

RZ1-ALU CABLE

1. Object

This document defines the design and manufacturing characteristics of the cables type RZ1 0,6/1 kV (AS) AL

2. Design

This cable has been designed, manufactured and tested according to UNE 21123 and IEC 60502.

3. Applications

Cable of aluminium for fixed installations. Suitable for transport and distribution of electric power in low voltage distribution networks where it is required a low smoke and halogen free cable which must perform under fire conditions.

4. Characteristics

Nominal voltage: 0,6/1 (1,2) kV

Minimum service temperature: -40 °C. (Static with protection)

Minimum installation and handling: 0 °C (on cable surface)

Maximum conductor temperature: 90 °C

Maximum short-circuit temperature: 250 °C (max 5 s)

Minimum bending radius: 15 x cable Ø

No flame propagation: according to EN 60332-1/IEC 60332-1

No fire propagation: according to EN 60332-3/IEC 60332-3

Halogen free: according to EN 50267 / IEC 60754

HCl content < 0,5 %

pH > 4,3

conductivity < 10 µS/mm

Smoke density: according to EN 61034 / IEC 61034

light transmittance > 60 %

5. General make-up of the cable

5.1 Conductor

Aluminium conductor, class 2 according to EN 60228/ IEC 60228.

5.2 Insulation

Cross-linked polyethylene insulation, type DIX-3 according to HD 603-1 and type XLPE according IEC 60502-1.

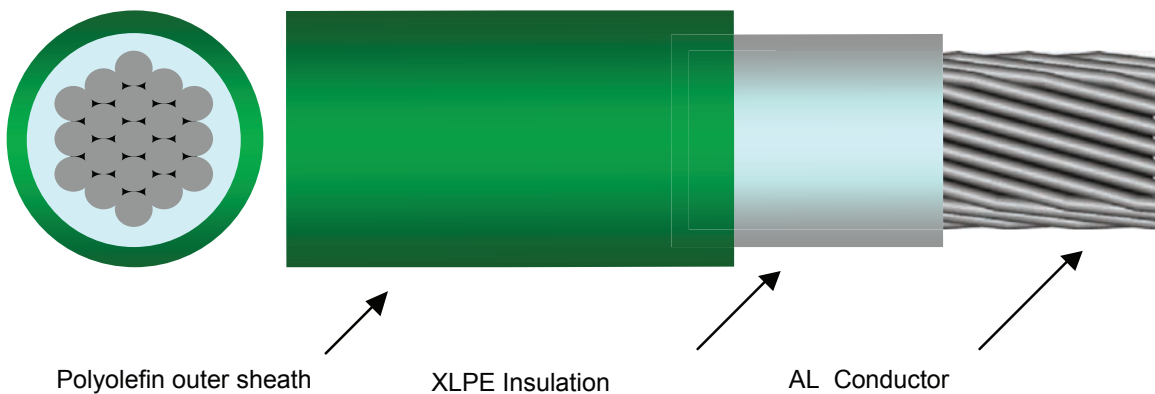
The standard identification, according to HD 308, is the following:

- 1 x.....natural
- 4 x.....brown + black + grey + blue

5.3 Outer sheath

Polyolefin outer sheath, green colour, with low smoke and halogen free fumes under fire conditions.

5.4 Diagram representation



Open air installation: three single-core cables in contact and ambient temperature of 30 °C with adequate ventilation (supported by cleats and hangers or on perforated tray).

Buried installation: three single-core cables in contact directly buried at depth of 0,7 m; 20 °C of ground temperature and soil thermal resistivity of 2,5 °K·m/W.

In all cases it is supposed a three-phase circuit.

For conditions other than this apply the adequate correction factors (point 6.3).

Voltage drop is the maximum that may occur. It is calculated for the maximum service temperature and for $\cos \phi = 1$.

Section= mm ²	Open air= A	Buried Inst.= A	Voltage drop= V/A·km
1 x 25	103	82	2,66
1 x 35	129	98	1,92
1 x 50	159	117	1,42
1 x 70	206	144	0,982
1 x 95	253	172	0,709
1 x 120	296	197	0,561
1 x 150	343	220	0,457
1 x 185	395	250	0,364
1 x 240	471	290	0,277
1 x 300	547	326	0,222
1 x 400	663	380	0,172
4 x 240	409	290	0,277

Table 1

6.2 Short-circuit current-carrying capacities

The maximum short-circuit current that a cable can withstand depend on the time of reaction of the protection elements installed in the line. The maximum current-carrying capacity in a short-circuit accident, for a specific type of cable, is the result of multiplying the cross section of the cable for the values shown in table 2. These values are taken from IEC 949.

Time (s)=	0,1	0,2	0,3	0,5	1	1,5	2	2,5	3
A/mm ² =	299	211	173	134	94	77	67	60	55

Table 2

6.3 Correction factors

The current-carrying capacities must be multiplied with the adequate correction factor when the installation conditions differs from point 6.1

Correction factors for air temperature other than 30 °C

Air T. (°C)=	20	25	30	35	40	45	50	55	60
Factor=	1,08	1,04	1	0,96	0,91	0,87	0,82	0,76	0,71

Table 3

Correction factors for ground temperature other than 20 °C

Ground T. (°C)=	10	15	20	25	30	35	40	45	50
Factor =	1,07	1,04	1	0,96	0,93	0,89	0,85	0,80	0,76

Table 4

Correction factors for soil thermal resistivity, that depend of damp, other than 2,5 °K·m/W

Direct buried cables						
0,5 K.m/W	0,7 K.m/W	1 K.m/W	1,5 K.m/W	2 K.m/W	2,5 K.m/W	3 K.m/W
1,88	1,62	1,5	1,28	1,12	1	0,90

Table 5

7. Dimensions

Table 6 shows diameter and weight detailed for every cable.

Section=	Ø diameter=	Weight=
mm ²	mm	kg/km
1 x 25=	10,5	145
1 x 35=	11,6	180
1 x 50=	12,8	225
1 x 70=	15,1	310
1 x 95=	16,5	395
1 x 120=	18,1	485
1 x 150=	20,2	595
1 x 185	22,4	725
1 x 240	24,8	930
1 x 300	28,2	1.130
1 x 400	31,2	1.435
4 x 240	58,2	4.945

Tabla 6=