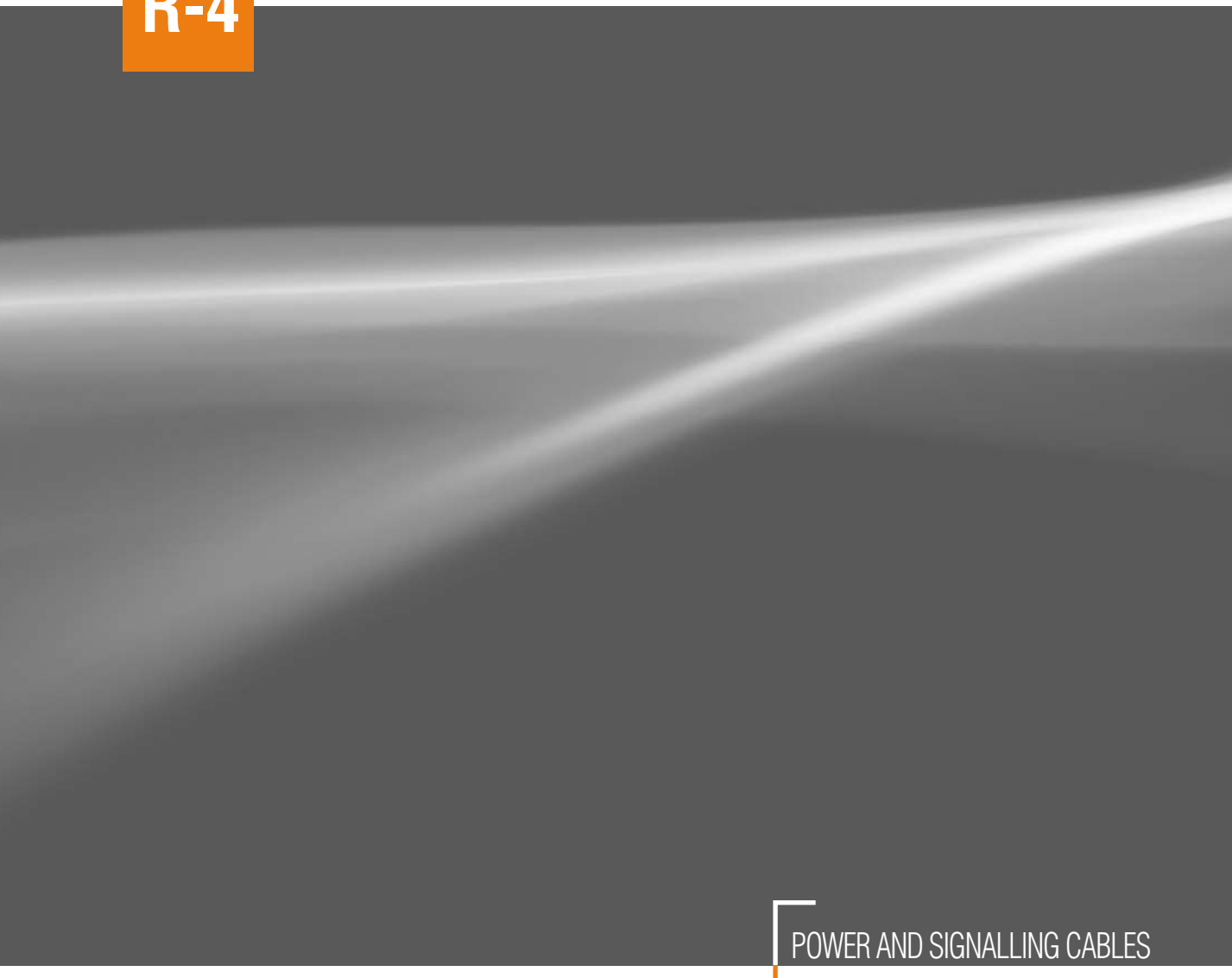
TRATOS
CAVI

R-4



POWER AND SIGNALLING CABLES

FG70R-0.6/1 kV

Flame retardant
and low corrosive gases

CONTENTS

FG7(O)R-0.6/1 kV

Power and signalling cables, single and multi-core, flame retardant, with low emission of corrosive gases suitable for areas at risk of fire breaking out.

Condition of use: fixed laying both indoor and outdoor, on tray, in pipe or direct burying.

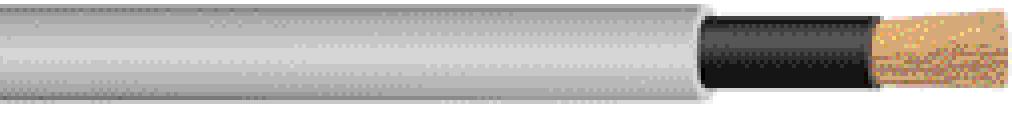
Were to use them: industrial areas, housebuilding

CONSTRUCTION CEI 20-13 CEI 20-22 II

Conductor: plain annealed copper class 5

Insulation: ethylene propylene rubber type G7

Sheath: polyvinyl chloride compound type Rz



Conductor identification:

1	black
2	blue - brown
3	a) brown - black - grey b) yellow/green - blue - brown
4	a) blue - marrone - black - grey b) yellow/green - brown - black - grey
5	yellow/green - blue - brown - black - grey
7	black with white numbering

Colour:

black	RAL 9000
brown	RAL 8003
blue	RAL 5015
yellow	RAL 1021
green	RAL 6018
grey	RAL 7001 (insulation)
grey	RAL 7035 (outer sheath)

Outer sheath colour: grey

Marking on outer sheath:

without yellow/green **TRATOS FG7OR-0.6/1 kV 4X10 CEI 20-22 II CEI 20-13 IEMMEQU** year of production metric marking **CE**

with yellow/green **TRATOS FG7OR-0.6/1 kV 4G10 CEI 20-22 II CEI 20-13 IEMMEQU** year of production metric marking **CE**

TECHNICAL REFERENCES

CEI 20-13	Rubber insulated cables with rated voltage between 1kV and 30kV
CEI 20-11	Technical characteristics and test requirements for insulation and sheath compounds of electric cables
CEI 20-29	Conductors of insulated cables. Guide to the dimensional limits of circular conductors
CEI 20-35/1-1 EN 50265-2-1	Common test methods for cables under fire conditions - Tests for resistance to vertical flame propagation for a single insulated conductor or cable. Part 2-1: procedures - 1kW pre-mixed flame
CEI 20-37/2-1 EN 50267-2-1	Common test methods for cables under fire conditions - Tests on gases evolved duri n g combustion of materials from cables. Part 2-1: procedures - Determination of the amount of halogen acid gas
CEI 20-37/3-0 EN 50268-1	Common test methods for cables under fire conditions - Measurement of smoke density of cables burning under defined conditions. Part 3: apparatus
CEI 20-37/3-1 EN 50268-2	Common test methods for cables under fire conditions - Measurement of smoke density of cables burning under defined conditions. Part 2: procedures
CEI 20-22 II	Tests on electric cables under fire conditions Part 2: fire propagation
CEI 64-8	Electical installation of buildings
CEI 20-67	Guide to use of 0.6/1 kV cables

Conductor maximum temperature	90°C on conductor
Maximum short circuit temperature for 5 seconds duration max	250°C on conductor
Minimum bending radius	• 4 x overal diameter for power cables • 6 x overal diameter for signaling cables
Maximum applicable pool force on metal conductor	• 5 kg/mm2 copper size during installation • 1,5 kg/mm2 copper size during service
Minimum installation temperature	0°C

QUALITY SYSTEM

Our Quality System management includes two certificates: BSI and Aenor (E), in acordance to ISO 9001/2000 covering the production, purchasing of raw materials design and final test including varios documents typologies. Tratos Quality System management is under constant control by inspectors working for the certifying bodies.

Flame retardant cables, low corrosive gases G7 elastomeric compound and Rz sheathed.

FG7(O)R-0.6/1 kV

IMQ DAT 93003875

Nominal section	Max. diameter cond. wires	Nominal conduct. diameter	Average insulation thickness	Max. outer diameter	Indicative weight	Minimun bending radius	Current Rating (A)						Max. cond.resist. at 20°C
							30°C in air	30°C in pipe in air	20°C ground laying in pipe		20°C ground laying		
									ρ =1	ρ =1.5	ρ =1	ρ =1.5	
mm2	mm	mm	mm	mm	kg/km	mm							0hm/km
FG7R-0.6/1kV 1 Conductor													
1.5	0.26	1.5	0.7	6.7	53	27	23	19	21	20	34	31	13.3
2.5	0.26	1.9	0.7	7.2	65	29	32	28	28	26	44	38	7.98
4	0.31	2.5	0.7	7.8	83	32	44	36	36	34	57	50	4.95
6	0.31	3.0	0.7	8.4	107	34	57	47	46	43	72	63	3.3
10	0.41	3.9	0.7	9.4	152	38	79	65	62	58	96	84	1.91
16	0.41	5.0	0.7	10.4	211	42	108	89	83	78	126	111	1.21
25	0.41	6.0	0.9	12.2	324	79	136	116	109	101	159	140	0.78
35	0.41	7.7	0.9	13.6	410	55	170	145	133	122	190	168	0.554
50	0.41	9.0	1.0	15.4	582	62	206	176	165	149	225	198	0.386
70	0.51	11.0	1.1	17.3	818	70	267	221	205	185	278	245	0.272
95	0.51	12.5	1.1	19.4	1057	78	327	270	243	218	332	293	0.206
120	0.51	14.5	1.2	21.4	1306	86	384	311	273	250	376	331	0.16
150	0.51	16.0	1.4	23.8	1627	96	445	354	325	288	419	369	0.129
185	0.51	17.7	1.6	26.0	1985	104	508	419	363	322	447	420	0.106
240	0.51	20.4	1.7	29.2	2507	117	609	488	426	378	551	486	0.08
300	0.51	23.4	1.8	32.0	3277	128	701	—	485	430	618	544	0.0641
400	0.51	27.0	2.0	36.5	4262	146	820	—	562	503	697	615	0.0486
FG7OR-0.6/1kV 2 Conductors													
1.5	0.26	1.5	0.7	12.0	127	48	25	21	25	24	35	30	13.3
2.5	0.26	1.9	0.7	13.0	136	52	37	31	30	29	48	42	7.98
4	0.31	2.5	0.7	14.2	221	57	48	39	40	38	62	56	4.95
6	0.31	3.0	0.7	15.4	246	62	64	50	53	50	76	67	3.3
10	0.41	3.9	0.7	17.3	429	70	87	70	69	65	104	91	1.91
16	0.41	5.0	0.7	19.4	577	78	114	90	91	85	137	121	1.21
25	0.41	6.0	0.9	24.0	900	96	150	120	117	110	178	154	0.78
35	0.41	7.7	0.9	26.6	1085	107	184	147	146	137	213	186	0.554
50	0.41	9.0	1.0	30.5	1629	122	226	176	181	169	253	219	0.386
FG7OR-0.6/1kV 3 Conductors (without yellow/green)													
1.5	0.26	1.5	0.7	12.5	148	50	22	18.5	19	18	29	25	13.3
2.5	0.26	1.9	0.7	13.6	210	55	33	26	27	26	41	37	7.98
4	0.31	2.5	0.7	14.9	251	60	41	36	32	31	52	46	4.95
6	0.31	3.0	0.7	16.2	327	65	53	43	44	42	66	57	3.3
10	0.41	3.9	0.7	18.2	543	73	61	61	60	56	89	79	1.91
16	0.41	5.0	0.7	20.6	760	83	99	79	75	71	115	102	1.21
25	0.41	6.0	0.9	24.5	1121	98	126	104	101	94	147	129	0.78
35	0.41	7.7	0.9	27.3	1432	110	159	129	121	115	177	156	0.554
50	0.41	9.0	1.0	31.2	2054	125	193	155	150	139	212	186	0.386
70	0.51	11.0	1.1	35.6	3008	143	245	193	187	172	261	229	0.272
95	0.51	12.5	1.1	40.0	3844	160	300	235	228	208	313	276	0.206
120	0.51	14.5	1.2	44.4	4898	178	344	266	262	240	354	309	0.161
150	0.51	16.0	1.4	49.5	5624	198	401	301	300	273	396	347	0.129
185	0.51	17.7	1.6	55.2	7111	221	454	341	342	308	447	390	0.106
240	0.51	20.4	1.7	61.9	9455	248	540	397	400	358	513	455	0.08

Note: the current carrying capacities of five-core cables were calculated for three active conductors. The current carrying capacities of cables laid in ground were calculated for a depth of m. 0.8.

IMQ DAT 93003875

FG7(O)R-0.6/1 kV

Nominal section	Max. diameter cond. wires	Nominal conduct. diameter	Average insulation thickness	Max. outer diameter	Indicative weight	Minimun bending radius	Current Rating (A)						Max. cond.resist. at 20°C
							30°C in air	30°C in pipe in air	20°C ground laying in pipe		20°C ground laying		
									ρ =1	ρ =1.5	ρ =1	ρ =1.5	
mm2	mm	mm	mm	mm	kg/km	mm							0hm/km
FG7OR-0.6/1kV 3 Conductors (with yellow-green)													
1.5	0.26	1.5	0.7	12.5	148	50	24	20	25	24	37	32	13.3
2.5	0.26	1.9	0.7	13.6	210	55	34	28	32	31	48	42	7.98
4	0.31	2.5	0.7	14.9	251	60	50	41	42	40	60	54	4.95
6	0.31	3.0	0.7	16.2	327	65	62	50	53	50	78	69	3.3
10	0.41	3.9	0.7	18.2	543	73	87	70	69	65	104	91	1.91
16	0.41	5.0	0.7	20.6	760	83	114	90	91	85	137	121	1.21
25	0.41	6.0	0.9	24.5	1121	98	148	118	117	110	178	157	0.78
35	0.41	7.7	0.9	27.3	1432	110	186	147	143	134	213	186	0.554
50	0.41	9.0	1.0	31.2	2054	125	224	174	178	166	253	222	0.386
70	0.51	11.0	1.1	35.6	3008	143	290	222	221	205	309	271	0.272
95	0.51	12.5	1.1	40.0	3844	160	353	266	266	246	370	324	0.206
120	0.51	14.5	1.2	44.4	4898	178	411	306	311	285	425	372	0.16
150	0.51	16.0	1.4	49.5	5624	198	474	335	357	325	474	416	0.129
185	0.51	17.7	1.6	55.2	7111	221	522	375	403	360	527	460	0.106
240	0.51	20.4	1.7	61.9	9455	248	620	437	470	418	605	536	0.08
FG7OR-0.6/1kV 4 Conductors (without yellow/green)													
1.5	0.26	1.5	0.7	13.4	175	54	22	18.5	21	20	31	27	13.3
2.5	0.26	1.9	0.7	14.6	235	59	33	27	25	24	41	37	7.98
4	0.31	2.5	0.7	16.0	307	64	41	34	34	33	52	46	4.95
6	0.31	3.0	0.7	17.5	413	70	55	45	44	42	66	57	3.3
10	0.41	3.9	0.7	19.8	632	80	74	59	60	56	87	77	1.91
16	0.41	5.0	0.7	22.4	868	90	99	79	75	71	113	100	1.21
25	0.41	6.0	0.9	26.8	1431	108	126	104	99	92	147	129	0.78
35+1x25	0.41	7.7/6.0	0.9/0.9	29.2	1827	117	157	127	123	115	179	159	0.554
50+1x25	0.41	9.0/6.0	1.0/0.9	32.4	2596	130	193	155	153	142	210	184	0.386
70+1x35	0.51	11.0/7.7	1.1/0.9	37.0	3375	148	247	195	190	175	257	225	0.272
95+1x50	0.51	12.5/9.0	1.1/1.0	42.0	4274	168	300	235	225	205	312	275	0.206
120+1x70	0.51	14.5/11.0	1.2/1.1	46.9	5515	188	344	266	259	237	357	313	0.161
150+1x95	0.51	16.0/12.5	1.4/1.1	52.5	7006	210	401	302	301	274	393	346	0.129
185+1x95	0.51	17.7/12.5	1.6/1.1	57.3	8410	230	457	342	338	308	444	390	0.106
240+1x150	0.51	20.4/16.0	1.7/1.4	65.5	11104	262	535	396	403	362	514	456	0.08
FG7OR-0.6/1kV 4 Conductors (with yellow/green)													
1.5	0.26	1.5	0.7	13.4	175	54	24	18.5	19	18	29	25	13.3
2.5	0.26	1.9	0.7	14.6	235	59	33	27	25	24	39	35	7.98
4	0.31	2.5	0.7	16.0	307	64	43	36	34	33	52	46	4.95
6	0.31	3.0	0.7	17.5	413	70	53	43	44	42	66	57	3.3
10	0.41	3.9	0.7	19.8	632	80	74	59	60	56	89	79	1.91
16	0.41	5.0	0.7	22.4	868	90	101	81	77	73	115	102	1.21
25	0.41	6.0	0.9	26.8	1431	108	128	106	99	92	149	131	0.78
35+1G25	0.41	7.7/6.0	0.9/0.9	29.2	1827	117	157	127	121	115	179	158	0.554
50+1G25	0.41	9.0/6.0	1.0/0.9	32.4	2596	130	193	155	153	142	213	187	0.386
70+1G35	0.51	11.0/7.7	1.1/0.9	37.0	3375	148	247	195	187	172	258	226	0.272
95+1G50	0.51	12.5/9.0	1.1/1.0	42.0	4274	168	300	235	228	208	310	273	0.206
120+1G70	0.51	14.5/11.0	1.2/1.1	46.9	5515	188	348	270	258	236	357	313	0.161
150+1G95	0.51	16.0/12.5	1.4/1.1	52.5	7006	210	397	298	301	274	392	343	0.129
185+1G95	0.51	17.7/12.5	1.6/1.1	57.3	8410	230	456	343	340	310	447	392	0.106
240+1G150	0.51	20.4/16.0	1.7/1.4	65.5	11104	262	537	398	406	365	518	458	0.08

Note: the current carrying capacities of five-core cables were calculated for three active conductors. The current carrying capacities of cables laid in ground were calculated for a depth of m. 0.8.

Flame retardant cables, low corrosive gases G7 elastomeric compound and Rz sheathed.

FG7(O)R-0.6/1 kV

IMQ DAT 93003875

Nominal section	Max. diameter cond. wires	Nominal conduct. diameter	Average insulation thickness	Max. outer diameter	Indicative weight	Minimun bending radius	Current Rating (A)						Max. cond.resist. at 20°C
							30°C in air	30°C in pipe in air	20°C ground laying in pipe		20°C ground laying		
									ρ =1	ρ =1.5	ρ =1	ρ =1.5	
mm2	mm	mm	mm	mm	kg/km	mm							0hm/km
FG7OR-0.6/1kV 5 Conductors (with yellow/green)													
1.5	0.26	1.5	0.7	14.4	226	58	22	18.5	20	18	29	28	13.3
2.5	0.26	1.9	0.7	15.6	251	63	33	27	25	24	41	30	7.98
4	0.31	2.5	0.7	17.3	379	70	41	34	34	33	52	46	4.95
6	0.31	3.0	0.7	18.9	492	76	53	43	44	42	66	59	3.3
10	0.41	3.9	0.7	21.5	775	86	74	59	60	54	89	79	1.91
16	0.41	5.0	0.7	24.4	1059	98	99	79	76	71	113	100	1.21
25	0.41	6.0	0.9	29.3	1742	118	125	103	101	94	146	130	0.78
35	0.41	7.7	0.9	32.8	2262	132	157	127	123	115	180	159	0.554
50	0.41	9.0	1.0	39.4	3191	158	194	156	153	142	213	187	0.386
FG7ORX-0.6/1kV 2 Conductors helically wound													
2x1x1.5	0.26	1.5	0.7	13.4	108	54	23	19	21	20	34	31	13.3
2x1x2.5	0.26	1.9	0.7	14.4	132	58	32	28	28	26	44	38	7.98
2x1x4	0.31	2.5	0.7	15.6	168	63	44	36	36	34	57	50	4.95
2x1x6	0.31	3.0	0.7	16.8	217	68	57	47	46	43	72	63	3.3
2x1x10	0.41	3.9	0.7	18.8	308	76	79	65	62	58	96	84	1.91
2x1x16	0.41	5.0	0.7	20.8	427	84	108	89	83	78	126	111	1.21
2x1x25	0.41	6.0	0.9	24.4	655	98	136	116	109	101	159	140	0.78
2x1x35	0.41	7.7	0.9	27.2	829	109	170	145	133	122	190	168	0.554
2x1x50	0.41	9.0	1.0	30.8	1176	124	206	176	165	149	225	198	0.386
2x1x70	0.51	11.0	1.1	34.6	1653	139	267	221	205	185	278	245	0.272
2x1x95	0.51	12.5	1.1	38.8	2136	156	327	270	243	218	332	293	0.209
2x1x120	0.51	14.5	1.2	42.8	2639	172	384	311	273	250	376	331	0.161
2x1x150	0.51	16.0	1.4	47.6	3287	191	445	354	325	288	419	369	0.129
FG7OR-0.6/1kV 3 Conductors helically wound													
3x1x1.5	0.26	1.5	0.7	14.4	162	58	22	18.5	19	18	29	25	13.3
3x1x2.5	0.26	1.9	0.7	15.5	197	62	33	26	27	26	41	37	7.98
3x1x4	0.31	2.5	0.7	16.8	253	88	41	36	32	31	52	46	4.95
3x1x6	0.31	3.0	0.7	18.1	326	73	53	43	44	42	66	57	3.3
3x1x10	0.41	3.9	0.7	20.3	463	82	79	65	62	58	96	84	1.91
3x1x16	0.41	5.0	0.7	22.4	643	90	108	89	83	78	126	111	1.21
3x1x25	0.41	6.0	0.9	26.3	987	106	136	116	109	101	159	140	0.78
3x1x35	0.41	7.7	0.9	29.3	1249	118	170	145	133	122	190	168	0.554
3x1x50	0.41	9.0	1.0	33.2	1773	133	206	176	165	149	225	198	0.386
3x1x70	0.51	11.0	1.1	37.2	2491	149	267	221	205	185	278	245	0.272
3x1x95	0.51	12.5	1.1	41.8	3219	168	327	270	243	218	332	293	0.209
3x1x120	0.51	14.5	1.2	46.1	3977	185	384	311	273	250	376	331	0.161
3x1x150	0.51	16.0	1.4	51.2	4955	205	445	354	325	288	419	369	0.129
3x1x185	0.51	17.7	1.6	55.9	6045	224	508	419	363	322	477	420	0.106
3x1x240	0.51	20.4	1.7	62.8	7634	252	609	488	426	378	551	486	0.08

Note: the current carrying capacities of five-core cables were calculated for three active conductors. The current carrying capacities of cables laid in ground were calculated for a depth of m. 0.8.

Control and signalling cables

IMQ DAT 94000163

Nominal section	Max. diameter cond. wires	Nominal conduct. diameter	Average insulation thickness	Max. outer diameter	Indicative weight	Minimun bending radius	Current Rating (A)						Max. cond.resist. at 20°C
							30°C in air	30°C in pipe in air	20°C ground laying in pipe		20°C ground laying		
									ρ =1	ρ =1.5	ρ =1	ρ =1.5	
mm2	mm	mm	mm	mm	kg/km	mm							0hm/km
FG7OR-0.6/1kV N Conductors (with yellow/green)													
5x1.5	0.26	1.5	0.7	14.4	226	87	15	13	22	20	25	22	13.3
7x1.5	0.26	1.5	0.7	15.4	237	93	14	12.5	17	15.5	19.5	17	13.3
10x1.5	0.26	1.5	0.7	18.7	336	113	14	12.5	16.5	15.5	19.5	17	13.4
12x1.5	0.26	1.5	0.7	19.3	402	116	10	8.5	12.5	10	14	11.5	13.4
16x1.5	0.26	1.5	0.7	21.1	423	127	10	8.5	12	10	14	11.5	13.4
19x1.5	0.26	1.5	0.7	22.1	550	133	8	7	12	10	13	12.5	13.4
24x1.5	0.26	1.5	0.7	25.4	739	153	8	7	12	10	13	12.5	13.5
5x2.5	0.26	1.9	0.7	15.6	251	94	23	19	32	29	35	32	7.98
7x2.5	0.26	1.9	0.7	16.8	332	101	16.5	14.5	21	18	23	20	8.06
10x2.5	0.26	1.9	0.7	20.6	544	124	16.5	14.5	21	18	23	20	8.06
12x2.5	0.26	1.9	0.7	21.3	504	128	14.5	13	19	16	21	18.5	8.06
16x2.5	0.26	1.9	0.7	23.3	705	140	14.5	13	19	16	21	18.5	8.06
19x2.5	0.26	1.9	0.7	24.5	720	147	13	11.5	13.5	12	15	13	8.06
24x2.5	0.26	1.9	0.7	28.3	891	170	13	11.5	13.5	12	15	13	8.10

Note: the current carrying capacities of cables laid in ground were calculated for a depth of m. 0.8.

SPECIFICATIONS

CORRECTION COEFFICIENTS OF CURRENT CARRYING CAPACITY FOR AMBIENT TEMPERATURES DIFFERENT FROM THOSE HERE INDICATED FOR REFERENCE

Type of laying	Temperature (°C)											
	10	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**
in air*	1.15	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65
in ground	1.07	1.04	1.00	0.96	0.93	0.89	0.85	0.80	0.76	0.71	0.65	0.60

* Non directly exposed to sun light

POSITIONING OF PHASES SINGLE-CORE CABLES CONNECTED IN PARALLEL TO ENSURE THE CORRECT CURRENT DISPOSITION

Cables in trefoil setting

Number of triads in the same layer	2	3	4
	T T RS SR	T T T RS SR RS	T T T T RS SR RS SR

Cables distanced vertically or horizontally

Number of triads in the same layer	2	4
	RST TSR	RST TSR RST TSR

Note: this scheme has to be repeated for every layer

ELECTRICAL RESISTANCE AND REACTANCE

Resistance 90°C		
Nominal section	Flexible copper conductor, not tinned	
mm2	d.c. Ohm/km	a.c. Ohm/km
1.5	16.95	16.95
2.5	10.17	10.17
4	6.31	6.31
6	4.2	4.2
10	2.43	2.43
16	1.54	1.54
25	0.99	0.99
35	0.71	0.71
50	0.49	0.5
70	0.34	0.35
95	0.26	0.27
120	0.2	0.21
150	0.16	0.17
185	0.13	0.14
240	0.102	0.104
300	0.081	0.085

Reactance a 50 Hz		
Nominal section	Flexible copper conductor, not tinned	
mm2	One-pole Ohm/km	Multicore-pole Ohm/km
1.5	0.144	0.100
2.5	0.132	0.094
4	0.122	0.087
6	0.114	0.083
10	0.105	0.078
16	0.098	0.075
25	0.093	0.074
35	0.089	0.072
50	0.085	0.071
70	0.084	0.070
95	0.083	0.069
120	0.080	0.069
150	0.080	0.069
185	0.080	0.069
240	0.078	0.069
300	0.076	0.068

VOLTAGE DROP

For the calculation of the voltage drop in alternating current(a.c.) apply the following formula:

$$V = \frac{Ct \cdot I \cdot L}{1000}$$

where:

Ct (V/A/Km) = tab. factor [K·(R·cos φ + X·sen φ)]
I (A) = carring current
L (m) = line length
R (/Km) = electrical resistance at max. working temperature
X (/Km) = phase reactance
Cos φ = power factor
K = 2 for monophase lines
K = 1.73 for three-phase lines

Note: the voltage drop values are valid also for the direct current (d.c.).

Coefficients (Ct) for calculating the voltage drop at a.c. of flexible cables with HEPR-G7 insulation at 90°C

Nominal section mm2	One-pole single-phase			One-pole three-phase			Multi-pole single-phase			Multi-pole three-phase		
	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1
1.5	27.29	30.64	33.90	23.61	26.50	29.32	27.24	30.60	33.90	23.56	26.47	29.32
2.5	16.34	18.42	20.34	14.21	15.93	17.59	16.38	18.39	20.34	14.17	15.91	17.59
4	10.24	11.46	12.62	8.86	9.92	10.92	10.20	11.43	12.62	8.82	9.89	10.92
6	6.86	7.66	8.40	5.93	6.63	7.27	6.82	7.63	8.40	5.90	6.60	7.27
10	4.01	4.47	4.86	3.47	3.86	4.20	3.98	4.44	4.86	3.44	3.84	4.20
16	2.58	2.86	3.08	2.23	2.47	2.66	2.55	2.84	3.08	2.21	2.45	2.66
25	1.70	1.86	1.98	1.47	1.61	1.71	1.67	1.85	1.98	1.45	1.60	1.71
35	1.23	1.34	1.40	1.06	1.16	1.21	1.21	1.32	1.40	1.04	1.14	1.21
50	0.89	0.96	0.98	0.77	0.83	0.85	0.87	0.94	0.98	0.75	0.82	0.85
70	0.64	0.69	0.68	0.56	0.59	0.59	0.63	0.67	0.68	0.54	0.58	0.59
95	0.52	0.54	0.52	0.45	0.47	0.45	0.50	0.53	0.52	0.43	0.46	0.45
120	0.42	0.43	0.40	0.36	0.37	0.35	0.40	0.42	0.40	0.35	0.36	0.35
150	0.35	0.36	0.32	0.30	0.31	0.28	0.34	0.35	0.32	0.29	0.30	0.28
185	0.30	0.30	0.26	0.26	0.26	0.22	0.29	0.29	0.26	0.25	0.25	0.22
240	0.26	0.26	0.21	0.22	0.22	0.18	0.25	0.25	0.21	0.22	0.21	0.18
300	0.23	0.22	0.17	0.20	0.19	0.15	0.22	0.21	0.17	0.19	0.18	0.15

MAXIMUM SHORT CIRCUIT CURRENT

This formula can be used to verify the section of the selected conductor:

$$S = \frac{Icc \cdot t}{C}$$

This formula can be used to calculate the maximum short circuit current:

$$Icc\ max = \frac{S \cdot C}{t}$$

where:

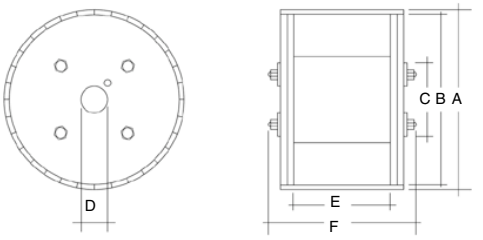
S = min. copper area conductor (mm2)
Icc = short circuit current (A)
t = duration of short circuit (sec.)
C = 143 (for G7 cables)

Values of current (C) as related to short circuit initial and final temperatures for copper conductors. Norm CEI 11-17

Starting temperature °C	Final temperature of short circuit °C					
	140	**160**	**180**	**200**	**220**	**250**
90	86	100	112	122	131	143
85	90	104	115	125	134	146
80	94	108	119	129	137	149
75	99	111	122	132	140	151
70	103	115	125	135	143	154
65	107	119	129	138	146	157
60	111	122	132	141	149	160
50	118	129	139	147	155	165
40	126	136	145	153	161	170
30	133	143	152	159	166	176

Note: the above fo rmulas are valid for periods of max. 5 seconds. Please refer to Norm CEI 64-8 for exact calculations

DRUMS DIMENSION



A - Flange diameter including circumference batten
B - Flange diameter without circumference batten
C - Inner barrel diameter
D - Axis hole
E - Inner width
F - External width

Drum type	A mm	B mm	C mm	D mm	E mm	F mm	Weight Kg	Volume m^3
BL 60	690	630	315	80	315	435	30	0.19
BL 70	770	710	355	80	400	515	35	0.28
BL 80	960	800	400	80	450	575	40	0.39
BL 90	960	900	450	80	450	575	50	0.45
BL 100	1.060	1.000	500	80	560	685	60	0.77
BL 120	1.310	1.250	630	80	630	760	100	1.27
BL 140	1.460	1.400	710	80	750	920	140	1.76
BL 160	1.660	1.600	900	80	900	1.070	250	2.80
BL 180	1.860	1.800	1.120	80	1.120	1.320	300	4.20
BL 200	2.060	2.000	1.250	125	1.120	1.320	400	5.20
BL 220	2.300	2.240	1.400	125	1.120	1.320	450	6.30
BL 250	2.510	2.450	1.500	125	1.120	1.320	500	8.20

DRUM CAPACITIES METERS

Cable diameter mm	Drum type								
	BL 60	BL 80	BL 100	BL 120	BL 160	BL 180	BL 200	BL 220	BL 250
6	1400	3590	—	—	—	—	—	—	—
8	800	2000	—	—	—	—	—	—	—
10	500	1290	—	—	—	—	—	—	—
12	350	850	1800	—	—	—	—	—	—
14	250	650	1350	—	—	—	—	—	—
16	208	500	1000	1800	—	—	—	—	—
18	164	400	800	1350	—	—	—	—	—
20	133	320	650	1100	—	—	—	—	—
22	110	267	550	900	2000	—	—	—	—
24	97	224	450	750	1600	—	—	—	—
26	—	—	379	650	1400	—	—	—	—
28	—	—	327	550	1200	—	—	—	—
30	—	—	285	475	1000	—	1850	—	—
32	—	—	250	450	900	1420	1650	—	—
34	—	—	222	400	800	1250	1450	—	—
36	—	—	198	350	700	1200	1290	—	—
38	—	—	—	300	650	990	1160	1575	—
40	—	—	—	260	575	890	1050	1420	—
42	—	—	—	240	500	800	950	1290	—
44	—	—	—	220	475	725	865	1175	1535
46	—	—	—	200	435	660	790	1075	1405
48	—	—	—	—	400	605	725	985	1290
50	—	—	—	—	370	555	670	910	1190
52	—	—	—	—	340	510	620	840	1100
54	—	—	—	—	320	470	575	780	1020
56	—	—	—	—	295	440	535	725	950
58	—	—	—	—	275	410	500	675	885
60	—	—	—	—	255	380	465	630	825
62	—	—	—	—	240	355	435	590	775
64	—	—		—	225	330	410	555	725
66	—	—	—	—	212	310	385	520	685
68	—	—	—	—	200	295	360	490	640

CENELEC HD 361/CEI 20-27

Norm reference

H	Harmonised cable
A	National aproved cable
N	National cable

Rated voltage

01	100/100V < 300/300V
03	300/300V
05	300/500V
07	450/750V
1	600/1000V

Insulation and sheath

B	HEPR rubber
B2	HEPR rubber
E	Polyethylene
N	Polychloroprene or equivalent
N2	Special polychloroprene compound
N5	Nitrilic rubber
Q	Polyurethan
Q4	Polyamides
S	Silicon rubber
T	Textile braid
V	PVC standard
V2	PVC compound t. 90°C
V3	Low temperature PVC compound
V5	Oil resisting PVC compound
X	XLPE

Metal sheath

A2	Aluminium sheath, extruded or sealed, smoth
A3	Aluminium sheath, extruded or sealed, corrugated
A4	Aluminium sheath on single core
A5	Aluminium tape sheath
C	Copper concentric conductor
C2	Copper sheath
C3	Corrugated copper sheath
C4	Copper braid screen
C7	Copper tape, wire or flat wire screen

Armour

Z2	Steel wires armour
Z3	Steel flat wires armour
Z4	Steel tape armour
Z5	Steel braid armour
Y2	Aluminium wires armour
Y6	Steel and copper wires armour or steel tape and copper wires armour

Conductor flexibility

F	Flexible conductor class 5 (Cenelec HD 22 sect. 6)
H	Very flexible conductor class 6
K	Flexible conductor class 5
R	Round stranded conductor class 2
U	Solid conductor class 1
Z	Special shaped and/or material conductor

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Conductor flexibility

A	Aluminium conductor
F	Flexible conductor class 5
FF	Very flexible conductor class 6
R	Round stranded conductor class 2
S	Shaped stranded conductor class 2
U	Solid conductor class 1

Insulation

E	Polyethylene
G7	HEPR rubber
G10	Cross linked elastomeric compound halogen free and low smoke t. 90°C
G20	Cross linked elastomeric compound halogen free and low smoke t. 90°C
M9	Thermoplastica compound halogen free and low smoke t. 70°C
R	PVC compound t. 70°C T1 T2 standard
R2	R2 high quality
R3	PVC compound t. 105°
R4	Polyamides compound
R7	PVC compound t. 90°C TI3
T	One or more mica glass tapes or closed glass braid

Screens and concentric conductors

C	Concentric copper conductor
H1	Tape, flat wire or copper wire screen
H2	Copper braid screen
H3	Double copper braid screen
H4	Longitudinally and corrugated steel tape screen
H5	Longitudinally aluminium coated tape

Non-metal sheathes

E	Polyethylene
E4	Cross linked polyethylene sheath E4M
G	Rubber sheath
K	Polychloroprene sheath
R4	Polyamide compound sheath
M1	Thermoplastica compound halogen free and low smoke t. 70°C
M2	Elastomeric compound halogen free and low smoke
M3	Elastomeric compound halogen free and low smoke
M4	Elastomeric compound halogen free and low smoke

Armour

A	Aluminium smooth sheath or metallic braid armour
A1	Aluminium sheath
F	Steel wires armour
H4	Corrugated steel tape armour
N	Steel tape armour
Z	Steel flat wire armour

Cable shape

O	Round
D	Flat
X	Helically wound

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POWER AND SIGNALLING CABLES

FG70R-0.6/1 kV

Flame retardant
and low corrosive gases