



***G7, the range of cables insulated with ethylene propylene rubber high modulus (G7) sheathed with a PVC compound type “Rz” (anti-abrasive), resistant to fire propagation, with reduced emission of halogen gases, for fixed installations.***

**SAFE:** G7 cables are suitable for use in environments with high risk of fire and explosion due to the fire propagating resistant properties of the compounds according to CEI 20-22 II standard. In case cables are involved in a fire they have a reduced emission of halogens gasses and fumes with a low content of hydrochloric acid (lower than 18% measured according CEI 20-37). The characteristics of its compound allows a better calibration of the intervention of the differential switches. G7 cables have a very good behaviour in an outside installation as demonstrated by passing the UV resistance exposure test, according to the CENELEC standard HD 605.

**HANDY:** G7 cables have a reduced size and a bending radius lower than similar cables insulated with PVC.

**EFFICIENT:** G7 cables allow higher continuous current carrying capacity, for equal conductor section, than similar cables PVC insulated.

**ECOLOGICAL:** G7 cables, thanks to the lead-free compound, assures maximum safeguard of the environment.

<b>FG7R–0,6/1 kV</b>	Single-core flexible conductor
<b>FG7OR–0,6/1 kV</b>	Multicore flexible conductor
<b>UG7R–0,6/1 kV</b>	Single-core cable, solid conductor up to 6 mm <sup>2</sup>
<b>UG7OR–0,6/1 kV</b>	Multicore cable, solid conductors up to 6 mm <sup>2</sup>
<b>RG7R–0,6/1 kV</b>	Single-core cable, stranded conductor over 6 mm <sup>2</sup>
<b>RG7OR–0,6/1 kV</b>	Multicore cable, stranded conductors over 6 mm <sup>2</sup>
<b>FG7OR–0,6/1 kV</b>	For signalling and control circuits

**Nominal voltage:**  $U_0/U = 0,6/1$  kV.

**Standards:** CEI 20-13, 20-11, 20-29, 20-22 II, 20-37/2-1; EN / IEC 60332-1.

**European directives:** L.V.D. 2006/95/EC - 2002/95/CEE (RoHS).

**Conductor:** plain annealed copper, solid, stranded or flexible.

**Insulation:** hard ethylene propylene rubber (HEPR) compound, of type G7, with reduced emission of halogen (corrosive gases) under fire conditions.

**Colour of the cores:**

- Two cores : blue – brown.
- Three cores : blue – brown – green/yellow or brown – black – grey.
- Four cores : brown – black – grey – green/yellow or blue – brown – black – grey.
- Five cores : blue – brown – black – grey – green/yellow or  
blue – brown – black – grey – black.

Signalling and control cables: black cores with white progressive numbering inscription with or without green/yellow

**Sheath:** PVC of type Rz with reduced emission of halogen (corrosive gases) under fire conditions. Resistance to UV exposure, measured according to the CENELEC standard HD 605, for a sure outside non protected to sun light installation.

Colour: light grey.

**Marking:** continuous marking on the sheath: «ICEL or LOMBARDA (cable designation and cross nominal section) CEI 20-22 II IEMMEQU ECOGAMMA production date », with under the sheath the IEMMEQU thread. Progressive meter marking.

**Maximum operating temperature:** 90°C on the conductor.

**Maximum short circuit temperature:** 250°C on the conductor (for maximum 5 seconds).

**Minimum permissible bending radii:** 4 times the cable overall diameter for power cables; 6 times the cable overall diameter for signalling and control cables.

**Maximum pulling force during laying:** 5 kg/mm<sup>2</sup> of the conductor cross section.

**Current carrying capacity:** see CEI-UNEL 35024, 35026.

**Guide to Use:** for internal installations, also in wet locations and for external installations; for installation in surface mounted or on metallic structures; direct laying in earth permitted. Cables to be used only for electrical power transmission and to be installed only by skilled personal. See also the guide to use standard CEI 20-67.



# FG7(O)R-0,6/1 kV



Single-core and multicore power cables, G7 rubber insulated, PVC sheathed, with **flexible** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35375

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter Mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
<b>FG7R-0,6/1 kV</b>							
1 x 1,5	0,26	0,7	2,9	1,4	6,7	51	13,3
1 x 2,5	0,26	0,7	3,4	1,4	7,2	65	7,98
1 x 4	0,31	0,7	3,9	1,4	7,8	80	4,95
1 x 6	0,31	0,7	4,4	1,4	8,4	105	3,30
1 x 10	0,41	0,7	5,3	1,4	9,4	150	1,91
1 x 16	0,41	0,7	6,4	1,4	10,4	200	1,21
1 x 25	0,41	0,9	8,2	1,4	12,2	300	0,780
1 x 35	0,41	0,9	9,5	1,4	13,6	390	0,554
1 x 50	0,41	1,0	11,2	1,4	15,4	540	0,386
1 x 70	0,51	1,1	13,2	1,4	17,3	740	0,272
1 x 95	0,51	1,1	14,7	1,5	19,4	940	0,206
1 x 120	0,51	1,2	16,6	1,5	21,4	1200	0,161
1 x 150	0,51	1,4	18,6	1,6	23,8	1480	0,129
1 x 185	0,51	1,6	20,7	1,6	26,0	1830	0,106
1 x 240	0,51	1,7	23,5	1,7	29,2	2340	0,0801
1 x 300	0,51	1,8	26,1	1,8	32,0	2950	0,0641
1 x 400	0,51	2,0	29,8	1,9	36,5	3930	0,0486
<b>FG7OR-0,6/1 kV</b>							
2 x 1,5	0,26	0,7	2,9	1,8	12,0	150	13,3
2 x 2,5	0,26	0,7	3,4	1,8	13,0	190	7,98
2 x 4	0,31	0,7	3,9	1,8	14,2	240	4,95
2 x 6	0,31	0,7	4,4	1,8	15,4	310	3,30
2 x 10	0,41	0,7	5,3	1,8	17,3	440	1,91
2 x 16	0,41	0,7	6,4	1,8	19,4	600	1,21
2 x 25	0,41	0,9	8,2	1,8	23,0	850	0,780
2 x 35	0,41	0,9	9,5	1,8	25,7	1130	0,554
2 x 50	0,41	1,0	11,2	1,8	29,3	1580	0,386
2 x 70	0,51	1,1	13,2	1,8	33,1	2050	0,272
2 x 95	0,51	1,1	14,7	2,0	37,4	2670	0,206
2 x 120	0,51	1,2	16,6	2,1	41,5	3330	0,161
2 x 150	0,51	1,4	18,6	2,2	46,1	4100	0,129

continued

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
<b>FG7OR-0,6/1 kV</b>							
3 G 1,5	0,26	0,7	2,9	1,8	12,5	170	13,3
3 G 2,5	0,26	0,7	3,4	1,8	13,6	220	7,98
3 G 4	0,31	0,7	3,9	1,8	14,9	280	4,95
3 G 6	0,31	0,7	4,4	1,8	16,2	370	3,30
3 G 10	0,41	0,7	5,3	1,8	18,2	530	1,91
3 G 16	0,41	0,7	6,4	1,8	20,6	740	1,21
3 G 25	0,41	0,9	8,2	1,8	24,5	1060	0,780
3 G 35	0,41	0,9	9,5	1,8	27,3	1420	0,554
3 G 50	0,41	1,0	11,2	1,8	31,2	1960	0,386
3 G 70	0,51	1,1	13,2	1,9	35,6	2700	0,272
3 G 95	0,51	1,1	14,7	2,0	40,0	3430	0,206
3 G 120	0,51	1,2	16,6	2,1	44,4	4390	0,161
3 G 150	0,51	1,4	18,6	2,3	49,5	5400	0,129
3 G 185	0,51	1,6	20,7	2,4	55,2	6700	0,106
3 G 240	0,51	1,7	23,5	2,6	61,9	8700	0,0801
3 G 300	0,51	1,8	26,1	2,8	68,0	10700	0,0641
4 G 1,5	0,26	0,7	2,9	1,8	13,4	200	13,3
4 G 2,5	0,26	0,7	3,4	1,8	14,6	260	7,98
4 G 4	0,31	0,7	3,9	1,8	16,0	330	4,95
4 G 6	0,31	0,7	4,4	1,8	17,5	430	3,30
4 G 10	0,41	0,7	5,3	1,8	19,8	640	1,91
4 G 16	0,41	0,7	6,4	1,8	22,4	900	1,21
4 G 25	0,41	0,9	8,2	1,8	26,8	1300	0,780
3x35 +25	0,41	0,9	9,5	1,8	29,2	1650	0,554/0,780
3x50 +25	0,41	1,0	11,2	1,8	32,4	2200	0,386/0,780
3x70 +35	0,51	1,1	13,2	1,9	37,0	3000	0,272/0,554
3x95 +50	0,51	1,1	14,7	2,1	42,0	3900	0,206/0,386
3x120 +70	0,51	1,2	16,6	2,2	46,9	4700	0,161/0,272
3x150 +95	0,51	1,4	18,6	2,4	52,5	6300	0,129/0,206
3x185 +95	0,51	1,6	20,7	2,5	57,3	7600	0,106/0,206
3x240 +150	0,51	1,7	23,5	2,7	65,5	10000	0,0801/0,129
3x300 +150	0,51	1,8	26,1	2,9	70,8	12000	0,0641/0,129
5 G 1,5	0,26	0,7	2,9	1,8	14,4	230	13,3
5 G 2,5	0,26	0,7	3,4	1,8	15,6	310	7,98
5 G 4	0,31	0,7	3,9	1,8	17,3	400	4,95
5 G 6	0,31	0,7	4,4	1,8	18,9	520	3,30
5 G 10	0,41	0,7	5,3	1,8	21,5	780	1,91
5 G 16	0,41	0,7	6,4	1,8	24,4	1120	1,21
5 G 25	0,41	0,9	8,2	1,8	29,3	1680	0,780
5 G 35	0,41	0,9	9,5	1,8	32,8	2150	0,554
5 G 50	0,41	1,0	11,2	2,0	38,2	3000	0,386

If specifically requested, and for agreed quantities, a version of the cables without the protective conductor (green/yellow) can be supplied.

# FG7OR-0,6/1 kV



Multicore cables for signalling and control, G7 rubber insulated, PVC sheathed, with **flexible** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35377

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
<b>FG7OR-0,6/1 kV</b>							
5 G 1,5	0,26	0,7	2,9	1,8	14,4	230	13,3
7 G 1,5	0,26	0,7	2,9	1,8	15,4	275	13,3
10 G 1,5	0,26	0,7	2,9	1,8	18,7	365	13,4
12 G 1,5	0,26	0,7	2,9	1,8	19,3	410	13,4
16 G 1,5	0,26	0,7	2,9	1,8	21,1	510	13,4
19 G 1,5	0,26	0,7	2,9	1,8	22,1	580	13,4
24 G 1,5	0,26	0,7	2,9	1,8	25,4	700	13,5
7 G 2,5	0,26	0,7	3,4	1,8	16,8	310	7,98
10 G 2,5	0,26	0,7	3,4	1,8	20,6	395	8,06
12 G 2,5	0,26	0,7	3,4	1,8	21,3	445	8,06
16 G 2,5	0,26	0,7	3,4	1,8	23,3	545	8,06
19 G 2,5	0,26	0,7	3,4	1,8	24,5	615	8,06
24 G 2,5	0,26	0,7	3,4	1,8	28,3	750	8,10

If specifically requested, and for agreed quantities, a version of the cables without the protective conductor (green/yellow) can be supplied.

## UG7R–0,6/1 kV



Single core power cables, G7 rubber insulated, PVC sheathed, with **solid** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35376

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
1 x 1,5	1	0,7	2,9	1,4	6,4	51	12,1
1 x 2,5	1	0,7	3,3	1,4	6,9	65	7,41
1 x 4	1	0,7	3,8	1,4	7,5	80	4,61
1 x 6	1	0,7	4,3	1,4	8,1	105	3,08

## RG7R–0,6/1 kV



Single core power cables, G7 rubber insulated, PVC sheathed, with **stranded** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35376

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
1 x 10	6	0,7	5,2	1,4	9,0	150	1,83
1 x 16	6	0,7	6,1	1,4	10,0	210	1,15
1 x 25	6	0,9	7,8	1,4	11,7	310	0,727
1 x 35	6	0,9	8,8	1,4	13,0	420	0,524
1 x 50	6	1,0	10,2	1,4	14,7	550	0,387
1 x 70	12	1,1	12,0	1,4	16,6	760	0,268
1 x 95	15	1,1	13,7	1,5	18,6	1010	0,193
1 x 120	18	1,2	15,4	1,5	20,5	1160	0,153
1 x 150	18	1,4	17,2	1,6	22,8	1500	0,124
1 x 185	30	1,6	19,3	1,6	25,0	1900	0,0991
1 x 240	34	1,7	21,9	1,7	27,9	2500	0,0754
1 x 300	34	1,8	24,3	1,8	30,7	3100	0,0601
1 x 400	53	2,0	27,4	1,9	35,0	4100	0,0470
1 x 500	53	2,2	30,6	2,0	38,6	5100	0,0366
1 x 630	53	2,4	34,6	2,2	43,1	6200	0,0283

## UG7OR–0,6/1 kV



Multicore power cables, G7 rubber insulated, PVC sheathed, with **solid** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35376

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
2 x 1,5	1	0,7	2,9	1,8	11,5	145	12,1
2 x 2,5	1	0,7	3,3	1,8	12,4	180	7,41
2 x 4	1	0,7	3,8	1,8	13,6	220	4,61
2 x 6	1	0,7	4,3	1,8	14,7	270	3,08
3 G 1,5	1	0,7	2,9	1,8	12,0	170	12,1
3 G 2,5	1	0,7	3,3	1,8	13,0	200	7,41
3 G 4	1	0,7	3,8	1,8	14,3	250	4,61
3 G 6	1	0,7	4,3	1,8	15,5	320	3,08
4 G 1,5	1	0,7	2,9	1,8	12,9	190	12,1
4 G 2,5	1	0,7	3,3	1,8	14,0	240	7,41
4 G 4	1	0,7	3,8	1,8	15,4	300	4,61
4 G 6	1	0,7	4,3	1,8	16,7	400	3,08
5 G 1,5	1	0,7	2,9	1,8	13,8	220	12,1
5 G 2,5	1	0,7	3,3	1,8	15,0	280	7,41
5 G 4	1	0,7	3,8	1,8	16,5	370	4,61
5 G 6	1	0,7	4,3	1,8	18,1	510	3,08

If specifically requested, and for agreed quantities, a version of the cables without the protective conductor (green/yellow) can be supplied.

## RG7OR–0,6/1 kV



Multicore power cables, G7 rubber insulated, PVC sheathed, with **stranded** conductors for fixed installations. Resistant to fire propagation with reduced emission of corrosive gases under fire conditions.

Tab. CEI – UNEL 35376

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
2 x 10	6	0,7	5,2	1,8	16,6	440	1,83
2 x 16	6	0,7	6,1	1,8	18,6	600	1,15
2 x 25	6	0,9	7,8	1,8	22,1	850	0,727
2 x 35	6	0,9	8,8	1,8	24,6	1130	0,524
2 x 50	6	1,0	10,2	1,8	28,1	1480	0,387
2 x 70	12	1,1	12,0	1,8	31,7	2040	0,268
2 x 95	15	1,1	13,7	2,0	35,9	2700	0,193

continued

Number and nominal cross-sectional area of conductors mm <sup>2</sup>	Maximum diameter of conductor wires mm	Thickness of insulation specified value mm	Indicative core diameter mm	Thickness of the sheath specified value mm	Maximum overall diameter mm	Indicative cable weight g/m	Maximum resistance of conductors at 20°C ohm/km
<b>RG7OR-0,6/1 kV</b>							
2 x 120	18	1,2	15,4	2,1	39,8	3350	0,153
2 x 150	18	1,4	17,2	2,2	44,2	4100	0,124
3 G 10	6	0,7	5,2	1,8	17,5	530	1,83
3 G 16	6	0,7	6,1	1,8	19,7	740	1,15
3 G 25	6	0,9	7,8	1,8	23,4	1130	0,727
3 G 35	6	0,9	8,8	1,8	26,2	1450	0,524
3 G 50	6	1,0	10,2	1,8	29,9	1950	0,387
3 G 70	12	1,1	12,0	1,9	34,1	2650	0,268
3 G 95	15	1,1	13,7	2,0	38,3	3480	0,193
3 G 120	18	1,2	15,4	2,1	42,5	4380	0,153
3 G 150	18	1,4	17,2	2,3	47,4	5350	0,124
3 G 185	30	1,6	19,3	2,4	52,9	6700	0,0991
3 G 240	34	1,7	21,9	2,6	59,3	8700	0,0754
3 G 300	34	1,8	24,3	2,7	65,2	10900	0,0601
3 G 400	53	2,0	27,4	3,0	74,6	13600	0,0470
4 G 10	6	0,7	5,2	1,8	19,0	630	1,83
4 G 16	6	0,7	6,1	1,8	21,5	900	1,15
4 G 25	6	0,9	7,8	1,8	25,7	1480	0,727
3x35 +25	6	0,9	8,8	1,8	28,0	1700	0,524/0,727
3x50 +25	6	1,0	10,2	1,8	31,1	2000	0,387/0,727
3x70 +35	12	1,1	12,0	1,9	35,4	2800	0,268/0,524
3x95 +50	15	1,1	13,7	2,1	40,3	4000	0,193/0,387
3x120 +70	18	1,2	15,4	2,2	44,9	5200	0,153/0,268
3x150 +95	18	1,4	17,2	2,4	50,3	6300	0,124/0,193
3x185 +95	30	1,6	19,3	2,5	54,9	7600	0,0991/0,193
3x240 +150	34	1,7	21,9	2,7	62,8	10000	0,0754/0,124
3x300 +150	34	1,8	24,3	2,9	67,8	12000	0,0601/0,124
3x400 +240	53	2,0	27,4	3,2	78,8	15900	0,0470/0,0754
5 G 10	6	0,7	5,2	1,8	20,6	780	1,83
5 G 16	6	0,7	6,1	1,8	23,4	1100	1,15
5 G 25	6	0,9	7,8	1,8	28,0	1750	0,727
5 G 35	6	0,9	8,8	1,8	31,5	2100	0,524
5 G 50	6	1,0	10,2	2,0	36,6	2900	0,387

If specifically requested, and for agreed quantities, a version of the cables without the protective conductor (green/yellow) can be supplied.

The **G7** mark highlights a range of electric rubber cable resistant to fire propagation, only suitable for fixed installations, with the IMQ mark on the whole product range.

The **G7** cables belong to the AFIAM cable line and are marked "**CEI 20-22 II**", so to point out that they are "**resistant to fire propagation**": this means that they are conform to the requirement of self extinguishing set down in the standard CEI 20-22/2 (test of resistance to propagation of fire), having passed with success the burning test at the CESI laboratory. The test has been carried out on a bunch of cables with at least 10 kg/m of non metallic material.

The **G7** cables are also "**flame retardant on a single vertical cable test**" according to the test CEI 20-35 (EN and IEC 60332-1).

Furthermore, to prevent additional risks coming from the toxic substances emitted during the combustion by the plastic material, the **G7** cables are manufactured with special compounds "**with reduced emission of corrosive gases**", less than 18% in terms of hydrochloric acid, according to the standard **CEI 20-37/0; 20-37/2-0 (EN 50267-1) and 20-37/2-1 (EN 50267-2-1)**.

In the IMQ laboratories the **ICEL FG7(O)R** cables have passes with full success the UV resistant test (not required by the product standard) according the CENELEC standard HD 605, so to have a good performance in respect of UV resistance in a non protected external installation.

All the **G7** cables belong to the ecological line named ECOGAMMA, marked on the documentation and on the packaging, by the symbol of the Windmill. In the new ecological cables the **lead** has been eliminated, a heavy metal, that is dangerous, for the environment and for humans, if present in high quantity.

The use of the **G7** cables is recommended also in installations with danger of explosion or of fire spread, as in thermal and electrical power plants, chemical and petrochemical plants, steel plants, fuels distribution plants, etc...



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