TABLE OF PROPERTIES OF THE CONDUCTORS - DEFINITION OF THE CURRENT LOADS

A PROPERTIES OF THE MATERIALS

	MAX SPECIFIC RESISTIVITY AT 20° C - Ω * mm²/m		DENSITY g/cm³
Electrolytic bare copper 99,9 Cu ETP1	Norm ASTM B3	**0,017241**	8,89
Tin Coated Copper	Norm ASTM B 33 - EN 13602	**0,017931**	8,89
Nickel Coated copper	Norm ASTM B355 - Classe 2	**0,017960**	8,89
Nickel 99,2 Minimum	Norm ASTM B 160	**0,090 ± 0.01**	8,90

B CONDUCTORS TABLE OF PROPERTIES AND LOADS

Wires heat up due to the passage of the current.
Always keep into consideration this physical phenomena when selecting the sections to be used. In fact, knowing the thermal proprieties of the insulator, the ambient maximum working temperature, and the ΔT generated by the passage of the current, it is possible to accurately evaluate the sections. The values contained in table **-C-** are determined according to our experience and tests, or by using the **DIN-VDE 0298-4** norm when possible, **and are referred to single core cables.**

Nominal Section mm²	Max Resistance at 20° C for copper allowed by the norm EN 60228 Ω/km				RELATION LOAD-TEMPERATURE at T +20°C (I max)			
					Copper		Nickel	
	Flexible conductors Bare copper	Flexible Conductors Plated copper	Solid Conductors Tinned copper	Flexible conductors Nickel (±15%)	ΔT current Flow (I) +50°C	ΔT current Flow (I) +5°C	ΔT current Flow (I) +50°C	ΔT current Flow (I) +5°C
0,25	81,00	82,50		360,00	5,00	2,50	1,25	0,50
0,35	56,50	58,50		257,14	8,00	2,80	1,75	0,70
0,50	39,00	40,10	36,70	180,00	12,00	3,80	2,50	1,00
0,75	26,00	26,70	24,80	120,00	15,00	4,80	3,70	1,50
1,00	19,50	20,00	18,20	90,00	17,00	6,00	5,00	2,00
1,50	13,30	13,70	12,20	60,00	23,00	8,00	7,50	3,00
2,00	9,75	10,10	9,18	45,00	28,00	9,00	10,00	4,00
2,50	7,98	8,21	7,56	36,00	33,00	10,00	11,00	4,50
3,00	6,50	6,67	6,07	30,00	37,00	12,00	12,00	5,00
4,00	4,95	5,09	4,70	22,50	41,00	14,00	16,00	6,50
6,00	3,30	3,39	3,11	15,00	50,00	18,00	24,00	9,80
10,00	1,91	1,95	1,84	9,00	80,00	25,00	35,00	15,00
16,00	1,21	1,24	1,16	5,62	100,00	35,00	56,00	22,00
25,00	0,78	0,795		3,60	145,00	50,00	75,00	32,00

C TABLE OF RESISTIVITY AND LOADS

It is known that wires increase their resistivity when the temperature increases, thus decreasing their load.
As we have not found any literature in the regulations in force, we had to make laboratory tests on copper wires, in order to draw up this approximate table:

Temperature	20°C Ω/km	100°C	145°C	170°C	250°C	
Resistivity increase in consequence of the temperature compare with the nominal value	**VN** (Nominal Value)	**VN** + 20%	**VN** + 35%	**VN** + 45%	**VN** + 75%	
Load decrease	**PM** (Max Load)	**PM** - 20%	**PM** - 35%	**PM** - 45%	**PM** - 75%	

Data Emissione 17/05/1999	Indice Modifica 8	Data Modifica 21/09/2015
Redatto **SETP**	Verificato **SEP**	Approvato **DIG**

T002