ROUND LOW VOLTAGE CABLES FOR FESTOON OPERATION

	RONDOFLEX	RONDOFLEX(C) -FC	FESTOONFLEX PUR HF	FESTOONFLEX C PUR HF
Designation	(N)GRDGOEU Rubber	(N)GRDGCGOEU Rubber	D12Y11Y	D12YC11Y
Dimension	Optimized on DIN VDE 0250 part 814	Optimized on DIN VDE 0250 part 814	Optimized	Optimized
Cores	Power: 1C, 3C+3G, 4C, 5C Control: multicores (also with BUS of TSP)	Power: 3C+3G, 4C with overall CU screen	Power: 1C, 3C, 4C, 5C Control: multicores	Power: 1C, 3C, 4C, 5C Control: multicores with overall CU screen (also with BUS of TSP)
Outer Sheath	Rubber	Rubber	PUR	PUR
Approvals	VDE, GOST-R	VDE, GOST-R		
Tensile Load	15 N/mm²	15 N/mm²	15 N/mm²	15 Nmm²
Speed	240 m/min	240 m/min	210m/min	210 m/min
Temp. (moving)	-35°C/+80°C	-35°C/+80°C	-40°C/+80°C	-40°C/+80°C

RONDOFLEX (N)GRDGOEU

Low voltage round cable for festoon application

Application

Flexible low voltage power and control cable, for use on festoon systems and for connecting movable parts of machine tools, material handling equipment, etc. Suitable for application under high mechanical stresses and frequent bending during operation.

Global data

Brand	RONDOFLEX
Type designation	(N)GRDGOEU-J/-O
Standard	Based on DIN VDE 0250-814
Certifications / Approvals	VDE Reg. Nr. 7841; GOST-R

Design features

Conductor	Bare electrolytic copper, finely stranded, class 5
Insulation	PROTOLON MS High grade special compound based on high-quality EPR (at least GI3); improved mechanical and electrical characteristics
Core identification	Best identification as a result of light colored insulation with numbers printed in black for power and control cables, earth conductor green/ yellow (acc. to DIN VDE 0293)
Individual screen	Braid screen made of tinned copper wires, transfer impedance optimized at 30 MHz. Surface covered: at least 60% for individually shielded cores; at least 80% for twisted and shielded pairs
Core arrangement	Laid-up in a maximum of 3 layers
Inner sheath	Basic material EPR, Rubber compound GM1b Colour: black
Outer sheath	High grade special compound (at least 5GM3), based on PCP; Color: black
Marking	RONDOFLEX (N)GRDGOEU-J/-O VDE-Reg.-No.

Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	3.5 kV (5 Min.)
Current Carrying Capacity description	Acc. to DIN VDE 0298-4: - single core, table 15-column 2 - multicore, table 15-column 4

Chemical parameters

Resistance to oil	Acc. to DIN EN 60811-404 and DIN VDE 0473-811-404, paragraph 10
Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone, UV and moisture

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -35 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	± 25 °/m
Min. bending radius	Acc. to DIN VDE 0298 part 3
Min. distance with S-type directional changes	20 x D
Travel speed	- Trolley (festoon system): up to 240 m/min (it is recommended to consult the manufacturer for speeds beyond 240 m/min); - Reeling operation: 60 m/min.
Additional tests	Bending test

Number of cores x cross section	Part number	MLFB Number	Conductor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permissible tensile force max. N	Conductor resistance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conductor) kA
(N)GRDGOEU-O power cables, single-core design											
1x25	20003532	5DG6610	6.7	11.4	12.6	63	330	370	0.78	138	3.58
1x35	20003533	5DG6611	8	12.3	13.9	70	430	520	0.55	170	5.01
1x50	20003534	5DG6612	9.5	15	16.6	83	620	750	0.39	212	7.15
1x70	20003535	5DG6613	11	16.3	18.3	92	830	1050	0.27	263	10.01
1x95	20003536	5DG6614	12.8	18.5	20.5	103	1070	1420	0.21	316	13.59
1x120	20003537	5DG6615	14.4	20.3	22.3	112	1330	1800	0.16	370	17.16
1x150	20003538	5DG6616	16.4	22.7	24.7	124	1640	2250	0.13	424	21.45
1x185	20003539	5DG6617	17.8	24.6	27.6	138	2010	2770	0.11	484	26.46
1x240	20003540	5DG6618	20.9	28.9	31.9	160	2650	3600	0.08	567	34.32
(N)GRDGOEU-J power cables, 3-core design, earth conductor splitted into three parts											
3x35+3x16/3	20003544	5DG6631	8	27.3	30.3	152	1780	1570	0.55	170	5.01
3x50+3x25/3	20003545	5DG6632	9.5	33	36	180	2570	2250	0.39	212	7.15
3x70+3x35/3	20003546	5DG6633	11	38.9	41.9	210	3570	3150	0.27	263	10.01
(N)GRDGOEU-J power cables, 4-core design											
4x4	20003550	5DG6642	2.5	13.6	15.2	76	350	240	4.95	43	0.57
4x6	20003551	5DG6643	3	15.9	17.9	90	480	360	3.3	56	0.86
4x10	20003552	5DG6644	4	18	20	100	680	600	1.91	78	1.43
4x16	20003553	5DG6645	5.7	23.3	25.3	127	1110	960	1.21	104	2.29
4x25	20003554	5DG6646	6.8	26.9	29.9	150	1610	1500	0.78	138	3.58
4x35	20003555	5DG6647	8.1	30.1	33.1	166	2100	2100	0.55	170	5.01
4x50	20003556	5DG6648	9.6	36.1	39.1	196	3010	3000	0.39	212	7.15
(N)GRDGOEU-J power cables, 5-core design											
5x4	20003559	5DG6652	2.5	15.7	17.7	89	450	300	4.95	43	0.57
5x6	20003560	5DG6653	3	17.5	19.5	98	580	450	3.3	56	0.86
5x10	20003561	5DG6654	4	20.2	22.2	111	860	750	1.91	78	1.43
5x16	20003562	5DG6655	5.7	24.5	27.5	138	1340	1200	1.21	104	2.29
5x25	20003563	5DG6656	6.8	29.9	32.9	165	1990	1870	0.78	138	3.58
5x35	20003564	5DG6657	8.1	34.7	37.7	189	2700	2620	0.55	170	5.01
(N)GRDGOEU-J control cables											
12x1,5	20003568	5DG6662	1.6	16.2	18.2	91	460	270	13.3	24	0.21
18x1,5	20003569	5DG6663	1.6	18.7	20.7	104	630	400	13.3	24	0.21
24x1,5	20003570	5DG6664	1.6	22.1	24.1	121	840	540	13.3	24	0.21
30x1,5	20003571	5DG6665	1.6	23.3	25.3	127	950	670	13.3	24	0.21
36x1,5		5DG6666	1.6	24.6	27.6	138	1090	810	13.3	24	0.21
4x2,5	20003549	5DG6641	2	11.8	13.4	67	250	150	7.98	32	0.36
7x2,5	20003574	5DG6671	2	15.3	17.4	87	430	260	7.98	32	0.36
12x2,5	20003575	5DG6672	2	18	20	100	600	450	7.98	32	0.36
18x2,5	20003576	5DG6673	2	21.5	23.5	118	870	670	7.98	32	0.36
24x2,5	20003577	5DG6674	2	24	27	135	1140	900	7.98	32	0.36

Number of cores x cross section	Part number	MLFB Number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
30x2,5	20003578	5DG6675	2	26.4	29.4	147	1360	1120	7.98	32	0.36
36x2,5	20003579	5DG6676	2	28.7	31.7	159	1550	1350	7.98	32	0.36
24x3,5		5DG6912	2.4	34.6	37.6	188	2160	1260	5.55	41	0.5
30x3,5		5DG6911	2.4	36.4	39.4	197	2450	1570	5.55	41	0.5
(N)GRDGOEU-O bus cables											
3x(2x1)C	20003590	5DG6689	1.3	20.8	22.8	114	690	90	19.5	19	0.14
6x(2x0,5)C	20003593	5DG6693	0.9	21.6	24.6	123	800	90	39	11	0.07
6x(2x1)C	20003594	5DG6694	1.3	27	30.2	151	1230	180	19.5	19	0.14
9x(2x0,5)C		5DG6691	0.9	28.3	31.3	157	1340	130	39	11	0.07
9x(2x1)C	20003592	5DG6692	1.3	35.3	38.3	192	1930	270	19.5	19	0.14
12x(2x0,5)C		5DG6521	0.9	29.8	32.8	164	1540	180	39	11	0.07
12x(2x1)C	20038334	5DG6696	1.3	36.3	39.3	197	2020	360	19.5	19	0.14
12x1(C)	20003582	5DG6681	1.3	17.6	19.6	98	540	180	19.5	19	0.14

(2) Nominal current carrying capacity for rubber cables installed free in air, at 30°C ambient temperature (see also technical appendixes).

NOTES

RONDOFLEX(C)-FC (N)GRDGCGOEU

Low voltage screened round cable for festoon application

Application

For use on festoon systems, e.g. on gantry cranes, hall gantry cranes, rack material handling equipment, transportation systems or machine tools. Especially suitable where power cables are expected to cause interference and disruption on data cables or where the maximum emission values according to EN 55011/55022 must be achieved.
The cables are used under high mechanical stresses and frequent bending. Also suitable for use as flexible motor power supply cable.

Global data

Brand	RONDOFLEX(C)-FC
Type designation	(N)GRDGCGOEU-J
Standard	Based on DIN VDE 0250-814
Certifications / Approvals	VDE Reg. Nr. 7841; GOST-R

Notes on installation

Notes on installation	Due to external damages a short circuit current can occur between phase conductor and the screen or between a phase conductor and a protective conductor. In these cases only the cross-section of the screen or the cross-section of the protective conductor is available to carry the fault current. The effective resistance of the screen or protective conductor is given by the distance between the point of the fault and the ground connection.
Notes on installation	Especially for festoon application it is not recommended the use of cross-sections beyond 3x50mm².

Design features

Conductor	Bare electrolytic copper conductor, finely stranded, class 5. Earth conductor made of tinned, extremely finely stranded copper, class FS (better than class 5).
Insulation	PROTOLON MS high grade special compound based on high-quality EPR (at least GI3); improved mechanical and electrical characteristics
Core identification	Light colored insulation with numbers printed in black for power and control cables, earth conductor green/ yellow
Core arrangement	Up to 10mm²: 4-core design; from 16mm² on: three main conductors, earth conductor splitted into three parts and placed into the interstices
Inner sheath	Basic material EPR, compound type GM1b, color: black
Screen over inner sheath	Braid screen made of tinned copper wires, surface covered: >80%, transfer impedance <100mΩ/m at <= 30MHz
Outer sheath	Basic material PCP, rubber compound 5GM3, colour: black
Marking	RONDOFLEX (C)-FC (N)GRDGCGÖU-J (nr. of cores)x(cross section) 0,6/1 kV VDE-Reg.-Nr. 7841

Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	5 kV (5 Min.)
Peak voltage	2400 V
Max. AC voltage for connection on frequency converter	690 V
EMC	Main application thanks to the special cable design
Current Carrying Capacity description	Acc. to DIN VDE 0298-4

Chemical parameters

Resistance to oil	Acc. to DIN EN 60811-404 and DIN VDE 0473-811-404, paragraph 10
Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone, UV and moisture

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -35 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	Not allowed
Min. bending radius	Acc. to DIN VDE 0298 part 3
Travel speed	- Trolley (festoon system): up to 240m/min Note: the trouble free operation is influenced by a number of factors (e.g. space, cable weight, loop length, number of motor driven carriers). It is recommended to consult the cable manufacturer for travel speeds beyond 240 m/min.
Additional tests	Bending test

Number of cores x cross section	Part number	MLFB Number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Nom. operating capaci-tance µF/km	Induc-tance nom. mH/ km	Current carrying capacity for install. free in air (2) A	Transfer impedance at 1 MHz mΩ/m	Transfer impedance at 10 MHz mΩ/m	Transfer impedance at 30 MHz mΩ/m
(N)GRDGCGOEU-J screened power cables													
4x2,5	20007109	5DG6651	2	13	15	75	340	0.17	0.58	32			
4x4	20003583	5DG6682	2.5	14.8	17.8	89	480	0.18	0.55	43			
4x6	20003584	5DG6683	3	16.2	19.2	96	640	0.19	0.53	56			
4x10	20003585	5DG6684	4	19.6	22.6	113	890	0.23	0.51	78	0.4	1.3	3.5
3x16+3x2,5	20003586	5DG6685	5.7	22.4	25.4	127	1150	0.225	0.48	104	0.2	0.6	1.5
3x25+3x4	20003587	5DG6686	6.8	25.4	28.4	142	1590	0.275	0.45	138	0.2	0.4	1.3
3x35+3x6	20003588	5DG6687	8.1	29.3	32.3	162	2160	0.325	0.43	170	0.1	0.4	0.9
3x50+3x10	20003589	5DG6688	9.6	35.4	38.4	192	3060	0.4	0.41	212	0.1	0.2	0.7
3x70+3x10	20003591	5DG6690	11.5	40.8	43.8	219	3960	0.475	0.39	263	0.1	0.2	0.5
3x95+3x16	20003580	5DG6679	12.9	43.4	46.4	232	4840	0.6	0.375	316	0.1	0.2	0.4
3x120+3x16	20003581	5DG6680	14.6	47.8	50.8	254	5910	0.7	0.36	370	0.1	0.1	0.3
3x150+3x25	20003558	5DG6650	16.5	54.6	57.6	288	7540			424			

(2) Nominal current carrying capacity for rubber cables installed free in air, at 30°C ambient temperature (see also technical appendixes). Especially for festoon application it is not recommended the use of cross-sections beyond 3x50mm²!

FESTOONFLEX PUR-HF D12Y11Y

Low voltage round cable PUR sheathed for festoon application

Application

For use as energy and control cable in festoon systems under severe conditions, incl. frequent bending. Also for drag lines, machine tools or materials handling systems.
In addition, suitable as drum reeling cable under moderate mechanical stress.

Global data

Brand	FESTOONFLEX PUR-HF
Type designation	D12Y11Y-J/O

Design features

Conductor	Plain copper, flexible class 5 acc. to DIN EN 60228 / DIN VDE 0295
Insulation	Halogen free compound, based on polyester
Core identification	Up to 5 cores: colored in accordance with DIN VDE 0293-308; From 6 cores: white with black numbers
Core arrangement	Cores twisted with short length of lay around central element
Outer sheath	Polyurethane, halogen free, flame retardant; Colour: black (opaque)
Marking	White imprint: FESTOONFLEX PUR-HF -J/-O (number of cores) x (cross-section) (year/week)

Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	4 kV (5 Min.)
Current Carrying Capacity description	Acc. to DIN VDE 0298-4

Chemical parameters

Resistance to fire	Similar to IEC 60332-1
Water resistance	The cables are suitable for permanent use in water (no drinking water) up to 50 meter diving depth.

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -40 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	± 25 °/m
Min. bending radius	6 x D (Proved by flexing tests acc. to HD 22.2 part 3.1)
Travel speed	- In festoon systems: up to 210 m/min; - For reeling operation: up to 60 m/min; - In chain systems: up to 210 m/min (note: trouble free operation is influenced by several factors, among all the chain length. For long chain system we recommend to operate at lower speed).

Number of cores x cross section	Part number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
D12Y11Y-O power cables, single core										
1x16	20165443	5	8.5	9.5	57	170	240	1.21	104	2.29
1x25	20156874	6.2	9.9	11.1	67	270	370	0.78	138	3.58
1x35	20154575	7.8	11.7	12.9	77	380	520	0.55	170	5.01
1x50	20154574	8.9	13.9	15.1	91	530	750	0.39	212	7.15
1x70	20154573	11.1	16.2	17.4	104	740	1050	0.27	263	10.01
1x95	20166593	12.6	17.9	19.1	115	940	1420	0.21	316	13.59
1x120	20156873	14.8	20.2	21.5	130	1200	1800	0.16	370	17.16
1x150		16	21.8	23.2	139	1490	2250	0.13	424	21.45
1x185		17.7	24.3	25.7	154	1830	2770	0.11	484	26.46
1x240		20.2	27.7	29.3	176	2300	3600	0.08	567	34.32
1x300		22.7	30	32	192	3200	4500	0.06	651	42.9
D12Y11Y-O power cables, three core										
3x1,5		1.5	6.5	7.5	45	115	60	13.3	24	0.21
3x2,5	20156877	2	8.5	9.5	57	130	110	7.98	32	0.36
D12Y11Y-J power cables, four core										
4x1,5		1.5	8.1	9.1	55	120	90	13.3	24	0.21
4x2,5	20156878	2	9.2	10.2	61	160	150	7.98	32	0.36
4x4	20160347	2.6	10.3	11.5	69	230	240	4.95	43	0.57
4x6		3.2	12.1	13.2	80	320	360	3.3	56	0.86
4x10	20154577	4	15	16.2	97	520	600	1.91	78	1.43
4x16	20156879	5	17.7	18.9	113	750	960	1.21	104	2.29
4x25	20160348	6.2	21.1	22.5	135	1160	1500	0.78	138	3.58
4x35		7.8	25.8	27.4	164	1650	2100	0.55	170	5.01
4x50		9.6	31	33	198	2410	3000	0.39	212	7.15
4x70		11.1	38.1	40.6	244	3070	4200	0.27	263	10.01
4x95		12.6	42.0	44.5	267	4150	5700	0.21	316	13.59
D12Y11Y-J power cables, five core										
5x1,5		1.5	8	9	54	150	110	13.3	24	0.21
5x2,5		2	9.8	11	66	180	180	7.98	32	0.36
5x4	20154579	2.6	11.6	12.7	77	290	300	4.95	43	0.57
5x6	20154578	3.2	14	15.2	91	420	450	3.3	56	0.86
5x10		4	16.2	17.5	105	630	750	1.91	78	1.43
5x16	20166492	5	19.4	20.6	124	920	1200	1.21	104	2.29
5x25		6.2	23.2	24.5	148	1380	1870	0.78	138	3.58
D12Y11Y-J Control cables										
7x1,5		1.5	9	10	60	220	150	13.3	24	0.21
12x1,5		1.5	14.3	15.5	93	320	270	13.3	24	0.21
18x1,5	20154580	1.5	14.5	15.7	94	380	400	13.3	24	0.21
24x1,5	20157942	1.5	16.5	17.8	107	500	540	13.3	24	0.21
30x1,5		1.5	19.6	21	126	680	670	13.3	24	0.21
36x1,5		1.5	21.1	22.5	135	770	810	13.3	24	0.21
7x2,5	20166594	2	11.5	12.7	76	250	260	7.98	32	0.36
12x2,5	20160349	2	16.5	17.7	106	460	450	7.98	32	0.36

Number of cores x cross section	Part number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
18x2,5	20149380	2	16.7	17.9	107	580	670	7.98	32	0.36
24x2,5	20149192	2	19.2	20.4	122	760	900	7.98	32	0.36
30x2,5		2	24.9	26.5	159	1080	1120	7.98	32	0.36
36x2,5		2	25.9	27.5	165	1300	1350	7.98	32	0.36

(2) Nominal current carrying capacity for rubber cables installed free in air, at 30°C ambient temperature (see also technical appendixes).
For articles without part number the values shown are approximate, and need to be confirmed in case of order.

NOTES

FESTOONFLEX C-PUR-HF D12YC11Y

Low voltage screened round cable PUR sheathed for festoon application

Application

For use as energy and control cable in festoon systems under severe conditions, incl. frequent bending. Also for drag lines, machine tools or materials handling systems.

Global data

Brand	FESTOONFLEX C PUR-HF
Type designation	D12YC11Y-J/O

Design features

Conductor	Plain copper, flexible class 5 acc. to DIN EN 60228 / DIN VDE 0295
Insulation	Halogen free compound, based on polyester
Core identification	Up to 5 cores: colored in accordance with DIN VDE 0293-308 From 6 cores: natural color with black numbers
Core arrangement	Cores/Pairs twisted with short length of lay around central element
Inner sheath	Due to technical reasons some of the cross section are produced with an additional polyurethane inner sheath
Screen over inner sheath	Braid of tinned copper wires
Outer sheath	Polyurethane, halogen free, flame retardant; Colour: black (opaque).
Marking	White imprint: FESTOONFLEX C-PUR-HF -J/-O (number of cores) x (cross-section) (year/week)

Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	4 kV (5 Min.)
Current Carrying Capacity description	Acc. to DIN VDE 0298-4

Chemical parameters

Resistance to fire	Similar to IEC 60332-1
Water resistance	The cables are suitable for permanent use in water (no drinking water) up to 50 meter diving depth.

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -40 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	Not allowed
Min. bending radius	6 x D (Proved by flexing tests acc. to HD 22.2 part 3.1)
Travel speed	- In festoon systems: up to 210 m/min; - In chain systems: up to 210 m/min (note: trouble free operation is influenced by several factors, among all the chain length. For long chain system we recommend to operate at lower speed).

Number of cores x cross section	Part number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
D12YC11Y-O screened power cables, single core										
1x25		6.2	10.3	11.5	69	330	370	0.78	138	3.58
1x35	20161370	7.8	12.3	13.5	81	430	520	0.55	170	5.01
1x50		8.9	15.4	16.6	100	610	750	0.39	212	7.15
1x70	20157795	11.1	17.0	18.3	110	810	1050	0.27	263	10.01
1x95		12.6	18.9	20.1	121	1030	1420	0.21	316	13.59
1x120	20156875	14.8	21.4	22.8	137	1320	1800	0.16	370	17.16
1x150		16	23.1	24.5	147	1650	2250	0.13	424	21.45
1x185		17.7	25.5	27.2	163	2000	2770	0.11	484	26.46
1x240		20.2	28.5	30.1	181	2490	3600	0.08	567	34.32
D12YC11Y-J screened power cables, four core										
4x1,5		1.5	10.8	12	72	240	90	13.3	24	0.21
4x2,5	20166386	2	12.1	13.2	80	250	150	7.98	32	0.36
4x4		2.6	13.6	14.7	89	330	240	4.95	43	0.57
4x6	20161501	3.2	15.1	16.3	98	420	360	3.3	56	0.86
4x10		4	18.4	19.6	118	640	600	1.91	78	1.43
4x16	20166385	5	21.2	22.5	136	940	960	1.21	104	2.29
4x25		6.2	24.5	26.2	157	1360	1500	0.78	138	3.58
4x35	20168451	7.8	29.6	31.6	190	1870	2100	0.55	170	5.01
4x50		9.6	35.1	37.6	226	2560	3000	0.39	212	7.15
D12YC11Y-J screened power cables, five core										
5x1,5		1.5	10.9	12.1	73	250	110	13.3	24	0.21
5x2,5		2	12.8	14	84	280	180	7.98	32	0.36
5x4		2.6	13.8	15	90	345	300	4.95	43	0.57
D12YC11Y-J screened control cables										
7x1,5	20166387	1.5	10.9	12.1	73	220	150	13.3	24	0.21
12x1,5	20156247	1.5	15	16.2	97	360	270	13.3	24	0.21
18x1,5	20157796	1.5	15	16.2	97	420	400	13.3	24	0.21
12x2,5		2	17.4	18.6	112	530	450	7.98	32	0.36
18x2,5		2	17.5	18.8	113	650	670	7.98	32	0.36
D12YC11Y-O overall screened control pairs										
3x(2x1,5)		1.5	16.5	17.8	107	350	130	13.3	24	0.21
4x(2x1)		1.3	15.3	16.5	99	310	120	19.5	19	0.14
4x(2x1,5)		1.5	17.2	18.5	111	385	180	13.3	24	0.21
D12Y11Y-O individually screened control pairs										
4x(2x1)C	20161461	1.3	15.9	17.1	103	350	120	19.5	19	0.14
6x(2x1)C	20160120	1.3	19.0	20.3	122	480	180	19.5	19	0.14
9x(2x1)C		1.3	23.6	25	150	721	270	19.5	19	0.14
2x(2x1,5)C		1.5	15.2	16.4	98	280	90	13.3	24	0.21

Number of cores x cross section	Part number	Conduc-tor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
2x(2x2,5)C		2	17.2	18.5	111	340	150	7.98	32	0.36
3x(2x1,5)C	20156880	1.5	17.2	18.5	111	350	130	13.3	24	0.21
3x(2x2,5)C		2	17.5	18.8	113	390	220	7.98	32	0.36

(2) Nominal current carrying capacity for rubber cables installed free in air, at 30°C ambient temperature (see also technical appendixes).
For articles without part number the values shown are approximate, and need to be confirmed in case of order.

NOTES

Crane cables

FLAT LOW VOLTAGE CABLES FOR FESTOON OPERATION

	PLANOFLEX	M(StD)HOEU
Designation	NGFLGOEU	M(StD)HOEU
Dimension	DIN VDE 0250 part 809	Similar to DIN VDE 0250 part 809
Cores	Power: 4C, 5C, 7C Control: multicore (also with IS and TSP)	Power: 4C Control: multicore (also with TSP)
Outer Sheath	Rubber	Rubber
Approvals	VDE, GOST-R, UL-File E 113313	VDE, UL AWM Style 4540
Tensile Load	15 N/mm²	15 N/mm²
Speed	180 m/min	180 m/min
Temp. (moving)	-35°C/+80°C	-30°C/+80°C

PLANOFLEX NGFLGOEU

Low voltage flat cable for festoon application

Application

Flexible low voltage power and control cable, for use on festoon systems and for connecting moveable parts of machine tools, material handling equipment, etc., associated with high mechanical stresses and frequent bending during operation and for bending in one plane only.

Global data

Brand	PLANOFLEX
Type designation	NGFLGOEU-J/-O
Standard	DIN VDE 0250-809
Certifications / Approvals	VDE Marking; UL-File E 113313; GOST-R

Design features

Conductor	Eletrolytic copper, not tinned: - up to 25 mm²: extremely finely stranded, class 6 - above 35 mm²: finely stranded, class 5
Insulation	PROTOLON Basic material EPR, Rubber compound 3GI3 (refer also to DIN VDE 0207, Part 20)
Core identification	Up to 5 cores, colored: green/yellow (or black for version...-O) black, blue, brown, grey; For more than 5 cores: black with white colored numbers
Individual screen	Braid screen made of tinned copper wires, transfer impedance optimized at 30 MHz. Surface covered: approx. 60% for shielded cores, approx. 80% for twisted and shielded pairs.
Core arrangement	Parallel, for more than 12 cores: parallel bundles
Outer sheath	Basic material CR, Rubber compound 5GM3 (refer also to DIN VDE 0207, Part 21) Colour: black
Marking	<VDE>PLANOFLEX NGFLGOEU-J/-O (number of cores)x(cross-section) 600V, 90°C, (UL), PLANOFLEX (cross-section) AWG/(number of cores)(type of core) OUTDOOR

Electrical parameters

Rated voltage	300/500V (600V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	2.5 kV (5 Min.)
Current Carrying Capacity description	Acc. to DIN VDE 0298-4

Chemical parameters

Resistance to oil	Acc. to DIN VDE 0473-404, paragraph 10
Weather resistance	Unrestricted use outdoors and indoors, resistant to ozone, UV and moisture.

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -50 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -35 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	Not allowed
Min. bending radius	Acc. to DIN VDE 0298 part 3
Travel speed	- Gantry (reeling operation): no application; - Trolley (festoon system): guidance value up to 180m/min (it is recommended to consult the manufacturer for speeds beyond 180m/min).
Additional tests	Bending test

Number of cores x cross section	Part number	MLFB Number	Conduc-tor diameter max. mm	Min. Height (for flat cable) mm	Max. Height (for flat cable) mm	Min. Width (for flat cable) mm	Max. Width (for flat cable) mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
NGFLGOEU-J control cables													
3x1,5		5DG5751	1.5	5.7	6.2	11.7	12.5	19	130	68	13.3	24	0.21
4x1,5	20003476	5DG5711	1.5	5.7	6.2	15	15.8	19	170	90	13.3	24	0.21
5x1,5		5DG5712	1.5	5.5	6	18.5	20.1	18	210	113	13.3	24	0.21
7x1,5		5DG5714	1.5	5.5	6	25	26.8	18	280	158	13.3	24	0.21
8x1,5	20003480	5DG5715	1.5	5.5	6	27.5	29.3	18	310	180	13.3	24	0.21
10x1,5		5DG5717	1.5	6.2	6.7	35.5	37	20	440	225	13.3	24	0.21
12x1,5	20003483	5DG5718	1.5	6.3	6.8	42	43.5	20	530	270	13.3	24	0.21
24x1,5	20003485	5DG5720	1.5	11.5	12.3	51	53.2	62	1040	540	13.3	24	0.21
42x1,5	20003470	5DG5653	1.5	15.1	16.1	70.2	72.3	81	1920	945	13.3	24	0.21
4x2,5	20003487	5DG5721	2	6.8	7.3	18.5	19.5	22	260	150	7.98	32	0.36
5x2,5		5DG5722	2	6.6	7.4	22.9	24.6	22	320	188	7.98	32	0.36
7x2,5	20003490	5DG5724	2	6.8	7.4	31	32.8	22	440	263	7.98	32	0.36
8x2,5	20003492	5DG5725	2	6.8	7.4	34.1	35.9	22	490	300	7.98	32	0.36
10x2,5		5DG5727	2	7.4	8	43	45.3	24	660	375	7.98	32	0.36
12x2,5	20003494	5DG5728	2	7.4	8	50.6	53.5	24	780	450	7.98	32	0.36
24x2,5	20003496	5DG5730	2	14.8	15.6	65.4	68	78	1690	900	7.98	32	0.36
7x(3x1)	20037062	5DG5483	1.3	8.7	10.3	49.3	51.8	41	770	315	19.5	19	0.14
NGFLGOEU-J power cables													
4x4	20003498	5DG5731	2.8	8.4	8.9	22.5	23.5	36	390	240	4.95	43	0.57
4x6	20003503	5DG5741	3.5	9	9.5	25.4	26.9	38	500	360	3.3	56	0.86
4x10	20003509	5DG5765	4.5	10.5	11	30.1	32.6	44	750	600	1.91	78	1.43
4x16	20003511	5DG5766	5.6	12.1	12.9	36	37.5	65	1060	960	1.21	104	2.29
4x25	20003513	5DG5767	6.6	13.6	14.4	41.9	43.4	72	1500	1500	0.78	138	3.58
4x35	20003515	5DG5768	8.1	14.8	16.7	47	49.9	84	2040	2100	0.55	170	5.01
4x50	20003517	5DG5770	9.5	18	19	56	58	95	2830	3000	0.39	212	7.15
4x70	20003519	5DG5771	11.1	20.3	21.3	63.2	65.2	107	3820	4200	0.27	263	10.01
4x95	20003521	5DG5772	12.9	23.1	24.1	72.6	74.6	121	4930	5700	0.21	316	13.59
4x120		5DG5773	15	24.2	27.2	79.2	83.2	136	6220	7200	0.16	370	17.16
5x4		5DG5732	2.8	8.5	9	28.9	31.2	36	510	300	4.95	43	0.57
5x6	20003505	5DG5742	3.5	9.1	9.6	31.8	34.1	38	640	450	3.3	56	0.86
5x10		5DG5687	4.5	10.5	11.3	39.2	41.6	45	960	750	1.91	78	1.43
5x16	20003523	5DG5776	5.6	12.2	12.7	45.1	47.6	64	1360	1200	1.21	104	2.29
7x4	20003501	5DG5734	2.8	8.4	9	38.5	40.9	36	690	420	4.95	43	0.57
7x6	20003507	5DG5744	3.5	9	9.6	42.9	45.3	38	870	630	3.3	56	0.86
7x10		5DG5865	4.5	10.5	11.3	53	55.9	45	1320	1050	1.91	78	1.43
7x16		5DG5866	5.6	12.6	13.4	60.7	63.9	67	1990	1680	1.21	104	2.29
7x25	20070764	5DG5867	6.6	14.8	15.6	72.6	75.9	78	2820	2625	0.78	138	3.58
7x35		5DG5868	8.1	16.4	17.4	83.7	87	87	3820	3675	0.55	170	5.01
(N)GFLGOEU-O control cables with individually screened cores													
12x1(C)	20003474	5DG5670	1.3	6.6	7.1	48.2	51.3	21	660	180	19.5	19	0.14
4x1,5(C)	20155763	5DG5880	1.5	6.8	7.4	18.5	19.5	22	250	90	13.3	24	0.21
8x1,5(C)		5DG5884	1.5	6.8	7.4	35.1	35.1	22	510	180	13.3	24	0.21
12x1,5(C)	20003527	5DG5888	1.5	7.4	8	51.7	55	24	780	270	13.3	24	0.21

Number of cores x cross section	Part number	MLFB Number	Conduc-tor diameter max. mm	Min. Height (for flat cable) mm	Max. Height (for flat cable) mm	Min. Width (for flat cable) mm	Max. Width (for flat cable) mm	Bending radius free moving min. mm	Weight (ca.) kg/km	Permis-sible tensile force max. N	Con-ductor resis-tance at 20°C max. Ω/km	Current carrying capacity for install. free in air (2) A	Short Circuit Current (conduc-tor) kA
(N)GFLGOEU-O bus cables													
4x(2x1)C	20003528	5DG5890	1.3	10.5	11.3	31.8	33.8	45	630	120	19.5	19	0.14
6x(2x2,5)C	20054902	5DG5898	2	14.2	15.2	60	62.7	76	1680	450	7.98	32	0.36
7x(2x1)C	20003529	5DG5893	1.3	10.5	11.3	53.1	56	45	1090	210	19.5	19	0.14
(N)GFLGOEU-J power cables with individual screen													
4x4(C)		5DG5484	2.8	9.2	10.2	26.3	29.3	41	550	240	4.95	43	0.57
4x6(C)		5DG5485	3.5	9.5	11.1	28.8	31.8	44	665	360	3.3	56	0.86
4x10(C)		5DG5486	4.5	11.7	13.3	36	39	67	1060	600	1.91	78	1.43
4x16(C)		5DG5487	5.6	12.8	14.4	40.2	43.2	72	1360	960	1.21	104	2.29
4x25(C)		5DG5488	6.6	14.8	16.8	47.3	50.3	84	1980	1500	0.78	138	3.58
4x35(C)		5DG5489	8.1	16.9	18.9	53.4	57.4	95	2590	2100	0.55	170	5.01
4x50(C)		5DG5490	9.5	19.5	21.5	62	66	108	3590	3000	0.39	212	7.15
4x70(C)		5DG5491	11.1	21.9	23.9	69.8	73.8	120	4630	4200	0.27	263	10.01
4x95(C)		5DG5492	12.9	24.2	27.2	78.7	83.7	136	5950	5700	0.21	316	13.59

(2) Nominal current carrying capacity for rubber cables installed free in air, at 30°C ambient temperature (see also technical appendixes).

NOTES

M(StD)HOEU

Low voltage screened flat cable for festoon application

Application

Flexible power and control cables, in particular for hoisting gears transportation systems, machine tools, at medium mechanical stresses and for severe bending in one plane only; in dry, damp, wet areas and also outdoors; where resistance against oils, fats and chemical influences is required.

Global data

Brand	M(StD)HOEU
Standard	UL Style 4540
Standard	Based on DIN VDE 0250-809

Design features

Conductor	Copper bare, up to 25 mm²: finest wire class 6 according to IEC 60228 / DIN EN 60228; 35 mm² and up: fine wire class 5 according to IEC 60228 / DIN EN 60228; Conductor wrapping: paper tape or PETP-film
Insulation	Rubber, type pf compound 3GI3 according to DIN VDE 0207-20
Core identification	Up to 5 cores: colored in accordance with DIN VDE 0293-308 From 6 cores: black with white numbers
Individual screen	ALU/PETP foil, overlapped. Spinning of tinned copper wires, covering > 85 %. Wrapping with PETP-film
Core arrangement	Cores arranged in parallel; Pair twisting: 2 Cores and 2 fillers twisted with varying direction of lay and short length of lay, wrapping with PETP-film, pairs parallel arranged
Outer sheath	Polychloroprene, type of compound 5GM3 according to DIN VDE 0207-21. Colour: black
Marking	White imprint: M(STD)HÖU-J/-O (number of cores) x (cross-section) (UL File Nr.)(UL-SZ) AWM Style 4540 90°C FT-1 600 V (week/year)

Electrical parameters

Rated voltage	0.6/1 kV (600/1000V)
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
AC Test Voltage	2.5 kV (5 Min.)
Current Carrying Capacity description	Acc. to VDE 0298-4

Thermal parameters

Max. permissible temperature at conductor	90 °C
Max. short circuit temperature of the conductor	250 °C
Ambient temperature for fixed installation	min -40 °C ; max +80 °C
Ambient temperature in fully flexible operation	min -30 °C ; max +80 °C

Mechanical parameters

Max. tensile load on the conductor	15 N/mm²
Torsional stress	Not allowed
Min. bending radius	Acc. to DIN VDE 0298 part 3
Travel speed	- In festoon system: up to 180m/min (it is recommended to consult the manufacturer for speeds beyond)