69	18.45	557.5	0.16486	59.50	L027700190AMX
450.00	228.0	19 x 3.91	19.55	626.0	0.14683	66.80	L028000190AMX
500.00	253.0	19 x 4.12	20.60	695.0	0.13224	74.20	L028600190AMX
550.00	279.0	37 x 3.10	21.70	766.2	0.11995	83.90	L028700370AMX
600.00	303.0	37 x 3.23	22.16	831.9	0.11049	91.00	L029300370AMX
650.00	330.0	37 x 3.37	23.59	905.5	0.10150	94.90	L029900370AMX
700.00	354.0	37 x 3.49	24.43	971.2	0.09464	101.00	L02A200370AMX
750.00	381.0	37 x 3.62	25.34	1045.0	0.08796	109.00	L02A800370AMX
800.00	404.0	37 x 3.73	26.11	1109.0	0.08285	116.00	L02B100370AMX
900.00	456.0	37 x 3.96	27.72	1250.0	0.07351	131.00	L02B300370AMX
1000.00	508.0	37 x 4.18	29.26	1393.0	0.06597	146.00	L02C000370AMX
1250.00	631.0	61 x 3.63	32.67	1732.0	0.05306	179.00	L02C800610AMX
1500.00	759.0	61 x 3.98	35.82	2082.0	0.04414	215.00	L02D500610AMX
1750.00	886.0	61 x 4.30	38.70	2431.0	0.03781	251.00	L02E000610AMX

All Aluminum-Alloy Conductors (AAAC) - AL3 Conductors - U.K.

BS EN 50182 Standard

Code	Old Code	Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Calculated breaking load	AES Code
		mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
19-AL3	BOX	18.8	7 x 1.85	5.55	51.4	1.74800	5.55	L020800070EMX
24-AL3	ACACIA	23.8	7 x 2.08	6.24	64.9	1.38280	7.02	L021200070EMX
30-AL3	ALMOND	30.1	7 x 2.34	7.02	82.2	1.09260	8.88	L021600070EMX
35-AL3	CEDAR	35.5	7 x 2.54	7.62	96.8	0.92730	10.46	L022100070EMX
42-AL3	DEODAR	42.2	7 x 2.77	8.31	115.2	0.77970	12.44	L022500070EMX
48-AL3	FIR	47.8	7 x 2.95	8.85	130.6	0.68750	14.11	L022600070EMX
60-AL3	HAZEL	59.9	7 x 3.30	9.90	163.4	0.54940	17.66	L023100070EMX
72-AL3	PINE	71.6	7 x 3.61	10.80	195.6	0.45910	21.14	L023800070EMX
84-AL3	HOLLY	84.1	7 x 3.91	11.70	229.5	0.39130	24.79	L024200070EMX
90-AL3	WILLOW	89.7	7 x 4.04	12.10	245.0	0.36650	26.47	L024500070EMX
119-AL3	OAK	118.9	7 x 4.65	14.00	324.5	0.27670	35.07	L025400070EMX
151-AL3	MULBERRY	150.9	19 x 3.18	15.90	414.3	0.21920	44.52	L026300190EMX
181-AL3	ASH	180.7	19 x 3.48	17.40	496.1	0.18300	53.31	L027200190EMX

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All Aluminum-Alloy Conductors (AAAC) - AL3 Conductors - U.K.

BS EN 50182 Standard

Code	Old Code	Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Calculated breaking load	AES Code
		mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	KN	
211-AL3	ELM	211.0	19 x 3.76	18.80	579.2	0.15680	62.24	L027800190EMX
239-AL3	POPLAR	239.4	37 x 2.87	20.10	659.4	0.13870	70.61	L028200370EMX
303-AL3	SYCAMORE	303.2	37 x 3.23	22.60	835.2	0.10950	89.40	L029300370EMX
362-AL3	UPAS	362.1	37 x 3.53	24.70	997.5	0.09170	106.82	L02A400370EMX
479-AL3	YEW	479.0	37 x 4.06	28.40	1319.6	0.06930	141.31	L02B500370EMX
498-AL3	TOTARA	498.1	37 x 4.14	29.00	1372.1	0.06660	146.93	L02B700370EMX
587-AL3	RUBUS	586.9	61 x 3.50	31.50	1622.0	0.05670	173.13	L02C400610EMX
659-AL3	SORBUS	659.4	61 x 3.71	33.40	1822.5	0.05050	194.53	L02D000610EMX
821-AL3	ARAUCARIA	821.1	61 x 4.14	37.30	2269.4	0.04060	242.24	L02D900610EMX
996-AL3	REDWOOD	996.2	61 x 4.56	41.00	2753.2	0.03340	293.88	L02E400610EMX

All Aluminum-Alloy Conductors (AAAC)

DIN 48201 / 6 Standard

Nominal cross sectional area	Conductor construction	Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Ampacity (*)	Calculated breaking load	AES Code
mm ²	No. x Ø (mm)	mm	Kg / km	Ω / km	A	KN	
16	7 x 1.70	5.1	43	2.0910	105	4.44	L020700070DMX
25	7 x 2.10	6.3	66	1.37030	135	6.77	L021400070DMX
35	7 x 2.50	7.5	94	0.96690	170	9.60	L022000070DMX
50	7 x 3.00	9.0	135	0.67140	210	13.82	L022700070DMX
50	19 x 1.80	9.0	133	0.69050	210	13.50	L022700190DMX
70	19 x 2.10	10.5	181	0.50730	255	18.38	L023700190DMX
95	19 x 2.50	12.5	256	0.35790	320	26.05	L024600190DMX
120	19 x 2.80	14.0	322	0.28540	365	32.68	L025500190DMX
150	37 x 2.25	15.8	406	0.22740	425	41.09	L026200370DMX
185	37 x 2.50	17.5	500	0.18420	490	50.73	L027300370DMX
240	61 x 2.25	20.3	670	0.13830	585	67.74	L028300610DMX
300	61 x 2.50	22.5	827	0.11200	670	83.63	L029200610DMX
400	61 x 2.89	26.0	1104	0.08380	810	111.76	L02A900610DMX
500	61 x 3.23	29.1	1379	0.06700	930	139.60	L02B800610DMX
625	91 x 2.96	32.6	1732	0.05360	1075	174.90	L02C600910DMX
800	91 x 3.35	36.9	2218	0.04180	1255	224.02	L02D700910DMX
1000	91 x 3.74	41.1	2767	0.03360	1450	279.22	L02E500910DMX

* Standard values applicable up to 60 Hz at wind velocity of 0.6 m/s and solar effects for an original ambient temperature of 35 °C and a final conductor temperature of 80 °C. Reduce the values by an average of approximately 30% in case of special locations at still air.

Aluminum Conductors, Steel-Reinforced

CONSTRUCTION

Aluminum Conductors, Steel-Reinforced (ACSR) is a concentric-lay-stranded conductor consisting of galvanized steel central core with one or more layers of hard drawn stranded aluminum wires laid helically over the steel core. Steel core wires are protected from corrosion by galvanization.

APPLICATION

Aluminum Conductors, Steel-Reinforced (ACSR) can be used in Medium, High and Extra-High voltage transmission lines; also used for primary and secondary distribution lines. The combination of aluminum and steel in the conductor design offers both efficient conductivity and high tensile strength making ACSR the most economical solution for overhead power transmission and distribution projects.

APPLICABLE STANDARD

Aluminum Conductors, Steel-Reinforced (ACSR) can be supplied to meet various International Standards as follows :

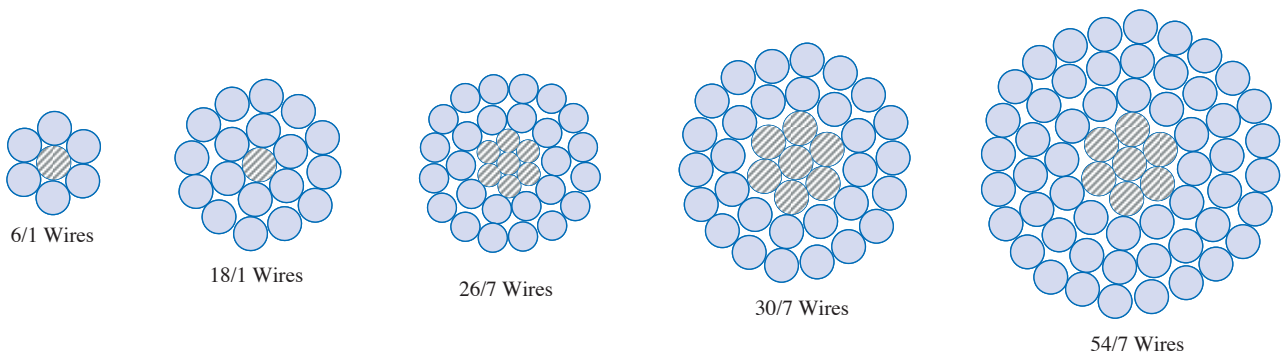
- BS 215 / 2
- IEC 61089
- DIN 48204
- ASTM B 232

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.



TECHNICAL DATA

Composition (AL / ST)	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
6 / 1	79 000	19.1
6 / 7	75 000	19.8
26 / 7	74 200	18.9
30 / 7	80 000	17.8
30 / 19	78 500	18.0
54 / 7	67 100	19.3
54 / 19	69 700	19.5



Aluminum Conductors, Steel-Reinforced (ACSR)

BS 215 / 2 Standard

Code Name	Nominal cross sectional area	Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Calculated breaking load	AES Code
		Aluminum	Steel					
	mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
GOPHER	25	6 x 2.36	1 x 2.36	7.08	106	1.09300	9.61	S021400070BMX
WEASEL	30	6 x 2.59	1 x 2.59	7.77	128	0.90770	11.45	S021500070BMX
FERRET	40	6 x 3.00	1 x 3.00	9.00	172	0.67660	15.20	S022300070BMX
RABBIT	50	6 x 3.35	1 x 3.35	10.05	214	0.54260	18.35	S022700070BMX
HORSE	70	12 x 2.79	7 x 2.79	13.95	538	0.39360	61.20	S023700190BMX
DOG	100	6 x 4.72	7 x 1.57	14.15	394	0.27330	32.70	S024900130BMX
WOLF	150	30 x 2.59	7 x 2.59	18.13	726	0.18280	69.20	S026200370BMX
DINGO	150	18 x 3.35	1 x 3.35	16.75	506	0.18150	35.70	S026200190BMX
LYNX	175	30 x 2.79	7 x 2.79	19.53	842	0.15760	79.80	S026800370BMX
CARACAL	175	18 x 3.61	1 x 3.61	18.05	587	0.15630	41.10	S026800190BMX
PANTHER	200	30 x 3.00	7 x 3.00	21.00	974	0.13630	92.25	S027500370BMX
JAGUAR	200	18 x 3.86	1 x 3.86	19.30	671	0.13670	46.55	S027500190BMX
ZEBRA	400	54 x 3.18	7 x 3.18	28.62	1621	0.06740	131.90	S02A900610BMX

Aluminum Conductors, Steel-Reinforced (ACSR) - A1/S1A Conductors

IEC 61089 Standard

Code Number	Steel ratio	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Rated strength	AES Code
		Al	St	Al	St					
	%	mm ²		No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
16	17	16	2.67	6 x 1.84	1 x 1.84	5.53	64.6	1.79340	6.08	S020700070IMX
25	17	25	4.17	6 x 2.30	1 x 2.30	6.91	100.9	1.14780	9.13	S021400070IMX
40	17	40	6.67	6 x 2.91	1 x 2.91	8.74	161.5	0.71740	14.40	S022300070IMX
63	17	63	10.50	6 x 3.66	1 x 3.66	11.00	254.4	0.45550	21.63	S023400070IMX
100	17	100	16.70	6 x 4.61	1 x 4.61	13.80	403.8	0.28690	34.33	S024900070IMX
125	6	125	6.94	18 x 2.97	1 x 2.97	14.90	397.9	0.23040	29.17	S025600190IMX
125	16	125	20.40	26 x 2.47	7 x 1.92	15.70	503.9	0.23100	45.69	S025610330IMX
160	6	160	8.89	18 x 3.36	1 x 3.36	16.80	509.3	0.18000	36.18	S026600190IMX
160	16	160	26.10	26 x 2.80	7 x 2.18	17.70	644.9	0.18050	57.69	S026610330IMX
200	6	200	11.10	18 x 3.76	1 x 3.76	18.80	636.7	0.14400	44.22	S027500190IMX
200	16	200	32.60	26 x 3.13	7 x 2.43	19.80	806.2	0.14440	70.13	S027510330IMX
250	10	250	24.60	22 x 3.80	7 x 2.11	21.60	880.6	0.11540	68.72	S028500290IMX
250	16	250	40.70	26 x 3.50	7 x 2.72	22.20	1007.7	0.11550	87.67	S028500330IMX
315	7	315	21.80	45 x 2.99	7 x 1.99	23.90	1039.6	0.09170	79.03	S029610520IMX
315	16	315	51.30	26 x 3.93	7 x 3.05	24.90	1269.7	0.09170	106.83	S029600330IMX
400	7	400	27.70	45 x 3.36	7 x 2.24	26.90	1320.1	0.07220	98.36	S02A900520IMX
400	13	400	51.90	54 x 3.07	7 x 3.07	27.60	1510.3	0.07230	123.04	S02A910610IMX
450	7	450	31.10	45 x 3.57	7 x 2.38	28.50	1485.2	0.06420	107.47	S02B200520IMX
450	13	450	58.30	54 x 3.26	7 x 3.26	29.30	1699.1	0.06430	138.42	S02B210610IMX
500	7	500	34.60	45 x 3.76	7 x 2.51	30.10	1650.2	0.05780	119.41	S02B800520IMX
500	13	500	64.80	54 x 3.43	7 x 3.43	30.90	1887.9	0.05780	153.50	S02B810610IMX

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Aluminum Conductors, Steel-Reinforced

Aluminum Conductors, Steel-Reinforced (ACSR) - A1 / S1A Conductors

IEC 61089 Standard

Code Number	Steel ratio	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Max. DC Resistance at 20 °C	Rated strength	AES Code
		Al	St	Al	St					
	%	mm ²		No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
560	7	560	38.70	45 x 3.98	7 x 2.65	31.80	1848.2	0.05160	133.74	S02C200520IMX
560	13	560	70.90	54 x 3.63	19 x 2.18	32.70	2103.4	0.05160	172.59	S02C210730IMX
630	7	630	43.60	45 x 4.22	7 x 2.81	33.80	2079.2	0.04590	150.45	S02C700520IMX
630	13	630	79.80	54 x 3.85	19 x 2.31	34.70	2366.3	0.04590	191.77	S02C710730IMX
710	7	710	49.10	45 x 4.48	7 x 2.99	35.90	2343.2	0.04070	169.56	S02D300520IMX
710	13	710	89.90	54 x 4.09	19 x 2.45	36.80	2666.8	0.04070	216.12	S02D310730IMX
800	4	800	34.60	72 x 3.76	7 x 2.51	37.60	2480.2	0.03610	167.41	S02D700790IMX
800	8	800	66.70	84 x 3.48	7 x 3.48	38.30	2732.7	0.03620	205.33	S02D710910IMX
800	13	800	101.0	54 x 4.34	19 x 2.61	39.10	3004.9	0.03620	243.52	S02D720730IMX
900	4	900	38.90	72 x 3.99	7 x 2.66	39.90	2790.2	0.03210	188.33	S02E200790IMX
900	8	900	75.00	84 x 3.69	7 x 3.69	40.60	3074.2	0.03220	226.50	S02E210910IMX
1000	4	1000	43.20	72 x 4.21	7 x 2.80	42.10	3100.3	0.02890	209.26	S02E500790IMX
1120	4	1120	47.30	72 x 4.45	19 x 1.78	44.50	3464.9	0.02580	234.53	S02E900910IMX
1120	8	1120	91.20	84 x 4.12	19 x 2.47	45.30	3811.5	0.02580	283.17	S02E911030IMX
1250	8	1250	102.0	84 x 4.35	19 x 2.61	47.90	4253.9	0.02320	316.04	S02F201030IMX
1250	4	1250	52.80	72 x 4.70	19 x 1.88	47.00	3867.1	0.02310	261.75	S02F210910IMX

Aluminum Conductors, Steel-Reinforced (ACSR)

DIN 48204 Standard

Nominal cross sectional area	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Ampacity (*)	Rated strength	AES Code
	Al	St	Al	St						
	mm ²		No. x Ø (mm)		mm	Kg / km	Ω / km	A	KN	
16 / 2.5	15.27	2.54	6 x 1.80	1 x 1.80	5.4	62	1.87930	105	5.81	S02F700070DMX
25 / 4	23.86	3.98	6 x 2.25	1 x 2.25	6.8	97	1.20280	140	9.02	S02F800070DMX
35 / 6	34.35	5.73	6 x 2.70	1 x 2.70	8.1	140	0.83530	170	12.70	S02F900070DMX
44 / 32	43.98	31.67	14 x 2.00	7 x 2.40	11.2	373	0.65730	195	45.46	S02G000210DMX
50 / 8	48.25	8.04	6 x 3.20	1 x 3.20	9.6	196	0.59460	210	17.18	S02G100070DMX
50 / 30	51.17	29.85	12 x 2.33	7 x 2.33	11.7	378	0.56440	213	44.28	S02G200190DMX
70 / 12	69.89	11.40	26 x 1.85	7 x 1.44	11.7	284	0.41300	290	26.31	S02G300330DMX
95 / 15	94.39	15.33	26 x 2.15	7 x 1.67	13.6	383	0.30580	350	35.17	S02G400330DMX
95 / 55	96.61	66.30	12 x 3.20	7 x 3.20	16.0	714	0.29920	367	80.20	S02G500190DMX
105 / 75	105.67	75.55	14 x 3.10	19 x 2.25	17.5	899	0.27360	394	106.69	S02G600330DMX
120 / 20	121.57	19.85	26 x 2.44	7 x 1.90	15.5	494	0.23740	410	44.94	S02G700330DMX
120 / 70	122.15	71.25	12 x 3.60	7 x 3.60	18.0	904	0.23640	724	98.16	S02G800190DMX
125 / 30	127.92	29.85	30 x 2.33	7 x 2.33	16.3	590	0.22590	425	57.86	S02G900370DMX
150 / 25	148.86	24.25	26 x 2.70	7 x 2.10	17.1	604	0.19390	470	54.37	S02H000330DMX
170 / 40	171.77	40.08	30 x 2.70	7 x 2.70	18.9	794	0.16820	520	77.01	S02H100370DMX
185 / 30	183.78	29.85	26 x 3.00	7 x 2.33	19.0	744	0.15710	535	66.28	S02H200330DMX

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Aluminum Conductors, Steel-Reinforced (ACSR)

DIN 48204 Standard

Nominal cross sectional area	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Ampacity (*)	Rated strength	AES Code
	Al	St	Al	St						
	mm ²		No. x Ø (mm)		mm	Kg / km	Ω / km	A	KN	
210 / 35	209.10	34.09	26 x 3.20	7 x 2.49	20.3	848	0.13800	590	74.94	S02H300330DMX
210 / 50	212.06	49.48	30 x 3.00	7 x 3.00	21.0	979	0.13630	610	92.25	S02H400370DMX
230 / 30	230.91	28.85	24 x 3.50	7 x 2.33	21.0	874	0.12490	630	73.09	S02H500310DMX
240 / 40	243.05	39.49	26 x 3.45	7 x 2.68	21.8	985	0.11880	645	86.46	S02H600330DMX
265 / 35	263.66	34.09	24 x 3.74	7 x 2.49	22.4	998	0.10940	680	82.94	S02H700310DMX
300 / 50	304.26	49.48	26 x 3.85	7 x 3.00	24.5	1233	0.09490	740	105.09	S02H800330DMX
305 / 40	304.62	39.49	54 x 2.68	7 x 2.68	24.1	1155	0.09490	740	99.30	S02H900610DMX
340 / 30	339.29	29.85	48 x 3.00	7 x 2.33	25.0	1174	0.08510	790	92.56	S02I000550DMX
380 / 50	381.70	49.48	54 x 3.00	7 x 3.00	27.0	1448	0.07570	840	120.91	S02I100610DMX
385 / 35	386.04	34.09	48 x 3.20	7 x 2.49	26.7	1336	0.07480	850	104.31	S02I200550DMX
435 / 55	434.29	56.30	54 x 3.20	7 x 3.20	28.8	1647	0.06660	900	136.27	S02I300550DMX
450 / 40	448.71	39.49	48 x 3.45	7 x 2.68	28.7	1553	0.06440	920	120.19	S02I400550DMX
490 / 65	490.29	63.55	54 x 3.40	7 x 3.40	30.6	1860	0.05900	960	152.85	S02I500610DMX
495 / 35	494.36	34.09	45 x 3.74	7 x 2.49	29.9	1636	0.05840	985	120.31	S02I600520DMX
510 / 45	510.54	45.28	48 x 3.68	7 x 2.87	30.7	1770	0.05660	995	134.33	S02I700550DMX
550 / 70	549.65	71.25	54 x 3.60	7 x 3.60	32.4	2085	0.05260	1020	167.42	S02I800610DMX
560 / 50	561.7	49.48	48 x 3.86	7 x 3.00	32.2	1943	0.05140	1040	146.28	S02I900550DMX
570 / 40	571.16	39.49	45 x 4.02	7 x 2.68	32.2	1889	0.05060	1050	137.98	S02J000520DMX
650 / 45	653.49	45.28	45 x 4.30	7 x 2.87	34.4	2163	0.04420	1120	155.52	S02J100520DMX
680 / 85	678.58	85.95	54 x 4.00	19 x 2.40	36.0	2564	0.04260	1150	209.99	S02J200730DMX

* Standard values applicable up to 60 Hz at wind velocity of 0.6 m/s and solar effects for an original ambient temperature of 35 °C and a final conductor temperature of 80 °C. Reduce the values by an average of approximately 30% in case of special locations at still air.

Aluminum Conductors, Steel-Reinforced (ACSR)

ASTM B 232 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	MCM	mm ²	Al	St					
			No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
Turkey	26.24	13.30	6 x 1.68	1 x 1.68	5.04	53.6	2.15703	5.28	S020500070AMX
Swan	41.74	21.15	6 x 2.12	1 x 2.12	6.36	85.3	1.35457	8.30	S021000070AMX
Swanate	41.74	21.15	7 x 1.96	1 x 2.61	6.53	99.6	1.35836	10.53	S021010080AMX
Sparrow	66.36	33.62	6 x 2.67	1 x 2.67	8.01	135.7	0.85399	12.69	S021900070AMX
Sparate	66.36	33.62	7 x 2.47	1 x 3.30	8.24	158.7	0.85533	16.14	S021910080AMX
Grouse	80.00	40.54	8 x 2.54	1 x 4.24	9.32	221.4	0.71122	22.86	S022400090AMX
Robin	83.69	42.41	6 x 3.00	1 x 3.00	9.00	171.1	0.67644	15.81	S022500090AMX
Petrel	101.80	51.58	12 x 2.34	7 x 2.34	11.70	377.7	0.56140	46.16	S022800190AMX
Raven	105.60	53.51	6 x 3.37	1 x 3.37	10.11	216.1	0.53606	19.35	S022900070AMX
Minorca	110.80	56.14	12 x 2.44	7 x 2.44	12.20	411.1	0.51632	50.19	S023000190AMX
Quail	133.10	67.44	6 x 3.78	1 x 3.78	11.34	272.0	0.42608	23.27	S023500070AMX

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Aluminum Conductors, Steel-Reinforced

Aluminum Conductors, Steel-Reinforced (ACSR)

ASTM B 232 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
			Al	St					
	MCM	mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
Leghorn	134.60	68.20	12 x 2.69	7 x 2.69	13.45	499.2	0.42481	60.67	S023600190AMX
Guinea	159.00	80.57	12 x 2.92	7 x 2.92	14.60	549.5	0.36053	71.10	S024100190AMX
Pigeon	167.80	85.02	6 x 4.25	1 x 4.25	12.75	343.0	0.33705	29.42	S024400070AMX
Dotterel	176.90	89.64	12 x 3.08	7 x 3.08	15.40	656.1	0.32404	76.68	S024500190AMX
Dorking	190.80	96.68	12 x 3.20	7 x 3.20	16.00	707.8	0.30019	82.77	S024700190AMX
Brahma	203.20	102.96	16 x 2.86	19 x 2.48	18.12	1003.8	0.28186	126.52	S025000350AMX
Cochin	211.30	107.07	12 x 3.37	7 x 3.37	16.85	783.9	0.27067	91.79	S025200190AMX
Penguin	211.60	107.22	6 x 4.77	1 x 4.77	14.31	432.7	0.26757	37.06	S025200070AMX
Waxwing	266.80	135.19	18 x 3.09	1 x 3.09	15.45	430.2	0.21358	30.27	S026000190AMX
Partridge	266.80	135.19	26 x 2.57	7 x 2.00	16.28	545.9	0.21480	50.23	S026010330AMX
Ostrich	300.0	152.01	26 x 2.73	7 x 2.12	17.28	613.4	0.19036	56.55	S026400330AMX
Merlin	336.4	170.45	18 x 3.47	1 x 3.47	17.35	542.8	0.16937	38.17	S026700190AMX
Linnet	336.4	170.45	26 x 2.89	7 x 2.25	18.31	687.5	0.16987	62.76	S026710330AMX
Oriole	336.4	170.45	30 x 2.69	7 x 2.69	18.83	783.3	0.17034	77.43	S026720370AMX
Chickadee	397.5	201.41	18 x 3.77	1 x 3.77	18.85	641.3	0.14348	43.37	S027600190AMX
Brant	397.5	201.41	24 x 3.27	7 x 2.18	19.62	761.0	0.14374	64.72	S027610310AMX
Ibbs	397.5	201.41	26 x 3.14	7 x 2.44	19.88	812.4	0.14390	72.05	S027620330AMX
Lark	397.5	201.41	30 x 2.92	7 x 2.92	20.44	925.2	0.14456	90.30	S027630370AMX
Pelican	477.0	241.70	18 x 4.14	1 x 4.14	20.70	769.7	0.11898	52.30	S028400190AMX
Flicker	477.0	241.70	24 x 3.58	7 x 2.39	21.49	913.5	0.11992	76.78	S028410310AMX
Hawk	477.0	241.70	26 x 3.44	7 x 2.67	21.77	975.1	0.11989	86.36	S028420330AMX
Hen	477.0	241.70	30 x 3.20	7 x 3.20	22.40	1110.6	0.12037	105.16	S028430370AMX
Osprey	556.5	281.98	18 x 4.47	1 x 4.47	22.35	897.7	0.10206	60.97	S028900190AMX
Parakeet	556.5	281.98	24 x 3.87	7 x 2.58	23.22	1065.6	0.10262	88.29	S028910310AMX
Dove	556.5	281.98	26 x 3.72	7 x 2.89	23.55	1138.6	0.10252	101.10	S028920330AMX
Eagle	556.5	281.98	30 x 3.46	7 x 3.46	24.22	1295.6	0.10296	122.94	S028930370AMX
Peacock	605.0	306.55	24 x 4.03	7 x 2.69	24.19	1158.9	0.09464	95.86	S029500310AMX
Squab	605.0	306.55	26 x 3.87	7 x 3.01	24.51	1237.0	0.09473	108.14	S029510330AMX
Wood Duck	605.0	306.55	30 x 3.61	7 x 3.61	25.27	1408.4	0.09458	129.02	S029520370AMX
Teal	605.0	306.55	30 x 3.61	19 x 2.16	25.24	1396.6	0.09458	133.37	S029530490AMX
Kingbird	636.0	322.26	18 x 4.78	1 x 4.78	23.90	1026.6	0.08925	69.72	S029700190AMX
Swift	636.0	322.26	36 x 3.38	1 x 3.38	23.66	956.5	0.08925	60.65	S029710370AMX
Rook	636.0	322.26	24 x 4.14	7 x 2.76	24.84	1217.5	0.08967	101.04	S029720310AMX
Grosbeak	636.0	322.26	26 x 3.97	7 x 3.09	25.15	1300.8	0.09002	111.87	S029730330AMX
Scoter	636.0	322.26	30 x 3.70	7 x 3.70	25.90	1480.7	0.09004	135.53	S029740370AMX
Egret	636.0	322.26	30 x 3.70	19 x 2.22	25.90	1469.0	0.09004	140.60	S029750490AMX
Flamingo	666.6	337.77	24 x 4.23	7 x 2.82	25.38	1276.6	0.08590	105.48	S02A100310AMX
Gannet	666.6	337.77	26 x 4.07	7 x 3.16	25.76	1363.3	0.08565	117.26	S02A110330AMX
Stilt	715.5	362.54	24 x 4.39	7 x 2.92	26.32	1370.4	0.07975	113.35	S02A500310AMX

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Aluminum Conductors, Steel-Reinforced (ACSR)

ASTM B 232 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	MCM	mm ²	Al	St					
			No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
Starling	715.5	362.54	26 x 4.21	7 x 3.28	26.68	1463.7	0.08005	125.95	S02A510330AMX
Redwing	715.5	362.54	30 x 3.92	19 x 2.35	27.43	1650.6	0.08021	153.66	S02A520490AMX
Coot	795.0	402.83	36 x 3.77	1 x 3.77	26.39	1195.8	0.07174	72.88	S02B000370AMX
Cuckoo	795.0	402.83	24 x 4.62	7 x 3.08	27.74	1522.2	0.07201	123.82	S02B010310AMX
Drake	795.0	402.83	26 x 4.44	7 x 3.45	28.11	1626.4	0.07197	139.67	S02B020330AMX
Tern	795.0	402.83	45 x 3.38	7 x 2.25	27.03	1331.8	0.07175	97.47	S02B030520AMX
Condor	795.0	402.83	54 x 3.08	7 x 3.08	27.72	1520.7	0.07201	124.33	S02B040610AMX
Mallard	795.0	402.83	30 x 4.14	19 x 2.48	28.96	1836.0	0.07191	171.22	S02B050490AMX
Ruddy	900.0	456.03	45 x 3.59	7 x 2.40	28.73	1507.3	0.06360	109.38	S02B300520AMX
Canary	900.0	456.03	54 x 3.28	7 x 3.28	29.52	1723.1	0.06350	141.00	S02B310610AMX
Catbird	954.0	483.39	36 x 4.14	1 x 4.14	28.98	1434.4	0.05949	87.88	S02B600370AMX
Rail	954.0	483.39	45 x 3.70	7 x 2.47	29.61	1598.1	0.05988	116.07	S02B610520AMX
Cardinal	954.0	483.39	54 x 3.38	7 x 3.38	30.42	1825.9	0.05979	149.72	S02B620610AMX
Tanager	1033.5	523.67	36 x 4.30	1 x 4.30	30.12	1553.5	0.05515	94.81	S02C100370AMX
Ortolan	1033.5	523.67	45 x 3.85	7 x 2.57	30.81	1730.5	0.05530	123.28	S02C110520AMX
Curlew	1033.5	523.67	54 x 3.51	7 x 3.51	31.62	1977.6	0.05545	161.46	S02C120610AMX
Bluejay	1113.0	563.96	45 x 4.00	7 x 2.66	31.98	1866.0	0.05123	132.71	S02C300520AMX
Finch	1113.0	563.96	54 x 3.65	19 x 2.19	32.85	2127.8	0.05152	174.60	S02C310730AMX
Bunting	1192.5	604.24	45 x 4.14	7 x 2.76	33.12	1996.9	0.04783	142.42	S02C500520AMX
Grackle	1192.5	604.24	54 x 3.77	19 x 2.27	33.97	2278.1	0.04830	184.19	S02C510730AMX
Skylark	1272.0	644.52	36 x 4.78	1 x 4.78	33.46	1913.6	0.04463	117.16	S02C900370AMX
Bittern	1272.0	644.52	45 x 4.27	7 x 2.85	34.16	2130.8	0.04496	151.63	S02C910520AMX
Pheasant	1272.0	644.52	54 x 3.90	19 x 2.34	35.10	2431.4	0.04513	194.13	S02C920730AMX
Dipper	1351.5	684.81	45 x 4.40	7 x 2.93	35.19	2263.2	0.04234	160.74	S02D100520AMX
Martin	1351.5	684.81	54 x 4.02	19 x 2.41	36.17	2581.7	0.04248	206.08	S02D110730AMX
Bobolink	1431.0	725.09	45 x 4.53	7 x 3.02	36.24	2397.2	0.03995	170.51	S02D400520AMX
Plover	1431.0	725.09	54 x 4.14	19 x 2.48	37.24	2734.9	0.04005	218.40	S02D410730AMX
Nuthatch	1510.5	765.37	45 x 4.65	7 x 3.10	37.20	2529.6	0.03791	177.64	S02D600520AMX
Parrot	1510.5	765.37	54 x 4.25	19 x 2.55	38.25	2883.7	0.03800	230.53	S02D610730AMX
Lapwing	1590.0	805.65	45 x 4.78	7 x 3.18	38.20	2663.5	0.03588	187.43	S02D800520AMX
Falcon	1590.0	805.65	54 x 4.36	19 x 2.62	39.26	3038.5	0.03611	242.99	S02D810730AMX
Chukar	1780.0	901.93	84 x 3.70	19 x 2.22	40.70	3083.1	0.03223	227.79	S02E301030AMX
Bluebird	2156.0	1092.45	84 x 4.07	19 x 2.44	44.76	3731.9	0.02664	268.05	S02E701030AMX
Kiwi	2167.0	1098.02	72 x 4.41	7 x 2.94	44.10	3423.9	0.02647	221.71	S02E800790AMX
Thrasher	2312.0	1171.49	76 x 4.43	19 x 2.07	45.79	3754.2	0.02485	251.86	S02F100950AMX

Aluminum Conductors, Aluminum-Clad Steel Reinforced

CONSTRUCTION

Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR/AW) is a concentric-lay-stranded conductor consisting of aluminum-clad steel central core (Alumoweld) with one or more layers of hard drawn stranded aluminum wires. Alumoweld is a highly resistant steel rod, covered with a thick coating of pure aluminum, which is cold-drawn in order to obtain wires of the required diameters.

The design and dimensions of ACSR/AW conductors are identical to those of ordinary ACSR conductors, except the steel core in ACSR conductor, which is aluminum-clad steel core in ACSR/AW.

APPLICATION

Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR/AW) can be used in Medium, High and Extra-High voltage transmission lines; also used for earth wires. In comparison with ACSR conductors, ACSR/AW conductors have considerable technical and economical advantages in overhead lines. Its lower weight combined with its higher current carrying capacity and corrosion protection provide a longer life cycle, reduction in energy losses and significant cost saving during the operation of the line.

APPLICABLE STANDARD

Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR/AW) is designed and tested to meet:

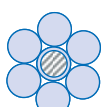
- ASTM B 549

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.

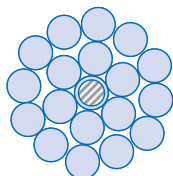


TECHNICAL DATA

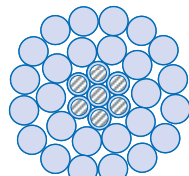
Composition (AL / AW)	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
6 / 1	74 500	19.3
6 / 7	71 600	20.0
26 / 7	71 600	19.1
30 / 7	74 500	18.0
30 / 19	72 500	18.2
54 / 7	65 700	19.5
54 / 19	63 700	19.6



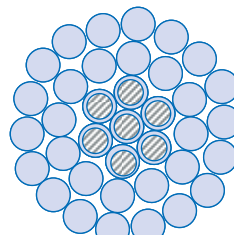
6/1 Wires



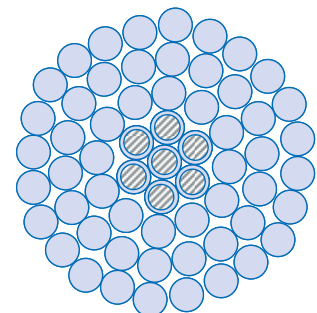
18/1 Wires



26/7 Wires



30/7 Wires



54/7 Wires

Aluminum Conductor, Aluminum-Clad Steel Reinforced (ACSR / AW)

ASTM B 549 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter mm	Approx. overall weight Kg / km	Calculated DC Resistance at 20 °C Ω / km	Rated strength KN	AES Code
	MCM	mm ²	Aluminum	AW					
			No. x Ø (mm)						
Swan / AW	41.74	21.15	6 x 2.12	1 x 2.12	6.36	81.0	1.28227	8.0	W021000070AMX
Swanate / AW	41.74	21.15	7 x 1.96	1 x 2.61	6.53	93.0	1.25114	10.0	W021010080AMX
Sparrow / AW	66.36	33.62	6 x 2.67	1 x 2.67	8.01	129.0	0.80840	12.0	W021900070AMX
Sparate / AW	66.36	33.62	7 x 2.47	1 x 3.30	8.24	149.0	0.78740	16.0	W021910080AMX
Grouse / AW	80.00	40.54	8 x 2.54	1 x 4.24	9.32	205.0	0.63591	22.0	W022400090AMX
Robin / AW	83.69	42.41	6 x 3.00	1 x 3.00	9.00	162.0	0.64034	15.0	W022500090AMX
Petrel / AW	101.80	51.58	12 x 2.34	7 x 2.34	11.70	342.0	0.46842	44.0	W022800190AMX
Raven / AW	105.60	53.51	6 x 3.37	1 x 3.37	10.11	205.0	0.50745	19.0	W022900070AMX
Minorca / AW	110.80	56.14	12 x 2.44	7 x 2.44	12.20	372.0	0.43081	48.0	W023000190AMX
Quail / AW	133.10	67.44	6 x 3.78	1 x 3.78	11.34	259.0	0.40334	23.0	W023500070AMX
Leghorn / AW	134.60	68.20	12 x 2.69	7 x 2.69	13.45	452.0	0.35445	58.0	W023600190AMX
Guinea / AW	159.00	80.57	12 x 2.92	7 x 2.92	14.60	534.0	0.30081	68.0	W024100190AMX
Pigeon / AW	167.80	85.02	6 x 4.25	1 x 4.25	12.75	326.0	0.31906	28.0	W024400070AMX
Dotterel / AW	176.90	89.64	12 x 3.08	7 x 3.08	15.40	594.0	0.27037	75.0	W024500190AMX
Dorking / AW	190.80	96.68	12 x 3.20	7 x 3.20	16.00	641.0	0.25047	81.0	W024700190AMX
Brahma / AW	203.20	102.96	16 x 2.86	19 x 2.48	18.12	894.0	0.21628	121.0	W025000350AMX
Cochin / AW	211.30	107.07	12 x 3.37	7 x 3.37	16.85	710.0	0.22584	88.0	W025200190AMX
Penguin / AW	211.60	107.22	6 x 4.77	1 x 4.77	14.31	412.0	0.25329	34.0	W025200070AMX
Waxwing / AW	266.80	135.19	18 x 3.09	1 x 3.09	15.45	421.0	0.20963	30.0	W026000190AMX
Partridge / AW	266.80	135.19	26 x 2.57	7 x 2.00	16.28	519.0	0.20351	48.0	W026010330AMX
Ostrich / AW	300.00	152.01	26 x 2.73	7 x 2.12	17.28	583.0	0.18040	54.0	W026400330AMX
Merlin / AW	336.40	170.45	18 x 3.47	1 x 3.47	17.35	531.0	0.16623	38.0	W026700190AMX
Linnet / AW	336.40	170.45	26 x 2.89	7 x 2.25	18.31	655.0	0.16093	60.0	W026710330AMX
Oriole / AW	336.40	170.45	30 x 2.69	7 x 2.69	18.83	737.0	0.15778	74.0	W026720370AMX
Chickadee / AW	397.50	201.41	18 x 3.77	1 x 3.77	18.85	628.0	0.14082	44.0	W027600190AMX
Brant / AW	397.50	201.41	24 x 3.27	7 x 2.18	19.62	731.0	0.13767	63.0	W027610310AMX
Ibbs / AW	397.50	201.41	26 x 3.14	7 x 2.44	19.88	774.0	0.13635	70.0	W027620330AMX
Lark / AW	397.50	201.41	30 x 2.92	7 x 2.92	20.44	869.0	0.13390	87.0	W027630370AMX
Pelican / AW	477.00	241.70	18 x 4.14	1 x 4.14	20.70	755.0	0.11678	51.0	W028400190AMX
Flicker / AW	477.00	241.70	24 x 3.58	7 x 2.39	21.49	877.0	0.11484	74.0	W028410310AMX
Hawk / AW	477.00	241.70	26 x 3.44	7 x 2.68	21.80	929.0	0.11358	84.0	W028420330AMX
Hen / AW	477.00	241.70	30 x 3.20	7 x 3.20	22.40	1043.0	0.11150	104.0	W028430370AMX
Osprey / AW	556.50	281.98	18 x 4.47	1 x 4.47	22.35	880.0	0.10017	59.0	W028900190AMX
Parakeet / AW	556.50	281.98	24 x 3.87	7 x 2.58	23.22	1022.0	0.09829	86.0	W028910310AMX

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Aluminum Conductors, Aluminum-Clad Steel Reinforced

Aluminum Conductor, Aluminum-Clad Steel Reinforced (ACSR /AW)

ASTM B 549 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	MCM	mm ²	Aluminum	AW					
			No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
Dove / AW	556.50	281.98	26 x 3.72	7 x 2.89	23.55	1083.0	0.09715	97.0	W028920330AMX
Eagle / AW	556.50	281.98	30 x 3.46	7 x 3.46	24.22	1217.0	0.09537	119.0	W028930370AMX
Peacock / AW	605.00	306.55	24 x 4.03	7 x 2.69	24.19	1112.0	0.09063	93.0	W029500310AMX
Squab / AW	605.00	306.55	26 x 3.87	7 x 3.01	24.51	1177.0	0.08976	105.0	W029510330AMX
Wood Duck/AW	605.00	306.55	30 x 3.61	7 x 3.61	25.27	1323.0	0.08761	126.0	W029520370AMX
Teal / AW	605.00	306.55	30 x 3.61	19 x 2.16	25.24	1314.0	0.08780	127.0	W029530490AMX
Kingbird / AW	636.00	322.26	18 x 4.78	1 x 4.78	23.90	1006.0	0.08760	67.0	W029700190AMX
Swift / AW	636.00	322.26	36 x 3.38	1 x 3.38	23.66	946.0	0.08842	61.0	W029710370AMX
Rook / AW	636.00	322.26	24 x 4.14	7 x 2.76	24.84	1168.0	0.08589	98.0	W029720310AMX
Grosbeak / AW	636.00	322.26	26 x 3.97	7 x 3.09	25.15	1238.0	0.08528	110.0	W029730330AMX
Scoter / AW	636.00	322.26	30 x 3.70	7 x 3.70	25.90	1391.0	0.08340	130.0	W029740370AMX
Egret / AW	636.00	322.26	30 x 3.70	19 x 2.22	25.90	1381.0	0.08355	133.0	W029750490AMX
Flamingo / AW	666.60	337.77	24 x 4.23	7 x 2.82	25.38	1225.0	0.08227	103.0	W02A100310AMX
Gannet / AW	666.60	337.77	26 x 4.07	7 x 3.16	25.76	1298.0	0.08117	116.0	W02A110330AMX
Stilt / AW	715.50	362.54	24 x 4.39	7 x 2.92	26.32	1314.0	0.07640	110.0	W02A500310AMX
Starling / AW	715.50	362.54	26 x 4.21	7 x 3.28	26.68	1393.0	0.07583	122.0	W02A510330AMX
Redwing / AW	715.50	362.54	30 x 3.92	19 x 2.35	27.43	1552.0	0.07444	149.0	W02A520490AMX
Coot / AW	795.00	402.83	36 x 3.77	1 x 3.77	26.39	1183.0	0.07107	74.0	W02B000370AMX
Cuckoo / AW	795.00	402.83	24 x 4.62	7 x 3.08	27.74	1460.0	0.06897	122.0	W02B010310AMX
Drake / AW	795.00	402.83	26 x 4.44	7 x 3.45	28.11	1549.0	0.06820	136.0	W02B020330AMX
Tern / AW	795.00	402.83	45 x 3.38	7 x 2.25	27.03	1298.0	0.07011	96.0	W02B030520AMX
Condor / AW	795.00	402.83	54 x 3.08	7 x 3.08	27.72	1458.0	0.06897	124.0	W02B040610AMX
Mallard / AW	795.00	402.83	30 x 4.14	19 x 2.48	28.96	1726.0	0.06675	165.0	W02B050490AMX
Ruddy / AW	900.00	456.03	45 x 3.59	7 x 2.40	28.73	1470.0	0.06213	107.0	W02B300520AMX
Canary / AW	900.00	456.03	54 x 3.28	7 x 3.28	29.52	1653.0	0.06081	138.0	W02B310610AMX
Catbird / AW	954.00	483.39	36 x 4.14	1 x 4.14	28.98	1420.0	0.05894	87.0	W02B600370AMX
Rail / AW	954.00	483.39	45 x 3.70	7 x 2.47	29.61	1558.0	0.05850	113.0	W02B610520AMX
Cardinal / AW	954.00	483.39	54 x 3.38	7 x 3.38	30.42	1752.0	0.05727	146.0	W02B620610AMX
Tanager / AW	1033.50	523.67	36 x 4.30	1 x 4.30	30.12	1537.0	0.05463	94.0	W02C100370AMX
Ortolan / AW	1033.50	523.67	45 x 3.85	7 x 2.57	30.81	1688.0	0.05403	121.0	W02C110520AMX
Curlew / AW	1033.50	523.67	54 x 3.51	7 x 3.51	31.62	1896.0	0.05310	158.0	W02C120610AMX
Bluejay / AW	1113.00	563.96	45 x 4.00	7 x 2.66	31.98	1819.0	0.05006	130.0	W02C300520AMX
Finch / AW	1113.00	563.96	54 x 3.65	19 x 2.19	32.85	2043.0	0.04939	167.0	W02C310730AMX
Bunting / AW	1192.50	604.24	45 x 4.14	7 x 2.76	33.12	1948.0	0.04673	139.0	W02C500520AMX

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Aluminum Conductor, Aluminum-Clad Steel Reinforced (ACSR /AW)

ASTM B 549 Standard

Code Word	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
			Aluminum	AW					
	MCM	mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
Grackle / AW	1192.50	604.24	54 x 3.77	19 x 2.27	33.97	2188.0	0.04628	179.0	W02C510730AMX
Skylark / AW	1272.00	644.52	36 x 4.78	1 x 4.78	33.46	1893.0	0.04421	114.0	W02C900370AMX
Bittern / AW	1272.00	644.52	45 x 4.27	7 x 2.85	34.16	2078.0	0.04392	149.0	W02C910520AMX
Pheasant / AW	1272.00	644.52	54 x 3.90	19 x 2.34	35.10	2333.0	0.04326	189.0	W02C920730AMX
Dipper / AW	1351.50	684.81	45 x 4.40	7 x 2.93	35.19	2207.0	0.04137	158.0	W02D100520AMX
Martin / AW	1351.50	684.81	54 x 4.02	19 x 2.41	36.17	2478.0	0.04072	201.0	W02D110730AMX
Bobolink / AW	1431.00	725.09	45 x 4.53	7 x 3.02	36.24	2336.0	0.03903	167.0	W02D400520AMX
Plover / AW	1431.00	725.09	54 x 4.14	19 x 2.48	37.24	2625.0	0.03840	212.0	W02D410730AMX
Nuthatch / AW	1510.50	765.37	45 x 4.65	7 x 3.10	37.20	2467.0	0.03704	177.0	W02D600520AMX
Parrot / AW	1510.50	765.37	54 x 4.25	19 x 2.55	38.25	2768.0	0.03643	224.0	W02D610730AMX
Lapwing / AW	1590.00	805.65	45 x 4.78	7 x 3.18	38.20	2598.0	0.03506	186.0	W02D800520AMX
Falcon / AW	1590.00	805.65	54 x 4.36	19 x 2.62	39.26	2917.0	0.03461	236.0	W02D810730AMX
Chukar / AW	1780.00	901.93	84 x 3.70	19 x 2.22	40.70	2996.0	0.03136	220.0	W02E301030AMX
Bluebird / AW	2156.00	1092.45	84 x 4.07	19 x 2.44	44.76	3627.0	0.02592	262.0	W02E701030AMX
Kiwi / AW	2167.00	1098.02	72 x 4.41	7 x 2.94	44.10	3366.0	0.02609	218.0	W02E800790AMX
Thrasher / AW	2312.00	1171.49	76 x 4.43	19 x 2.07	45.79	3679.0	0.02440	246.0	W02F100950AMX

Aluminum Conductors, Aluminum-Alloy Reinforced

CONSTRUCTION

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR) is a concentric-lay-stranded conductor consisting of stranded aluminum alloy central core with one or more layers of hard drawn stranded aluminum wires. The diameters of all wires are the same. Aluminum and aluminum-alloy wires can be mixed in the same layer.

APPLICATION

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR) can be used as bare overhead transmission conductor or primary or secondary distribution conductor. When higher capacity and strength for equal weight are prime line considerations, ACAR is the solution over ACSR due to its better strength-to-weight ratio.

APPLICABLE STANDARD

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR) can be supplied to meet various International Standards as follows :

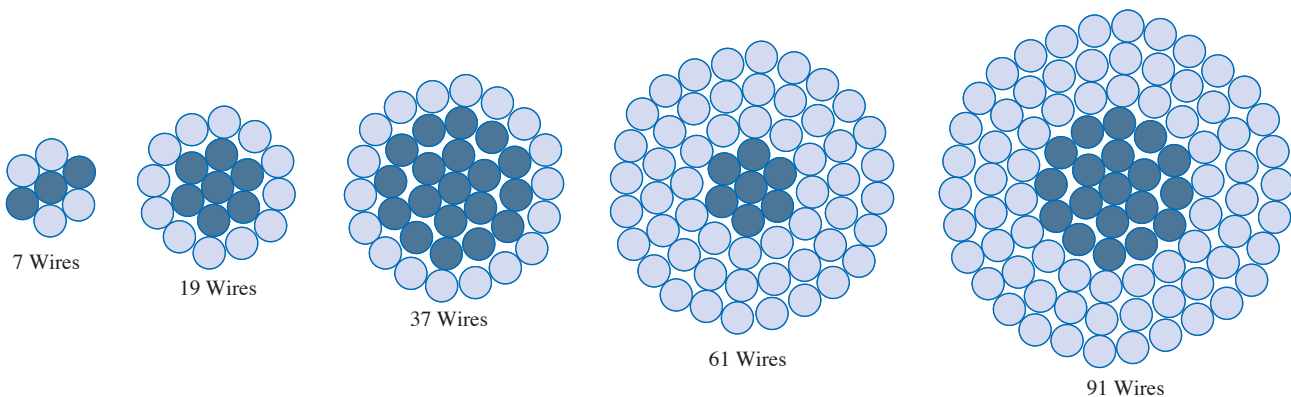
- IEC 61089
- ASTM B 524

However, **alfanar** can also supply a range of alternative designs to meet customer- specified requirements.



TECHNICAL DATA

Composition (AL + ALLOY)	Final Modulus of Elasticity MPa	Coeff. of Linear Expansion Per °C x 10 ⁻⁶
7	63 300	23.0
19	61 200	23.0
37	58 900	23.0
61	58 300	23.0
91	58 300	23.0



Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR) - A1 / A2 Conductors

IEC 61089 Standard

Code Number	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Max DC Resistance at 20 °C	Rated strength	AES Code
	Al	Alloy	Al	Alloy					
	mm ²		No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
16	9.73	7.30	4 x 1.76	3 x 1.76	5.28	46.6	1.78960	3.85	QB20700070IMX
25	15.20	11.40	4 x 2.20	3 x 2.20	6.60	72.8	1.14530	5.93	QB21400070IMX
40	24.30	18.30	4 x 2.78	3 x 2.78	8.35	116.5	0.71580	9.25	QB22300070IMX
63	38.30	28.70	4 x 3.49	3 x 3.49	10.50	183.5	0.45450	14.38	QB23400070IMX
100	60.80	45.60	4 x 4.40	3 x 4.40	13.20	291.2	0.28630	22.52	QB24900070IMX
125	83.30	48.60	12 x 2.97	7 x 2.97	14.90	362.7	0.23020	27.79	QB25600190IMX
160	107.00	62.20	12 x 3.36	7 x 3.36	16.80	464.2	0.17980	35.04	QB26600190IMX
200	133.00	77.80	12 x 3.76	7 x 3.76	18.80	580.3	0.14390	43.13	QB27500190IMX
250	167.00	97.20	12 x 4.21	7 x 4.21	21.00	725.3	0.11510	53.92	QB28500190IMX
250	131.00	138.00	18 x 3.04	19 x 3.04	21.30	742.2	0.11540	60.39	QB28510190IMX
315	263.00	61.30	30 x 3.34	7 x 3.34	23.40	892.6	0.09160	60.52	QB29600370IMX
315	165.00	174.00	18 x 3.42	19 x 3.42	23.90	935.1	0.09160	76.09	QB29610370IMX
400	334.00	77.80	30 x 3.76	7 x 3.76	26.30	1133.5	0.07210	75.19	QB2A900370IMX
400	210.00	221.00	18 x 3.85	19 x 3.85	27.00	1187.5	0.07210	95.58	QB2A910370IMX
450	375.00	87.60	30 x 3.99	7 x 3.99	27.90	1275.2	0.06410	84.59	QB2B200370IMX
450	236.00	249.00	18 x 4.08	19 x 4.08	28.60	1335.9	0.06410	107.52	QB2B210370IMX
500	417.00	97.30	30 x 4.21	7 x 4.21	29.40	1416.9	0.05770	93.98	QB2B800370IMX
500	262.00	277.00	18 x 4.31	19 x 4.31	30.10	1484.3	0.05770	119.47	QB2B810370IMX
560	467.00	109.00	30 x 4.45	7 x 4.45	31.20	1586.9	0.05150	105.26	QB2C200370IMX
560	504.00	65.40	54 x 3.45	7 x 3.45	31.00	1571.9	0.05160	101.54	QB2C210610IMX
630	454.00	205.00	42 x 3.71	19 x 3.71	33.40	1820.0	0.04580	130.25	QB2C700610IMX
630	271.00	417.00	24 x 3.79	37 x 3.79	34.10	1897.5	0.04580	160.19	QB2C710610IMX
710	512.00	232.00	42 x 3.94	19 x 3.94	35.50	2051.2	0.04070	146.78	QB2D300610IMX
710	305.00	470.00	24 x 4.02	37 x 4.02	36.20	2138.4	0.04070	180.53	QB2D310610IMX
800	577.00	261.00	42 x 4.18	19 x 4.18	37.60	2311.2	0.03610	165.39	QB2D700610IMX
800	344.00	530.00	24 x 4.27	37 x 4.27	38.40	2409.5	0.03610	203.41	QB2D710610IMX
900	649.00	294.00	42 x 4.43	19 x 4.43	39.90	2600.1	0.03210	186.06	QB2E200610IMX
900	567.00	388.00	54 x 3.66	37 x 3.66	40.20	2638.4	0.03210	199.54	QB2E210910IMX
1000	816.00	215.00	72 x 3.80	19 x 3.80	41.80	2849.1	0.02890	190.94	QB2E500910IMX
1000	630.00	432.00	54 x 3.85	37 x 3.85	42.40	2931.6	0.02890	221.71	QB2E510910IMX
1120	914.00	241.00	72 x 4.02	19 x 4.02	44.20	3191.0	0.02580	213.85	QB2E900910IMX
1120	705.00	483.00	54 x 4.08	37 x 4.08	44.90	3283.4	0.02580	248.32	QB2E910910IMX
1250	1020.00	269.00	72 x 4.25	19 x 4.25	46.70	3561.4	0.02310	238.68	QB2F200910IMX
1250	787.00	539.00	54 x 4.31	37 x 4.31	47.40	3664.5	0.02310	277.14	QB2F210910IMX
1400	1143.00	302.00	72 x 4.50	19 x 4.50	49.40	3988.8	0.02070	267.32	QB2F500910IMX

Aluminum Conductors, Aluminum-Alloy Reinforced

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR) - A1 / A3 Conductors

IEC 61089 Standard

Code Number	Nominal cross sectional area		Conductor construction		Approx. overall diameter	Approx. overall weight	Max DC Resistance at 20 °C	Rated strength	AES Code
	Al	Alloy	Al	Alloy					
	mm ²		No. x Ø (mm)						
16	9.78	7.33	4 x 1.76	3 x 1.76	5.29	46.8	1.78960	4.07	QA20700070IMX
25	15.30	11.50	4 x 2.21	3 x 2.21	6.62	73.1	1.14530	6.29	QA21400070IMX
40	24.40	18.30	4 x 2.79	3 x 2.79	8.37	117.0	0.71580	9.82	QA22300070IMX
63	38.50	28.90	4 x 3.50	3 x 3.50	10.50	184.3	0.45450	14.80	QA23400070IMX
100	61.10	45.80	4 x 4.41	3 x 4.41	13.20	292.5	0.28630	23.49	QA24900070IMX
125	83.70	48.80	12 x 2.98	7 x 2.98	14.90	364.1	0.23020	29.29	QA25600190IMX
160	107.00	62.50	12 x 3.37	7 x 3.37	16.90	466.0	0.17980	36.95	QA26600190IMX
200	134.00	78.10	12 x 3.77	7 x 3.77	18.80	582.5	0.14390	44.78	QA27500190IMX
250	167.00	97.60	12 x 4.21	7 x 4.21	21.10	728.1	0.11510	55.98	QA28500190IMX
250	132.00	139.00	18 x 3.05	19 x 3.05	21.40	746.0	0.11540	64.67	QA28510190IMX
315	263.00	61.40	30 x 3.34	7 x 3.34	23.40	894.4	0.09160	62.40	QA29600370IMX
315	166.00	175.00	18 x 3.43	19 x 3.43	24.00	940.0	0.09160	81.48	QA29610370IMX
400	334.00	78.00	30 x 3.77	7 x 3.77	26.40	1135.8	0.07210	76.82	QA2A900370IMX
400	211.00	222.00	18 x 3.86	19 x 3.86	27.00	1193.7	0.07210	100.30	QA2A910370IMX
450	376.00	87.70	30 x 3.99	7 x 3.99	28.00	1277.8	0.06410	86.42	QA2B200370IMX
450	237.00	250.00	18 x 4.10	19 x 4.10	28.70	1342.9	0.06410	112.84	QA2B210370IMX
500	418.00	97.50	30 x 4.21	7 x 4.21	29.50	1419.8	0.05770	96.03	QA2B800370IMX
500	263.00	278.00	18 x 4.32	19 x 4.32	30.20	1492.1	0.05770	125.38	QA2B810370IMX
560	468.00	109.00	30 x 4.46	7 x 4.46	31.20	1590.1	0.05150	107.55	QA2C200370IMX
560	505.00	65.50	54 x 3.45	7 x 3.45	31.10	1573.9	0.05160	103.53	QA2C210610IMX
630	456.00	206.00	42 x 3.72	19 x 3.72	33.40	1826.0	0.04580	134.59	QA2C700610IMX
630	272.00	420.00	24 x 3.80	37 x 3.80	34.20	1909.0	0.04580	169.14	QA2C710610IMX
710	514.00	232.00	42 x 3.95	19 x 3.95	35.50	2057.8	0.04070	151.68	QA2D300610IMX
710	307.00	473.00	24 x 4.03	37 x 4.03	36.30	2151.4	0.04070	190.61	QA2D310610IMX
800	579.00	262.00	42 x 4.19	19 x 4.19	37.70	2318.7	0.03610	170.90	QA2D700610IMX
800	346.00	533.00	24 x 4.28	37 x 4.28	38.50	2424.2	0.03610	214.78	QA2D710610IMX
900	651.00	294.00	42 x 4.44	19 x 4.44	40.00	2608.5	0.03210	192.27	QA2E200610IMX
900	569.00	390.00	54 x 3.66	37 x 3.66	40.30	2649.5	0.03210	207.79	QA2E210910IMX
1000	818.00	216.00	72 x 3.80	19 x 3.80	41.80	2855.4	0.02890	195.47	QA2E500910IMX
1000	632.00	433.00	54 x 3.86	37 x 3.86	42.50	2943.9	0.02890	230.88	QA2E510910IMX
1120	916.00	242.00	72 x 4.02	19 x 4.02	44.30	3198.1	0.02580	218.92	QA2E900910IMX
1120	708.00	485.00	54 x 4.09	37 x 4.09	45.00	3297.2	0.02580	258.58	QA2E910910IMX
1250	1022.00	270.00	72 x 4.25	19 x 4.25	46.80	3569.3	0.02310	244.33	QA2F200910IMX
1250	791.00	542.00	54 x 4.32	37 x 4.32	47.50	3679.9	0.02310	288.60	QA2F210910IMX
1400	1145.00	302.00	72 x 4.50	19 x 4.50	49.50	3997.6	0.02070	273.65	QA2F500910IMX

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR)

ASTM B 524 Standard

Nominal cross sectional area	Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	Aluminum	Alloy					
mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
16	4 x 1.71	3 x 1.71	5.13	44.2	1.90726	3.59	QA20700070AMX
20	4 x 1.91	3 x 1.91	5.73	55.2	1.52875	4.48	QA20900070AMX
25	4 x 2.13	3 x 2.13	6.39	68.6	1.22926	5.57	QA21400070AMX
31.5	4 x 2.39	3 x 2.39	7.17	86.4	0.97635	7.01	QA21700070AMX
40	4 x 2.70	3 x 2.70	8.10	110.3	0.76502	8.95	QA22300070AMX
50	4 x 3.02	3 x 3.02	9.06	138.1	0.61149	11.20	QA22700070AMX
63	4 x 3.39	3 x 3.39	10.17	173.9	0.48529	13.70	QA23400070AMX
80	4 x 3.81	3 x 3.81	11.43	219.7	0.38420	17.20	QA24000070AMX
100	4 x 4.26	3 x 4.26	12.78	274.6	0.30731	21.31	QA24900070AMX
112	4 x 4.51	3 x 4.51	13.53	307.8	0.27419	23.90	QA25300070AMX
125	4 x 4.77	3 x 4.77	14.31	344.3	0.24511	26.70	QA25600070AMX
140	15 x 3.06	4 x 3.06	15.30	385.0	0.21257	26.50	QA26100190AMX
140	12 x 3.06	7 x 3.06	15.30	384.0	0.21750	30.10	QA26110190AMX
160	15 x 3.27	4 x 3.27	16.35	440.0	0.18614	29.80	QA26600190AMX
160	12 x 3.27	7 x 3.27	16.35	439.0	0.19046	33.50	QA26610190AMX
180	15 x 3.47	4 x 3.47	17.35	495.0	0.16530	33.60	QA27100190AMX
180	12 x 3.47	7 x 3.47	17.35	495.0	0.16914	37.80	QA27110190AMX
200	15 x 3.66	4 x 3.66	18.30	550.0	0.14858	36.90	QA27500190AMX
200	12 x 3.66	7 x 3.66	18.30	550.0	0.15203	41.60	QA27510190AMX
224	15 x 3.87	4 x 3.87	19.35	616.0	0.13290	40.60	QA27900190AMX
224	12 x 3.87	7 x 3.87	19.35	615.0	0.13598	46.00	QA27910190AMX
250	15 x 4.09	4 x 4.09	20.45	688.0	0.11898	45.30	QA28500190AMX
250	12 x 4.09	7 x 4.09	20.45	687.0	0.12174	51.40	QA28510190AMX
250	18 x 2.93	19 x 2.93	20.51	687.0	0.12447	57.40	QA28520370AMX
250	24 x 2.93	13 x 2.93	20.51	686.0	0.12151	51.40	QA28530370AMX
250	30 x 2.93	7 x 2.93	20.51	688.0	0.11869	46.60	QA28540370AMX
250	33 x 2.93	4 x 2.93	20.51	688.0	0.11733	42.90	QA28550370AMX
280	15 x 4.33	4 x 4.33	21.65	771.0	0.10616	50.80	QA28800190AMX
280	12 x 4.33	7 x 4.33	21.65	771.0	0.10862	57.60	QA28810190AMX
280	18 x 3.10	19 x 3.10	21.70	768.0	0.11119	64.20	QA28820370AMX
280	24 x 3.10	13 x 3.10	21.70	769.0	0.10855	57.60	QA28830370AMX
280	30 x 3.10	7 x 3.10	21.70	770.0	0.10603	52.10	QA28840370AMX
280	33 x 3.10	4 x 3.10	21.70	770.0	0.10482	48.10	QA28850370AMX
315	18 x 3.29	19 x 3.29	23.03	865.0	0.09872	70.20	QA29600370AMX
315	24 x 3.29	13 x 3.29	23.03	866.0	0.09638	63.40	QA29610370AMX

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Aluminum Conductors, Aluminum-Alloy Reinforced

Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR)

ASTM B 524 Standard

Nominal cross sectional area	Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	Aluminum	Alloy					
mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
315	30 x 3.29	7 x 3.29	23.03	867.0	0.09414	57.90	QA29620370AMX
315	33 x 3.29	4 x 3.29	23.03	867.0	0.09306	53.70	QA29630370AMX
355	18 x 3.50	19 x 3.50	24.50	979.0	0.08723	79.50	QA2A300370AMX
355	24 x 3.50	13 x 3.50	24.50	980.0	0.08516	71.70	QA2A310370AMX
355	30 x 3.50	7 x 3.50	24.50	981.0	0.08318	65.50	QA2A320370AMX
355	33 x 3.50	4 x 3.50	24.50	982.0	0.08223	60.80	QA2A330370AMX
400	18 x 3.71	19 x 3.71	25.97	1100.0	0.07763	88.70	QA2A900370AMX
400	24 x 3.71	13 x 3.71	25.97	1102.0	0.07579	79.90	QA2A910370AMX
400	30 x 3.71	7 x 3.71	25.97	1103.0	0.07403	72.70	QA2A920370AMX
400	33 x 3.71	4 x 3.71	25.97	1103.0	0.07318	67.30	QA2A930370AMX
450	18 x 3.94	19 x 3.94	27.58	1242.0	0.06883	99.20	QA2B200370AMX
450	24 x 3.94	13 x 3.94	27.58	1242.0	0.06720	89.00	QA2B210370AMX
450	30 x 3.94	7 x 3.94	27.58	1243.0	0.06564	80.60	QA2B220370AMX
450	33 x 3.94	4 x 3.94	27.58	1244.0	0.06489	74.40	QA2B230370AMX
500	18 x 4.15	19 x 4.15	29.05	1377.0	0.06204	110.00	QA2B800370AMX
500	24 x 4.15	13 x 4.15	29.05	1379.0	0.06057	98.80	QA2B810370AMX
500	30 x 4.15	7 x 4.15	29.05	1379.0	0.05916	89.50	QA2B820370AMX
500	33 x 4.15	4 x 4.15	29.05	1380.0	0.05849	82.60	QA2B830370AMX
500	33 x 3.23	28 x 3.23	29.07	1376.0	0.06162	109.00	QA2B840610AMX
500	42 x 3.23	19 x 3.23	29.07	1377.0	0.06030	100.00	QA2B850610AMX
500	48 x 3.23	13 x 3.23	29.07	1377.0	0.05945	93.60	QA2B860610AMX
500	54 x 3.23	7 x 3.23	29.07	1378.0	0.05862	86.50	QA2B870610AMX
560	18 x 4.39	19 x 4.39	30.73	1541.0	0.05545	123.00	QA2C200370AMX
560	24 x 4.39	13 x 4.39	30.73	1542.0	0.05413	111.00	QA2C210370AMX
560	30 x 4.39	7 x 4.39	30.73	1544.0	0.05287	100.00	QA2C220370AMX
560	33 x 4.39	4 x 4.39	30.73	1544.0	0.05227	92.40	QA2C230370AMX
560	33 x 3.42	28 x 3.42	30.78	1542.0	0.05496	119.00	QA2C240610AMX
560	42 x 3.42	19 x 3.42	30.78	1544.0	0.05378	110.00	QA2C250610AMX
560	48 x 3.42	13 x 3.42	30.78	1545.0	0.05302	102.00	QA2C260610AMX
560	54 x 3.42	7 x 3.42	30.78	1545.0	0.05229	96.10	QA2C270610AMX
630	18 x 4.66	19 x 4.66	32.62	1736.0	0.04921	139.00	QA2C700370AMX
630	24 x 4.66	13 x 4.66	32.62	1737.0	0.04804	125.00	QA2C710370AMX
630	30 x 4.66	7 x 4.66	32.62	1740.0	0.04692	113.00	QA2C720370AMX
630	33 x 4.66	4 x 4.66	32.62	1740.0	0.04638	104.00	QA2C730370AMX
630	33 x 3.63	28 x 3.63	32.67	1737.0	0.04879	133.00	QA2C740610AMX

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Aluminum Conductors, Aluminum-Alloy Reinforced (ACAR)

ASTM B 524 Standard

Nominal cros sectional area	Conductor construction		Approx. overall diameter	Approx. overall weight	Calculated DC Resistance at 20 °C	Rated strength	AES Code
	Aluminum	Alloy					
mm ²	No. x Ø (mm)		mm	Kg / km	Ω / km	KN	
630	42 x 3.63	19 x 3.63	32.67	1739.0	0.04774	123.00	QA2C750610AMX
630	48 x 3.63	13 x 3.63	32.67	1740.0	0.04707	114.00	QA2C760610AMX
630	54 x 3.63	7 x 3.63	32.67	1741.0	0.04641	107.00	QA2C770610AMX
710	33 x 3.85	28 x 3.85	34.65	1954.0	0.04337	148.00	QA2D300610AMX
710	42 x 3.85	19 x 3.85	34.65	1956.0	0.04244	137.00	QA2D310610AMX
710	48 x 3.85	13 x 3.85	34.65	1957.0	0.04184	126.00	QA2D320610AMX
710	54 x 3.85	7 x 3.85	34.65	1958.0	0.04126	118.00	QA2D330610AMX
800	33 x 4.09	28 x 4.09	36.81	2205.0	0.03843	167.00	QA2D700610AMX
800	42 x 4.09	19 x 4.09	36.81	2207.0	0.03761	154.00	QA2D710610AMX
800	48 x 4.09	13 x 4.09	36.81	2209.0	0.03707	142.00	QA2D720610AMX
800	54 x 4.09	7 x 4.09	36.81	2209.0	0.03656	133.00	QA2D730610AMX
900	33 x 4.33	28 x 4.33	38.97	2472.0	0.03429	187.00	QA2E200610AMX
900	42 x 4.33	19 x 4.33	38.97	2474.0	0.03355	173.00	QA2E210610AMX
900	48 x 4.33	13 x 4.33	38.97	2475.0	0.03308	159.00	QA2E220610AMX
900	54 x 4.33	7 x 4.33	38.97	2478.0	0.03262	148.00	QA2E230610AMX
1000	33 x 4.57	28 x 4.57	41.13	2781.0	0.03078	206.00	QA2E500610AMX
1000	42 x 4.57	19 x 4.57	41.13	2783.0	0.03012	192.00	QA2E510610AMX
1000	48 x 4.57	13 x 4.57	41.13	2786.0	0.02970	178.00	QA2E520610AMX
1000	54 x 4.57	7 x 4.57	41.13	2786.0	0.02928	166.00	QA2E530610AMX
1000	54 x 3.74	37 x 3.74	41.14	2779.0	0.03057	204.00	QA2E540910AMX
1000	63 x 3.74	28 x 3.74	41.14	2780.0	0.03013	190.00	QA2E550910AMX
1000	72 x 3.74	19 x 3.74	41.14	2782.0	0.02970	180.00	QA2E560910AMX
1120	54 x 3.96	37 x 3.96	43.56	3116.0	0.02754	226.00	QA2E900910AMX
1120	63 x 3.96	28 x 3.96	43.56	3118.0	0.02714	210.00	QA2E910910AMX
1120	72 x 3.96	19 x 3.96	43.56	3119.0	0.02675	198.00	QA2E920910AMX
1250	54 x 4.18	37 x 4.18	45.98	3472.0	0.02471	253.00	QA2F200910AMX
1250	63 x 4.18	28 x 4.18	45.98	3474.0	0.02436	234.00	QA2F210910AMX
1250	72 x 4.18	19 x 4.18	45.98	3476.0	0.02401	221.00	QA2F220910AMX
1400	54 x 4.43	37 x 4.43	48.73	3899.0	0.02200	283.00	QA2F500910AMX
1400	63 x 4.43	28 x 4.43	48.73	3901.0	0.02169	263.00	QA2F510910AMX
1400	72 x 4.43	19 x 4.43	48.73	3904.0	0.02138	248.00	QA2F520910AMX
1600	54 x 4.73	37 x 4.73	52.03	4488.0	0.01949	323.00	QA2F600910AMX
1600	63 x 4.73	28 x 4.73	52.03	4491.0	0.01921	300.00	QA2F610910AMX
1600	72 x 4.73	19 x 4.73	52.03	4493.0	0.01893	283.00	QA2F620910AMX

Weather-Resistant XLPE Insulated Service Drop Cables

CONSTRUCTION

Service drop or secondary distribution cables are composed of one or more concentric-lay-stranded aluminum 1350 phase conductors insulated with an extruded layer of cross-linked polyethylene compound and assembled with one neutral conductor of All Aluminum Conductors (AAC); Aluminum-Alloy Conductors 6201-T81 (AAAC); Aluminum Conductors, Steel-Reinforced (ACSR); or Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR/AW). The neutral conductor may be bare or covered with an extruded layer of cross-linked polyethylene compound.

Note: Service drop or secondary distribution cables have many options in terms of the number of phase conductors used, the type of neutral conductor and either it is bare or insulated. This catalogue covers only the design and construction of Quadruplex cables with three concentric-lay-stranded aluminum 1350 phase conductors assembled with one bare full neutral conductor. However, we can provide all the necessary information for any other type or design upon a customer's request.

APPLICATION

Service drop cables are intended for use either as a service drop cable between a power pole and the service entrance, or as a secondary distribution cable between poles. The use of these service drop or secondary distribution cables is limited to circuits, not exceeding 600 volts phase-to-phase or 480 volts phase-to-ground, to a normal temperature rating of the service conductor temperature of 90 °C.

APPLICABLE STANDARD

Weather-resistant service drop cables are designed and tested to meet :

- ANSI / ICEA S-76-474

However, **alfanar** can also supply a range of alternative designs to meet customer-specified requirements.

TECHNICAL DATA

- Nominal voltage:
 - 480 Volts phase-to-ground
 - 600 Volts phase-to-phase
 - Power frequency test voltage 3.0 kV for 1 minute
 - Max. admissible temperature of conductor at normal operation 90 °C
 - Max. admissible temperature of conductor at emergency operation 130 °C
 - Max. admissible temperature of conductor at short circuit operation 250 °C
-



Quadruplex Service Drop Cables With Bare (AAC) Neutral Conductor

ANSI / ICEA S-76-474

Aluminum phase conductor size		Minimum phase insulation thickness mm	AAC Neutral conductor size		Approx. overall diameter mm	Approx. overall weight Kg / km	Phase conductor DC Resistance at 20 °C Ω / km	Neutral conductor Rated strength KN	AES Code
MCM	mm ²		MCM	mm ²					
4	21.1	1.0	4	21.1	18.3	322	1.36505	3.91	HH2100007WAMX
2	33.6	1.0	2	33.6	21.9	485	0.85954	5.99	HH2190007WAMX
1/0	53.5	1.4	1/0	53.5	28.2	786	0.53871	8.84	HH2290007WAMX
2/0	67.4	1.4	2/0	67.4	30.9	966	0.42808	11.10	HH2350007WAMX
3/0	85.0	1.4	3/0	85.0	34.0	1192	0.33953	13.50	HH2440007WAMX
4/0	107.2	1.4	4/0	107.2	37.6	1478	0.26842	17.00	HH2520007WAMX
266.8	135.2	1.8	266.8	135.2	43.8	1871	0.21324	22.10	HH2600019WAMX
336.4	170.5	1.8	336.4	170.5	48.2	2306	0.16911	27.30	HH2670019WAMX
397.5	201.4	1.8	397.5	201.4	51.8	2694	0.14344	31.60	HH2760019WAMX
477.0	241.7	1.8	477.0	241.7	56.1	3149	0.11961	38.60	HH2840037WAMX

Quadruplex Service Drop Cables With Bare (AAAC) Neutral Conductor

ANSI / ICEA S-76-474

Aluminum phase conductor size		Minimum phase insulation thickness mm	AAAC Neutral conductor size		Approx. overall diameter mm	Approx. overall weight Kg / km	Phase conductor DC Resistance at 20 °C Ω / km	Neutral conductor Rated strength KN	AES Code
MCM	mm ²		MCM	mm ²					
4	21.1	1.0	48.69	24.7	18.5	332	1.36505	7.83	HL2100007WAMX
2	33.6	1.0	77.47	39.2	22.3	499	0.85954	12.40	HL2190007WAMX
1/0	53.5	1.4	123.30	62.4	28.6	810	0.53871	18.90	HL2290007WAMX
2/0	67.4	1.4	155.40	78.6	31.4	995	0.42808	23.80	HL2350007WAMX
3/0	85.0	1.4	195.70	99.3	34.6	1230	0.33953	30.00	HL2440007WAMX
4/0	107.2	1.4	246.90	125.0	38.2	1526	0.26842	37.80	HL2520007WAMX
266.8	135.2	1.8	312.80	159.0	44.5	1934	0.21324	46.50	HL2600019WAMX
336.4	170.5	1.8	394.50	200.0	49.0	2385	0.16911	58.60	HL2670019WAMX
397.5	201.4	1.8	465.40	236.0	52.7	2788	0.14344	69.20	HL2760019WAMX
477.0	241.7	1.8	559.50	284.0	57.1	3263	0.11961	83.10	HL2840037WAMX

Weather-Resistant XLPE Insulated Service Drop Cables

Quadruplex Service Drop Cables With Bare (ACSR) Neutral Conductor

ANSI / ICEA S-76-474

Aluminum phase conductor size		Minimum phase insulation thickness mm	ACSR Neutral conductor size		Approx. overall diameter mm	Approx. overall weight Kg / km	Phase conductor DC Resistance at 20 °C Ω / km	Neutral conductor Rated strength KN	AES Code
MCM	mm ²		MCM	mm ²					
4	21.1	1.0	4	21.1	18.5	349	1.36505	8.30	HS2100007WAMX
2	33.6	1.0	2	33.6	22.3	528	0.85954	12.69	HS2190007WAMX
1/0	53.5	1.4	1/0	53.5	28.6	855	0.53871	19.35	HS2290007WAMX
2/0	67.4	1.4	2/0	67.4	31.4	1052	0.42808	23.27	HS2350007WAMX
3/0	85.0	1.4	3/0	85.0	34.6	1301	0.33953	29.42	HS2440007WAMX
4/0	107.2	1.4	4/0	107.2	38.2	1616	0.26842	37.06	HS2520007WAMX
266.8	135.2	1.8	266.8	135.2	44.0	1929	0.21324	30.27	HS2600019WAMX
336.4	170.5	1.8	336.4	170.5	48.4	2379	0.16911	38.17	HS2670019WAMX
397.5	201.4	1.8	397.5	201.4	52.1	2780	0.14344	43.37	HS2760019WAMX
477.0	241.7	1.8	477.0	241.7	56.4	3254	0.11961	52.30	HS2840037WAMX

Quadruplex Service Drop Cables With Bare (ACSR / AW) Neutral Conductor

ANSI / ICEA S-76-474

Aluminum phase conductor size		Minimum phase insulation thickness mm	ACSR / AW Neutral conductor size		Approx. overall diameter mm	Approx. overall weight Kg / km	Phase conductor DC Resistance at 20 °C Ω / km	Neutral conductor Rated strength KN	AES Code
MCM	mm ²		MCM	mm ²					
4	21.1	1.0	4	21.1	18.5	345	1.36505	8.00	HW2100007WAMX
2	33.6	1.0	2	33.6	22.3	521	0.85954	12.00	HW2190007WAMX
1/0	53.5	1.4	1/0	53.5	28.6	844	0.53871	19.00	HW2290007WAMX
2/0	67.4	1.4	2/0	67.4	31.4	1039	0.42808	23.00	HW2350007WAMX
3/0	85.0	1.4	3/0	85.0	34.6	1284	0.33953	28.00	HW2440007WAMX
4/0	107.2	1.4	4/0	107.2	38.2	1595	0.26842	34.00	HW2520007WAMX
266.8	135.2	1.8	266.8	135.2	44.0	1920	0.21324	30.00	HW2600019WAMX
336.4	170.5	1.8	336.4	170.5	48.4	2368	0.16911	38.00	HW2670019WAMX
397.5	201.4	1.8	397.5	201.4	52.1	2767	0.14344	44.00	HW2760019WAMX
477.0	241.7	1.8	477.0	241.7	56.4	3240	0.11961	51.00	HW2840037WAMX

1	2	3	4	5	6	7	8	9	10	11	12	13																																																																																																																																																																																																																																			
<p>The type designation provides information on the type of overhead conductor, conductor material, size, no. of strands and the principle design features in abbreviated and simplified form.</p> <p>The type designation is made up of 13 digits or characters. The type of the conductor is specified first and then the conductor construction and other parameters.</p> <p>You can order our product either by giving the AES item code stated in the catalogue or if you require a cable construction that is not covered in this catalogue, you can use the following codes to determine the construction of the conductor you require:</p>				53 : 112.00	54 : 118.90	55 : 120.00	56 : 125.00	57 : 125.10	58 : 126.00	59 : 126.70	60 : 135.20	61 : 140.00	62 : 150.00	63 : 150.90	64 : 152.00	65 : 158.50	66 : 160.00	67 : 170.50	68 : 175.00	69 : 177.30	70 : 178.00	71 : 180.00	72 : 180.70	73 : 185.00	74 : 199.90	75 : 200.00	76 : 201.40	77 : 203.00	78 : 211.00	79 : 224.00	80 : 228.00	81 : 235.80	82 : 239.40	83 : 240.00	84 : 241.70	85 : 250.00	86 : 253.00	87 : 279.00	88 : 280.00	89 : 281.98	90 : 282.00	91 : 283.50	92 : 300.00	93 : 303.20	94 : 304.00	95 : 306.55	96 : 315.00	97 : 322.30	98 : 329.40	99 : 330.00	A0 : 330.60	A1 : 337.77	A2 : 354.00	A3 : 355.00	A4 : 362.10	A5 : 362.60	A6 : 375.40	A7 : 380.00	A8 : 381.00	A9 : 400.00	B0 : 402.80	B1 : 404.00	B2 : 450.00	B3 : 456.00	B4 : 469.80	B5 : 479.00	B6 : 483.40	B7 : 498.10	B8 : 500.00	B9 : 506.70	C0 : 508.00	C1 : 523.70	C2 : 560.00	C3 : 564.00	C4 : 586.90	C5 : 604.20	C6 : 625.00	C7 : 630.00	C8 : 631.00	C9 : 644.50	D0 : 659.40	D1 : 684.81	D2 : 694.80	D3 : 710.00	D4 : 725.10	D5 : 759.00	D6 : 765.40	D7 : 800.00	D8 : 805.70	D9 : 821.10	E0 : 886.00	E1 : 886.70	E2 : 900.00	E3 : 901.93	E4 : 996.20	E5 : 1000.00	E6 : 1013.00	E7 : 1092.45	E8 : 1098.02	E9 : 1120.00	F0 : 1140.00	F1 : 1171.49	F2 : 1250.00	F3 : 1267.00	F4 : 1393.00	F5 : 1400.00	F6 : 1600.00	F7 : 16 / 2.5	F8 : 25 / 4	F9 : 35 / 6	G0 : 44 / 32	G1 : 50 / 8	G2 : 50 / 30	G3 : 70 / 12	G4 : 95 / 15	G5 : 95 / 55	G6 : 105 / 75	G7 : 120 / 20	G8 : 120 / 70	G9 : 125 / 30	H0 : 150 / 25	H1 : 170 / 40	H2 : 185 / 30	H3 : 210 / 35	H4 : 210 / 50	H5 : 230 / 30	H6 : 240 / 40	H7 : 265 / 35	H8 : 300 / 50	H9 : 305 / 40	I0 : 340 / 30	I1 : 380 / 50	I2 : 385 / 35	I3 : 435 / 55	I4 : 450 / 40	I5 : 490 / 65	I6 : 495 / 35	I7 : 510 / 45	I8 : 550 / 70	I9 : 560 / 50	J0 : 570 / 40	J1 : 650 / 45	J2 : 680 / 85																																																																																																
<p>1 & 2. Type of Overhead Conductor</p> <table border="1"> <tr><td>C0 :</td><td>SDC</td></tr> <tr><td>D0 :</td><td>HDC</td></tr> <tr><td>H0 :</td><td>AAC</td></tr> <tr><td>L0 :</td><td>AAAC</td></tr> <tr><td>S0 :</td><td>ACSR</td></tr> <tr><td>W0 :</td><td>ACSR / AW</td></tr> <tr><td>QA :</td><td>ACAR (Alloy Type A)</td></tr> <tr><td>QB :</td><td>ACAR (Alloy Type B)</td></tr> <tr><td>HH :</td><td>AAC + AAC (Quadruplex)</td></tr> <tr><td>HL :</td><td>AAC + AAAC (Quadruplex)</td></tr> <tr><td>HS :</td><td>AAC + ACSR (Quadruplex)</td></tr> <tr><td>HW :</td><td>AAC + ACSR/AW (Quadruplex)</td></tr> </table>				C0 :	SDC	D0 :	HDC	H0 :	AAC	L0 :	AAAC	S0 :	ACSR	W0 :	ACSR / AW	QA :	ACAR (Alloy Type A)	QB :	ACAR (Alloy Type B)	HH :	AAC + AAC (Quadruplex)	HL :	AAC + AAAC (Quadruplex)	HS :	AAC + ACSR (Quadruplex)	HW :	AAC + ACSR/AW (Quadruplex)	<p>3. Conductor Shape</p> <table border="1"> <tr><td>2 :</td><td>Stranded - Circular round</td></tr> <tr><td>3 :</td><td>Stranded - Circular compacted</td></tr> </table>				2 :	Stranded - Circular round	3 :	Stranded - Circular compacted	<p>4 & 5. Conductor Size (mm²)</p> <table border="1"> <tr><td>01 :</td><td>2.50</td><td>27 :</td><td>50.00</td></tr> <tr><td>02 :</td><td>4.00</td><td>28 :</td><td>51.58</td></tr> <tr><td>03 :</td><td>6.00</td><td>29 :</td><td>53.50</td></tr> <tr><td>04 :</td><td>10.00</td><td>30 :</td><td>56.14</td></tr> <tr><td>05 :</td><td>13.30</td><td>31 :</td><td>59.90</td></tr> <tr><td>06 :</td><td>14.00</td><td>32 :</td><td>60.00</td></tr> <tr><td>07 :</td><td>16.00</td><td>33 :</td><td>62.50</td></tr> <tr><td>08 :</td><td>18.80</td><td>34 :</td><td>63.00</td></tr> <tr><td>09 :</td><td>20.00</td><td>35 :</td><td>67.40</td></tr> <tr><td>10 :</td><td>21.10</td><td>36 :</td><td>68.20</td></tr> <tr><td>11 :</td><td>22.00</td><td>37 :</td><td>70.00</td></tr> <tr><td>12 :</td><td>23.80</td><td>38 :</td><td>71.60</td></tr> <tr><td>13 :</td><td>24.70</td><td>39 :</td><td>78.70</td></tr> <tr><td>14 :</td><td>25.00</td><td>40 :</td><td>80.00</td></tr> <tr><td>15 :</td><td>30.00</td><td>41 :</td><td>80.57</td></tr> <tr><td>16 :</td><td>30.10</td><td>42 :</td><td>84.10</td></tr> <tr><td>17 :</td><td>31.50</td><td>43 :</td><td>84.90</td></tr> <tr><td>18 :</td><td>32.00</td><td>44 :</td><td>85.00</td></tr> <tr><td>19 :</td><td>33.60</td><td>45 :</td><td>89.70</td></tr> <tr><td>20 :</td><td>35.00</td><td>46 :</td><td>95.00</td></tr> <tr><td>21 :</td><td>35.50</td><td>47 :</td><td>96.68</td></tr> <tr><td>22 :</td><td>39.30</td><td>48 :</td><td>99.20</td></tr> <tr><td>23 :</td><td>40.00</td><td>49 :</td><td>100.00</td></tr> <tr><td>24 :</td><td>40.54</td><td>50 :</td><td>102.96</td></tr> <tr><td>25 :</td><td>42.40</td><td>51 :</td><td>104.00</td></tr> <tr><td>26 :</td><td>47.80</td><td>52 :</td><td>107.00</td></tr> </table>				01 :	2.50	27 :	50.00	02 :	4.00	28 :	51.58	03 :	6.00	29 :	53.50	04 :	10.00	30 :	56.14	05 :	13.30	31 :	59.90	06 :	14.00	32 :	60.00	07 :	16.00	33 :	62.50	08 :	18.80	34 :	63.00	09 :	20.00	35 :	67.40	10 :	21.10	36 :	68.20	11 :	22.00	37 :	70.00	12 :	23.80	38 :	71.60	13 :	24.70	39 :	78.70	14 :	25.00	40 :	80.00	15 :	30.00	41 :	80.57	16 :	30.10	42 :	84.10	17 :	31.50	43 :	84.90	18 :	32.00	44 :	85.00	19 :	33.60	45 :	89.70	20 :	35.00	46 :	95.00	21 :	35.50	47 :	96.68	22 :	39.30	48 :	99.20	23 :	40.00	49 :	100.00	24 :	40.54	50 :	102.96	25 :	42.40	51 :	104.00	26 :	47.80	52 :	107.00	<p>6. Multiple Constructions</p> <table border="1"> <tr><td>0 :</td><td>Standard construction</td></tr> <tr><td>1 :</td><td>Alternative construction No. 1</td></tr> <tr><td>2 :</td><td>Alternative construction No. 2</td></tr> </table>				0 :	Standard construction	1 :	Alternative construction No. 1	2 :	Alternative construction No. 2	<p>7, 8 & 9. No. of Strands</p> <table border="1"> <tr><td>007 :</td><td>7 Strands</td></tr> <tr><td>008 :</td><td>8 Strands</td></tr> <tr><td>019 :</td><td>19 Strands</td></tr> <tr><td>031 :</td><td>31 Strands</td></tr> <tr><td>033 :</td><td>33 Strands</td></tr> <tr><td>037 :</td><td>37 Strands</td></tr> <tr><td>061 :</td><td>61 Strands</td></tr> <tr><td>091 :</td><td>91 Strands</td></tr> </table>				007 :	7 Strands	008 :	8 Strands	019 :	19 Strands	031 :	31 Strands	033 :	33 Strands	037 :	37 Strands	061 :	61 Strands	091 :	91 Strands	<p>10. Insulation (if required)</p> <table border="1"> <tr><td>0 :</td><td>Bare conductor</td></tr> <tr><td>W :</td><td>XLPE Insulation - Weather resistant</td></tr> </table>				0 :	Bare conductor	W :	XLPE Insulation - Weather resistant	<p>11. Design Standard</p> <table border="1"> <tr><td>A :</td><td>ASTM Standard</td></tr> <tr><td>B :</td><td>BS Standard</td></tr> <tr><td>D :</td><td>DIN Standard</td></tr> <tr><td>E :</td><td>BS EN Standard</td></tr> <tr><td>I :</td><td>IEC Standard</td></tr> <tr><td>N :</td><td>NF C Standard</td></tr> <tr><td>R :</td><td>Customer request</td></tr> </table>				A :	ASTM Standard	B :	BS Standard	D :	DIN Standard	E :	BS EN Standard	I :	IEC Standard	N :	NF C Standard	R :	Customer request	<p>12. Packing Type</p> <table border="1"> <tr><td>M :</td><td>Wooden drum</td></tr> <tr><td>T :</td><td>Steel drum</td></tr> </table>				M :	Wooden drum	T :	Steel drum	<p>13. Cutting Length</p> <table border="1"> <tr><td>F :</td><td>500 Meter</td></tr> <tr><td>R :</td><td>1000 Meter</td></tr> <tr><td>A :</td><td>1500 Meter</td></tr> <tr><td>B :</td><td>2000 Meter</td></tr> <tr><td>C :</td><td>2500 Meter</td></tr> <tr><td>D :</td><td>3000 Meter</td></tr> <tr><td>E :</td><td>3500 Meter</td></tr> <tr><td>K :</td><td>3600 Meter</td></tr> <tr><td>G :</td><td>4000 Meter</td></tr> <tr><td>L :</td><td>4300 Meter</td></tr> <tr><td>M :</td><td>5000 Meter</td></tr> <tr><td>N :</td><td>6000 Meter</td></tr> <tr><td>O :</td><td>7000 Meter</td></tr> <tr><td>X :</td><td>Standard length</td></tr> </table>				F :	500 Meter	R :	1000 Meter	A :	1500 Meter	B :	2000 Meter	C :	2500 Meter	D :	3000 Meter	E :	3500 Meter	K :	3600 Meter	G :	4000 Meter	L :	4300 Meter	M :	5000 Meter	N :	6000 Meter	O :	7000 Meter	X :	Standard length
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X :	Standard length																																																																																																																																																																																																																																														

References

IEC Standards

1. IEC 60228 : Conductors of insulated cables.
2. IEC 61089 : Round wire concentric-lay overhead electrical stranded conductors.
3. IEC 60888 : Zinc-coated steel wires for stranded conductors.
4. IEC 60889 : Hard-drawn aluminum wire for overhead line conductors.
5. IEC 61232 : Aluminum-clad steel wires for electrical purposes.
6. IEC 61597 : Overhead electrical conductors - Calculation methods for stranded bare conductors.

BS / BS EN Standards

1. BS EN 60228 : Conductors of insulated cables.
2. BS 7884 : Specification for copper and copper-cadmium stranded conductors for overhead electric traction and power transmission systems.
3. BS 215-1 : Specification for aluminum conductors and aluminum conductors, steel-reinforced for overhead power transmission. Aluminum stranded conductors.
4. BS 215-2 : Specification for aluminum conductors and aluminum conductors, steel-reinforced for overhead power transmission. Aluminum conductors, steel-reinforced.
5. BS EN 50182 : Conductors for overhead lines. Round wire concentric-lay stranded conductors.
6. BS EN 50183 : Conductors for overhead lines. Aluminum-magnesium-silicon alloy wires.
7. BS EN 50189 : Conductors for overhead lines. Zinc coated steel wires.

DIN Standards

1. DIN 48201 / 1 : Stranded conductors - Copper cable.
2. DIN 48201 / 5 : Aluminum stranded conductors.
3. DIN 48201 / 6 : E-AlMgSi Stranded conductors.
4. DIN 48204 : Steel reinforced aluminum stranded conductors.

ASTM Standards

1. ASTM B 230 : Standard Specification for Aluminum 1350-H19 Wire for Electrical Purpose.
2. ASTM B 231 : Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors.
3. ASTM B 398 : Standard Specification for Aluminum Alloy 6201-T81 Wire for Electrical Purpose.
4. ASTM B 399 : Standard Specification for Concentric-Lay-Stranded Aluminum Alloy 6201-T81 Conductors.
5. ASTM B 232 : Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR).
6. ASTM B 498 : Standard specification for zinc-coated (galvanized) steel core wire for aluminum conductors, steel reinforced (ACSR).
7. ASTM B 549 : Standard specification for concentric-lay-stranded aluminum conductors, aluminum clad steel reinforced.
8. ASTM B 502 : Standard Specification Aluminum clad steel core wire for aluminum conductors, aluminum clad steel reinforced.
9. ASTM B 524 : Standard Specification for concentric-lay-stranded aluminum conductors, aluminum alloy reinforced (ACAR).

ANSI / ICEA Standards

1. ANSI/ICEA S-76-474 : Standard for neutral-supported power cable assemblies with weather-resistant extruded insulation rated 600 volts.

Notes

A series of horizontal dotted lines for writing notes.

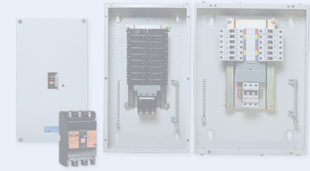
Product Range

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

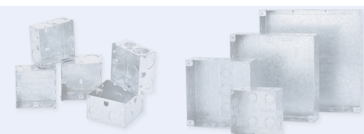
Busbar Chamber w/o Main



METAL ACCESSORIES

Switch Boxes

Junction Boxes



CABLES & WIRES

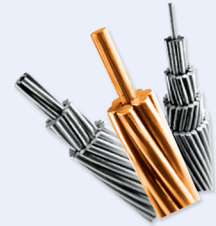
Building Wires

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



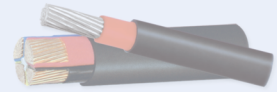
Overhead conductors

- 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
- Medium Voltage Power Cables
- High Voltage Power 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

Fluorescent

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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