



FLEXIBLE CABLES

FLEXMOV®

Polymer-tech Solutions™



- CSB was established in 1995 and its legal registered capital is 223 million RMB.
- Annual turnover more than 1 Billion RMB, more than 1000 employees.
- CSB has 5 production bases with a total area of 200000m².
- China National Hi-Tech Enterprise, more than 120 patents.
- IATF16949: 2016、ISO9001: 2015、ISO14001: 2015 and ISO45001: 2018 certifications.

...High-performance Polymer Technologies Creating Value For Customers

EC Directive 2011/65/EU (the RoHS Directive)

Hg、Cr⁺⁶、Pb、Cd、PBDE、PBB、DBP、BBP、DEHP、HBCDD。

This directive restricts the use of hazardous substances. Listed below are CSB products which are all RoHS compliant.



"CSB", "TEFPLAS", "TEXPLAS", "DURAPLAS", "DURARUB", "DURAFILM", "TRIBOTAPE", "DURAMOV", "FLEXMOV", "CSB-EPB", "CSB-LIN", "CSB-FWB", "CSB-BAL", "CSB-RPM", "CSB-SRB", "CSB-PRB", etc. are legally protected trademarks in China.



Polymer-tech Solutions™



CSB-EPB® Plastic Plain Bearings

Maintenance-free dry operation, Absolute corrosion resistance, Long service time and light; Multiple choices: Lowest friction coefficient, High load, Anti-static, High temperature 250°C, FDA food safety grade.



CSB-LIN® Plastic Linear Bearings

Dry operation without oil, Anti-dust, No noise, Corrosion resistance, Longer service time and light; Multiple Assemble types, Highest operation temperature 250°C.



CSB-LIN® Guide Rails and Lead Screws

Self-lubricating and maintenance-free linear motion system, Linear slider and screw nuts are made of high wear-resistant material EPB13, Dry operation for longer time, lower noise, longer service time and suitable for operation in dust or dirty water.



CSB-BAL® Plastic Spherical Bearings

Self-lubricating and maintenance-free, Corrosion-resistant, Anti-fouling, lightweight; Multiple structural design to meet different installation requirements.



CSB-FWB® Filament-wound Bearings

Long fiber composite material, The best performance for dry operation, High load capacity and max. static load 240MPa, Especially suitable for swing with high load and low speed.



DURAPLAS® Semi-finished Products

The semi-finished products are made of anti-wear and high performance materials CSB-EPB®, It can be machined non-standard bearings in short time, saving cost for small quantity; Multiple choices: Bar, sheet and tribo-tape.



DURAMOV® Plastic Cable Carriers

The cable carriers are made of high strength and anti-wear plastics, The cable carriers are used in a variety of motion modes and strokes, modular design is easy to assemble and maintain, and it is suitable for low noise long life in various environments.



FLEXMOV® Flexible Cables

FLEXMOV® flexible cables include control cables, data cables, servo cables, motor cables, bus cables, robot cables, etc.; Various jacket materials such as PVC, PUR and TPE are available to meet trouble-free operation in extreme environments such as indoors or outdoors.

<http://www.csb-ep.com>

Products

FLEXMOV®

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FLEXMOV® Flexible cables



FLEXMOV®
Flexible cables test

P9-13



FLEXMOV®
FMC Control cables

P14-55



FLEXMOV®
FMD Data cables

P56-67



FLEXMOV®
FMB Bus cables

P68-80



FLEXMOV®
FMM Motor cables

P81-99



FLEXMOV®
FMV Servo cables

P100-105



FLEXMOV®
FME Measuring system cables

P106-115



DURAMOV®
Plastic Cable Carriers

P6-8

Home / CSB® 在线工具 / 高柔性电缆查询系统V1.0

外护套

☒ PVC ☒ TPE ☒ PUR

应用参数

最高运行温度: 70 °C
最低运行温度: 5 °C
电缆安装类型: 架空
电缆扭转角度: ±0 °
电缆最小弯曲半径: 150 mm
电缆行程: 0 m
最大速度: 3 m/s
最大加速度: 20 m/s²

应用环境

☐ 耐油: 低
☐ 耐水解: 高
☐ 耐紫外线: 低
☐ 阻燃: 无要求
☒ 无卤素
☐ 耐盐雾

电缆类别

电缆类别: 控制电缆
芯线数量: 4

查找结果: 6 个电缆符合设计要求

电缆编码	外护套	直径[mm]	最小弯曲半径[mm]	重量
FMC603.02.04	PVC	5.5	41.25	35
FMC616.02.04	PVC	7	47.6	61
FMC601.02.04	TPE	5.5	27.5	37
FMC605.02.04	TPE	6.5	32.5	49
FMC607.02.04	PUR	5.5	37.4	35
FMC612.02.04	TPE	7	35	67

FLEXMOV® 高柔性电缆查询系统V1.0是基于CSB®实验室大量的测试数据以及电缆材料、电缆应用参数与应用环境选项查找适用电缆，并综合电缆芯线屏蔽要求系统输出。

由于系统基于理论数据模拟计算分析可能存在无法完全符合输入参数，数据仅供参考，数据仅供参考。

FLEXMOV®高柔性电缆查询系统输出数据信息仅供参考设计选型参考，不可作为最终电缆。

Outer jacker

☒ PVC ☒ TPE ☒ PUR

Application parameters

Max. temperature: 70 °C
Min. temperature: 5 °C
Installation type: unsupported
Torsion angle (+/-): ±0 °
Min. bend radius: 150 mm
Travel: 0 m
v max.: 3 m/s
a max.: 20 m/s²

Application environment

☐ Oil resistance: low
☐ Resistant to hydrolysis: low
☐ UV resistance: low
☐ Flame-retardant
☒ Clearroom
☐ Coolant-resistant
☐ Halogen-free
☐ MUD-resistant

FLEXMOV® Cables

Category: Control cable
Number of cores: 4
Shielded: All
Cross section: 0.25 mm²

Result: 6 pcs cables meet the design requirements

Cable code	Outer jacket	Diameter [mm]	Min. bend radius [mm]	Weight [kg/km]	Color	Cores
FMC603.02.04	PVC	5.5	41.25	35	Grey [RAL7001]	4x0.25
FMC616.02.04	PVC	7	47.6	61	Green [RAL6005]	(4x0.25)C
FMC601.02.04	TPE	5.5	27.5	37	Grey [RAL7015]	4x0.25
FMC605.02.04	TPE	6.5	32.5	49	Steel-blue [RAL5011]	(4x0.25)C
FMC607.02.04	PUR	5.5	37.4	35	Grey [RAL7001]	4x0.25
FMC612.02.04	TPE	7	35	67	Grey [RAL7015]	(4x0.25)C

FLEXMOV® High-flexible Cable Finder V1.0 is based on a large amount of test data from CSB® laboratories and combined analysis and calculation of cable materials and structural characteristics. You can find suitable cables by selecting sheath materials, cable application parameters and application environment options, and combined with the cable core wire and shielding requirements, the system will output an adapted flexible cable.

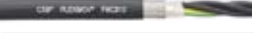
Since the system's simulation calculation analysis based on theoretical data may not fully meet the input parameters, data verification has certain limitations; CSB® recommends that flexible cables need to be tested and verified again on the equipment to fully meet the actual use requirements.

The output data information of the FLEXMOV® high-flexible cable finder is only for reference in design selection and cannot be used as the basis for final cable compliance determination; if you have any questions, please contact CSB® sales engineers.

Online Tools ▶▶▶.....

▶▶▶..... please visit: www.csb-ep.com

FLEXMOV® Flexible cables

Series	Part No.	Outer jacket	Shield	Min. bending radius Moving in cable carriers [mm]	Temperature Moving in cable carriers	v max. [m/s]		a max. [m/s ²]
								
FMC Control cables								
	FMC600	PVC	-	12.5 x d	+70°C/+5°C	3	-	20
	FMC603	PVC	-	7.5 x d	+70°C/+5°C	3	2	20
	FMC605	PVC	-	6.8 x d	+70°C/+5°C	10	5	80
	FMC610	PVC	✓	12.5 x d	+70°C/+5°C	3	-	20
	FMC616	PVC	✓	6.8 x d	+70°C/+5°C	10	5	80
	FMC800	PUR	-	12.5 x d	+80°C/-20°C	3	-	20
	FMC810	PUR	✓	12.5 x d	+80°C/-20°C	3	-	20
	FMC900	TPE	-	5 x d	+100°C/-35°C	10	6	100
	FMC901	TPE	-	5 x d	+100°C/-35°C	10	6	100
	FMC905	TPE	✓	5 x d	+100°C/-35°C	10	6	100
	FMC907	PUR	-	6.8 x d	+80°C/-25°C	10	5	80
	FMC912	TPE	✓	5 x d	+100°C/-35°C	10	6	100
	FMC918	PUR	✓	6.8 x d	+80°C/-25°C	10	5	80
FMD Data cables								
	FMD611	PVC	✓	7.5 x d	+70°C/+5°C	5	3	50
	FMD612	PVC	✓	10 x d	+70°C/+5°C	3	2	20
	FMD900	TPE	✓	6.8 x d	+100°C/-35°C	10	6	100
	FMD910	PUR	✓	10 x d	+80°C/-25°C	3	2	20
FMB Bus cables								
	FMB610	PVC	✓	12.5 x d	+70°C/+5°C	3	2	30
	FMB910	TPE	✓	10 x d	+70°C/-35°C	10	6	100
	FMB911	PUR	✓	12.5 x d	+70°C/-20°C	3	2	30

○ Inapplicable ● Medium ● High

Properties and approvals	UV-resistance 	Hydrolysis-resistance 	Cold-resistant 	Flame resistance 	Oil resistance 	Halogen-free 	Torsion 	Page
	○	○	○	●	○	-	○	P18
	○	○	○	●	○	-	●	P21
	●	○	○	●	●	-	●	P25
	○	○	○	●	○	-	○	P28
	●	○	○	●	●	-	○	P31
	●	○	●	○	●	-	○	P34
	●	○	●	○	●	-	○	P37
	●	●	●	○	●	✓	●	P40
	●	●	●	●	●	-	●	P44
	●	●	●	○	●	✓	○	P47
	●	●	●	●	●	✓	●	P50
	●	●	●	●	●	-	○	P54
	●	●	●	●	●	✓	○	P57
	○	○	○	●	●	-	○	P60
	○	○	○	●	●	-	○	P63
	●	●	●	○	●	✓	○	P66
	●	●	●	●	●	✓	○	P69
	●	○	○	●	●	-	○	P72
	●	●	●	●	●	-	○	P76
	●	●	●	●	●	✓	○	P81

FLEXMOV® Flexible cables

Series	Part No.	Outer jacket	Shield	Min. bending radius Moving in cable carriers [mm]	Temperature Moving in cable carriers	v max. [m/s]		a max. [m/s ²]
								
		Unsupported	Gliding					
FMM Motor cables								
	FMM600	PVC	-	7.5 x d	+70°C/+5°C	10	5	80
	FMM610	PVC	✓	7.5 x d	+70°C/+5°C	10	5	80
	FMM900	TPE	-	7.5 x d	+90°C/-35°C	10	6	100
	FMM902	TPE	-	7.5 x d	+90°C/-35°C	10	6	100
	FMM903	TPE	-	7.5 x d	+90°C/-35°C	10	6	80
	FMM907	TPE	-	7.5 x d	+90°C/-35°C	10	6	80
	FMM912	TPE	✓	7.5 x d	+90°C/-35°C	10	6	100
	FMM917	TPE	✓	7.5 x d	+90°C/-35°C	10	6	80
FMV Servo cables								
	FMV610	PVC	✓	7.5 x d	+70°C/+5°C	10	5	80
	FMV910	PUR	✓	10 x d	+80°C/-25°C	10	2	50
FME Measuring system cables								
	FME911	TPE	✓	7.5 x d	+90°C/-35°C	10	6	100
	FME913	PUR	✓	7.5 x d	+80°C/-25°C	10	5	50

○ Inapplicable ● Medium ● High

Properties and approvals	UV-resistance	Hydrolysis-resistance	Cold-resistant	Flame resistance	Oil resistance	Halogen-free	Torsion	Page
	●	○	○	●	●	-	●	P85
	●	○	○	●	●	-	○	P88
	●	●	●	●	●	-	●	P90
	●	●	●	○	●	✓	●	P93
	●	●	●	●	●	-	●	P95
	●	●	●	○	●	✓	●	P98
	●	●	●	○	●	✓	○	P101
	●	●	●	○	●	✓	○	P103
	●	○	○	●	●	-	○	P106
	●	●	●	●	●	✓	○	P109
	●	●	●	○	●	✓	○	P112
	●	●	●	●	●	✓	○	P117

DURAMOV® Cable carriers

Series	Opening principle	Hi Inner height [mm]	Max. cable outer diameter [mm]	Bi Inner width [mm]	Ha Outer height [mm]	Ba Outer width [mm]	R Bend radius [mm]	T Link pitch [mm]	
C01 Micro cable carriers, Closed design									
For the smallest applications. One-piece, non-openable									
		07	8	7-30	10	12-35	15-48	16.7	
		10	8	10-30	12	14-34	18-38	20	
		15	12	16-50	19.3	24.2-58.2	25-48	20	
C11 Micro cable carriers, Opening design									
Fill the cable quickly and easily; Split crossbar along the inner radius									
		05	3	5-10	8	8.7-13.7	10-18	10	
		07	4.5	7-30	10	12-35	15-48	16.7	
		10	6.5	10-20	15	16.5-26.5	18-38	20	
C21 Micro cable carriers, Openable along the outer radius									
Fill the cable quickly and easily; Openable along the outer radius									
		14.3	12	16-40	19.3	24.2-48.2	28-48	20	
		20	16	25-50	25	36-61	28-48	30.5	
C31 Micro cable carriers, openable along one side									
Two-pieces design, Openable along the outer radius or inner radius									
		10	8	10-30	15	17.4-37.4	18-38	20	
		15	12.5	16-50	19.3	23.8-57.8	28-48	20	
		20	16	25-50	25	36-61	28-48	30.5	
C02 Universal cable carriers									
For almost any application. Crossbars removable along the inner and outer radius									
		18	16	38-125	28	54-141	38-150	40	
		25	23	38-125	35	54-141	55-250	46	
		35	32	50-150	50	66-166	63-250	56	
		45	42	75-175	64	95-195	75-300	67	
C03 High load cable carriers									
Strong chain with crossbars every link									
		32	28	50-200	54	73-223	63-300	56	
		42	38	50-200	64	76-226	75-350	67	
		56	50	100-200	84	134-234	135-500	91	
		80	72	100-200	108	148-248	150-500	111	
C03H High-strength cable carriers									
Special crossbar design with freely definable inner width									
		32	28	200-400	54	223-423	63-300	56	
		42	38	200-400	64	226-426	75-350	67	
		56	50	200-600	84	234-634	135-500	91	
		80	72	200-600	108	248-648	150-500	111	

*Please scan the QR code to log in to our website: www.csb-ep.com

– Inapplicable

○ Optional

● standard

■ Especially suitable

	Unsupported fill weight max. [kg/m]	Unsupported length max. [m]	Long travel max. [m]	Internal divider		ATEX/ESD	Cleanroom	UL94	Low noise	QR code
				Vertical separators	Horizontal separators					
	0.37	≤ 0.5	–	–	–	○	●	HB	●	
	0.37	≤ 0.5	–	–	–	○	●	HB	●	
	0.75	≤ 0.7	–	–	–	○	●	HB	●	
	0.25	≤ 0.3	–	–	–	–	●	V2	●	
	0.37	≤ 0.5	–	–	–	–	●	V2	●	
	0.37	≤ 0.5	–	–	–	–	●	V2	●	
	0.50	≤ 0.7	–	–	–	○	–	HB	●	
	0.50	≤ 0.7	–	–	–	○	–	HB	●	
	0.50	≤ 0.7	–	–	–	○	–	HB	●	
	0.65	≤ 1.0	–	–	–	○	–	HB	●	
	0.65	≤ 1.0	–	–	–	○	–	HB	●	
	5	≤ 1.8	75	○	○	○	–	HB	–	
	5	≤ 2.4	100	○	○	○	–	HB	–	
	8	≤ 2.8	120	○	○	○	–	HB	–	
	13	≤ 3.7	150	○	○	○	–	HB	–	
	15	≤ 3.0	200	○	○	○	–	HB	–	
	38	≤ 4.2	300	○	○	○	–	HB	–	
	75	≤ 5.0	400	○	○	○	–	HB	–	
	75	≤ 5.8	400	○	○	○	–	HB	–	
	20	≤ 3.0	200	○	○	–	–	HB	–	
	55	≤ 4.2	300	○	○	–	–	HB	–	
	100	≤ 5.0	400	○	○	–	–	HB	–	
	100	≤ 5.8	400	○	○	–	–	HB	–	

DURAMOV® Cable carriers

Series	Opening principle	Hi Inner height [mm]	Max. cable outer diameter [mm]	Bi Inner width [mm]	Ha Outer height [mm]	Ba Outer width [mm]	R Bend radius [mm]	T Link pitch [mm]

C04 Low-noise cable carriers

Special design and small pitch for quite applications, Openable along the inner and outer radius

		28	25	30-60	35	46-76	55-150	22
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C06 High-speed and low-noise cable carriers

Special design and small pitch for quite and cleanroom, Openable along the inner and outer radius

		29	25	40-120	35	56-136	55-150	22
		35	31	40-120	42	60-140	55-150	25
		40	36	50-150	54	70-170	63-200	27.8
		52	46	50-150	65	74-174	75-250	30

DURAMOV® Bellows

Series	Type	Bi Inner diameter [mm]	Ba Outer diameter [mm]	R Bend radius [mm]	Unsupported length [m]	QR code
BL01 Bellows						
Used to protect cables in mutiple applications and flexible movement						
	Close	10-48	13-54.5	20-90	≤0.3	
	Open	10-48	13-54.5	20-90	≤0.3	
BL02 Bellows						
Used to protect cables in mutiple applications and flexible movement						
	封闭 Close	10-48	13-54.5	20-90	≤0.3	
	开口 Open	10-48	13-54.5	20-90	≤0.3	

Accessories

	Brackets Used to support bellows in long-travall applications			Quick connectors Quickly connected without tools	
	Water-proof connectors Used for wet or liquids environment			Right-angle connectors Used for right-angle applications	

*Please scan the QR code to log in to our website: www.csb-ep.com

— 不适用 Inapplicable ○ 可选配 Optional ● 标准 standard ■ 特别适合 Especially suitable

Unsupported fill weight max. [kg/m]	Unsupported length max. [m]	Long travel max. [m]	Internal divider		ATEX/ESD	Cleanroom	UL94	Low noise	QR code
			Vertical separators	Horizontal separators					
3	≤1.0	—	○	—	—	●	HB	■	
3	≤1.75	—	○	—	—	●	HB	●	
5	≤1.9	—	○	—	—	●	HB	●	
8	≤2.75	—	○	—	—	●	HB	●	
10	≤3.0	—	○	—	—	●	HB	●	

DURAMOV® Guide troughs

Series	Cable carriers	Trough side parts	Clamping brackets	Glide bars	C-profile	QR code
Steel guide troughs						
Available in galvanised steel and stainless steel						
	DURAMOV® C02 and C03	Standard length: 2m section	Standard parts	Standard length: 2m section	The length according to Lc	
Cable clamp						
	Cable clamp Multi-layer available, Used to fix cables with C-profile supporter					

*Please scan the QR code to log in to our website: www.csb-ep.com

DIN Color Codes to DIN 47100

Core	Colour	Core	Colour	Core	Colour	Core	Colour
1	WT	18	GY/BN	35	GN/BK	52	YL/BN/BK
2	BN	19	WT/PK	36	YL/BK	53	WT/GY/BK
3	GN	20	PK/BN	37	GY/BU	54	GY/BN/BK
4	YL	21	WT/BU	38	PK/BU	55	WT/PK/BK
5	GY	22	BN/BU	39	GY/RD	56	PK/BN/BK
6	PK	23	WT/RD	40	PK/RD	57	WT/BU/BK
7	BU	24	BN/RD	41	GY/BK	58	BN/BU/BK
8	RD	25	WT/BK	42	PK/BK	59	WT/RD/BK
9	BK	26	BN/BK	43	BU/BK	60	BN/RD/BK
10	VL	27	GY/GN	44	RD/BK	61	BK/WT
11	GY/PK	28	YL/GY	45	WT/BN/BK		
12	RD/BU	29	PK/GN	46	YL/GN/BK		
13	WT/GN	30	YL/PK	47	GY/PK/BK		
14	BN/GN	31	GN/BU	48	RD/BU/BK		
15	WT/YL	32	YL/BU	49	WT/GN/BK		
16	YL/BN	33	GN/RD	50	BN/GN/BK		
17	WT/GY	34	YL/RD	51	WT/YL/BK		

*Meaning of the above abbreviations:

WT_White BN_Brown GN_Green YL_Yellow GY_Gray
 PK_Pink BU_Blue RD_Red BK_Black VL_Violet

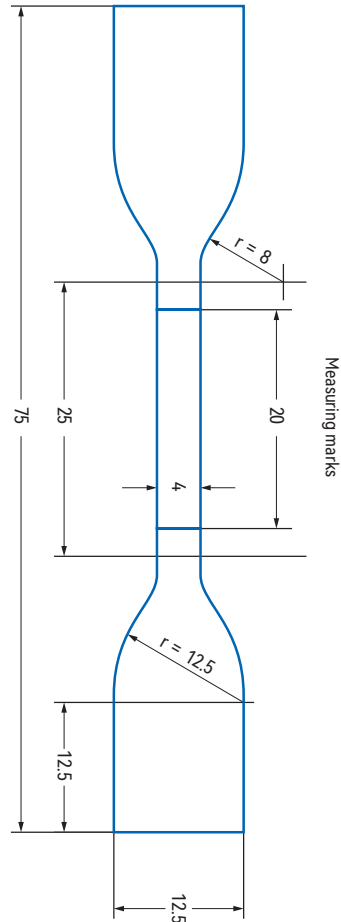
Test methods | Fire tests

Test	Specification	Design										
IEC 60332-1-2	Test of vertical flame propagation on a core, an insulated wire or a cable, test method 1kW - flame with gas/air mixture Sample length: 600mm Burner: According to IEC 60332-1-1 Test temperature: 1kW flame Position of the sample: Vertical Position of the flame: 45° to the vertical Flame duration: See table below Conditions: The damage or carbonisation must only occur between 50mm and 500mm, measured from the upper attachment point <table><tr><th>Outer diameter of the sample [mm]</th><th>Flame duration [s]</th></tr><tr><td>< 25</td><td>60</td></tr><tr><td>25-50</td><td>120</td></tr><tr><td>50-75</td><td>240</td></tr><tr><td>> 75</td><td>480</td></tr></table>	Outer diameter of the sample [mm]	Flame duration [s]	< 25	60	25-50	120	50-75	240	> 75	480	
Outer diameter of the sample [mm]	Flame duration [s]											
< 25	60											
25-50	120											
50-75	240											
> 75	480											
FT2 Flame Test	UL 1581, § 1100 (FT2 Flame Test) Length of the sample: 250 - 300mm Position of the sample: Horizontal Position of the flame: 20° to the vertical Flame duration: 30 seconds Conditions: The burnt distance must not exceed 100mm. Dripping material must not ignite the underlying cotton.											

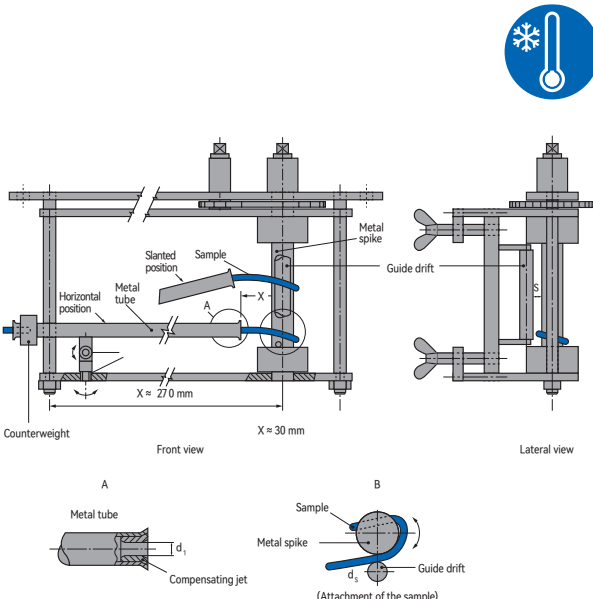
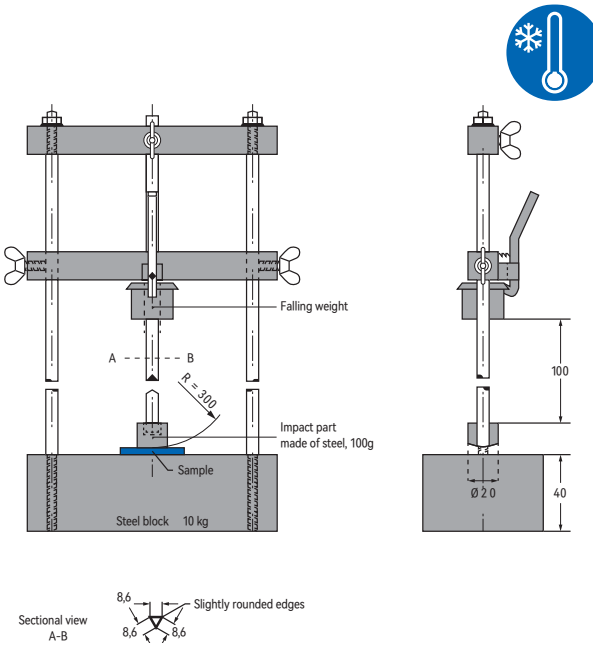
Test methods | Fire tests

Test	Specification	Design
Vertical Flame and FT1	UL 1581, § 1060 (Vertical Flame and FT1 Test) Length of the sample: 457mm-610mm Burner: Bunsen burner with additional air supply (Tirril gas burner) Ø9.5mm Test temperature: 500 W flame Position of the sample: Vertical Position of the flame: 20° to the vertical Flame duration: 5 x 15 seconds with 15 seconds flame break each Conditions: - Paper flag up to maximum 25% charred - The sample must continue to burn for maximum 1 minute	
VW-1 Flame	UL 1581, § 1080 (VW-1 Flame Test) Length of the sample: 610mm Burner: Bunsen burner with additional air supply (Tirril gas burner) Ø9.5mm Test temperature: 500 W flame Position of the sample: Vertical Position of the flame: 20° to the vertical Flame duration: 5 x 15 seconds with 15 seconds flame break each Conditions: - Paper flag up to maximum 25% charred - The sample must continue to burn for maximum 1 minute - Time noted until the flame/sample is extinguished - Dripping material must not ignite the cotton lying under it	
Cable Flame	UL 1581, § 1061 (Cable Flame Test) Length of the sample: 455mm Burner: Bunsen burner with additional air supply (Tirril gas burner) Ø9.5mm Test temperature: 500 W flame Position of the sample: Vertical Position of the flame: 20° to the vertical Flame duration: 3 x 60 seconds with 30 seconds flame break each Conditions: - Paper flag up to maximum 25% charred - The sample must continue to burn for maximum 1 minute - Dripping material must not ignite the cotton lying under it	

Test methods | Media tests

Test	Specification	Design
EN 50363-4-1	Testing of oil resistance for PVC jackets Test according to EN 60811-2-1, Clause 10 Test oil: IRM 902 Preparation of the sample according to EN 60811-501 Test temperature: $90 \pm 2^\circ$ Test duration: 7x 24hrs Followed by storage at room temperature of at least 16hrs, but not longer than 24hrs Maximum alteration of tensile strength: $\pm 30\%$ Maximum elongation at break: $\pm 30\%$	
EN 50363-10-2	Testing of oil resistance for PUR jackets Test according to EN 60811-2-1, Clause 10 Test oil: IRM 902 Preparation of the sample according to EN 60811-501 Test temperature: $100 \pm 2^\circ$ Test duration: 7x 24hrs Followed by storage at room temperature of at least 16hrs, but not longer than 24hrs Maximum alteration of tensile strength: $\pm 40\%$ Minimum median elongation at break: 300% Maximum elongation at break: $\pm 30\%$	
EN 60811-404	Testing of oil resistance for TPE jackets Test according to EN 60811-2-1, Clause 10 Test oil: IRM 902 Preparation of the sample according to EN 60811-501 Test temperature: $100 \pm 2^\circ$ Test duration: 7x 24hrs Followed by storage at room temperature of at least 16hrs, but not longer than 24hrs Maximum alteration of tensile strength: $\pm 30\%$ Maximum elongation at break: $\pm 30\%$	

Test methods | Low temperature tests

Test	Specification	Design																	
EN 60811-504	Bending test at low temperature for jacket																		
	Feed-through of the cold winding test according to 8.2 from EN 60811-504																		
	Deviating from the standard also the outer diameter of the sample > 12.5mm																		
	Mandrel diameter 4-5 times the sample diameter (there must be at least 2 samples)																		
	<table><tr><th colspan="2">(d)</th></tr><tr><th>Outer diameter of the sample [mm]</th><th>Number of windings</th></tr><tr><td>d ≤ 2.5</td><td>10</td></tr><tr><td>2.5 < d ≤ 4.5</td><td>6</td></tr><tr><td>4.5 < d ≤ 6.5</td><td>4</td></tr><tr><td>6.5 < d ≤ 8.5</td><td>3</td></tr><tr><td>8.5 < d</td><td>2</td></tr></table>		(d)		Outer diameter of the sample [mm]	Number of windings	d ≤ 2.5	10	2.5 < d ≤ 4.5	6	4.5 < d ≤ 6.5	4	6.5 < d ≤ 8.5	3	8.5 < d	2			
(d)																			
Outer diameter of the sample [mm]	Number of windings																		
d ≤ 2.5	10																		
2.5 < d ≤ 4.5	6																		
4.5 < d ≤ 6.5	4																		
6.5 < d ≤ 8.5	3																		
8.5 < d	2																		
Storage of the wound sample > 16hrs at test temperature																			
Heat to room temperature																			
When viewed with the naked eye or visual aid without magnification, there should not be any cracks in the outer jacket																			
EN 50305	Low temperature impact test for jacket																		
	Feed-through of the cold impact test according to 8.5 from EN 60811-504																		
	Selection criteria according to 5.1 from EN 50305																		
	<table><tr><th>(D)</th><th>Diameter of the cable [mm]</th><th>Weight of the hammer [g]</th><th>Weight of the intermediate sample [g]</th><th>Fall height [mm]</th></tr><tr><td>D < 15</td><td>1000</td><td>200</td><td>100</td></tr><tr><td>15 < D ≤ 25</td><td>1500</td><td>200</td><td>150</td></tr><tr><td>D > 25</td><td>2000</td><td>200</td><td>200</td></tr></table>		(D)	Diameter of the cable [mm]	Weight of the hammer [g]	Weight of the intermediate sample [g]	Fall height [mm]	D < 15	1000	200	100	15 < D ≤ 25	1500	200	150	D > 25	2000	200	200
	(D)		Diameter of the cable [mm]	Weight of the hammer [g]	Weight of the intermediate sample [g]	Fall height [mm]													
D < 15	1000	200	100																
15 < D ≤ 25	1500	200	150																
D > 25	2000	200	200																
3 pieces, length at least 5x the outer diameter or 150mm																			
Storage of the wound sample > 16hrs at test temperature																			
Heat to room temperature																			
When viewed with the naked eye or visual aid without magnification, there should not be any cracks in the outer jacket																			

Test methods | Motion tests

Test	Specification	Design
CSB® test: "Short travel" in DURAMOV®	Horizontal travel Travel length S: up to about 2m Temperature: approx. from -5°C to +35°C Bending factor: according to the catalogue (approx. 5 – 7.5 x d) Target: minimum 5,000,000 double strokes	
CSB® test: "Long travel" in DURAMOV®	Horizontal travel Travel length S: up to about 20m Temperature: approx. from -10°C to +40°C Bending factor: according to the catalogue (approx. 5 – 7.5 x d) Target: minimum 5,000,000 double strokes	
CSB® test: "Torsion test"	Twisted length S: about 1m Rotation angle: according to catalogue (about ±180°) Target: minimum 5,000,000 cycles	

FMC600 Control cables



- PVC outer jacket
- Flame-retardant
- Low cost

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	3 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travel distances up to 10 m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228)
	Conductor insulation	Mechanically high-quality PVC mixture.
	Conductor construction	Cores wound with an optimised pitch length.
	Color code	Black cores with white numbers, one green-yellow core.
	Outer jacket	Low-adhesion PVC mixture, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 600V, 80°C

Guaranteed service life

Double strokes	1 million times	3 million times	5 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	15	16	17
+15/+60	12.5	13.5	14.5
+60/+70	15	16	17

FMC600 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC600.05.02	2×0.5	5.0	11.0	32.0
FMC600.05.03	3G0.5	5.5	16.0	37.0
FMC600.05.04	4G0.5	6.0	21.0	46.0
FMC600.05.05	5G0.5	6.5	26.0	55.0
FMC600.05.07	7G0.5	7.5	37.0	73.0
FMC600.05.12	12G0.5	8.5	63.0	108.0
FMC600.05.18	18G0.5	10.0	94.0	158.0
FMC600.05.25	25G0.5	12.0	128.0	227.0
FMC600.07.02	2×0.75	5.5	16.0	40.0
FMC600.07.03	3G0.75	6.0	24.0	49.0
FMC600.07.04	4G0.75	6.5	32.0	61.0
FMC600.07.05	5G0.75	7.0	40.0	73.0
FMC600.07.07	7G0.75	8.0	56.0	99.0
FMC600.07.12	12G0.75	10.0	94.0	152.0
FMC600.07.18	18G0.75	11.5	140.0	167.0
FMC600.07.25	25G0.75	13.5	194.0	284.0
FMC600.10.02	2×1.0	6.0	21.0	48.0
FMC600.10.03	3G1.0	6.5	32.0	58.0
FMC600.10.04	4G1.0	7.0	42.0	62.0
FMC600.10.05	5G1.0	7.5	52.0	86.0
FMC600.10.07	7G1.0	8.5	73.0	116.0
FMC600.10.12	12G1.0	10.5	124.0	182.0
FMC600.10.18	18G1.0	12.5	186.0	278.0
FMC600.10.25	25G1.0	15.0	258.0	393.0
FMC600.15.02	2×1.5	6.5	32.0	64.0
FMC600.15.03	3G1.5	7.0	47.0	82.0
FMC600.15.04	4G1.5	7.5	63.0	104.0
FMC600.15.05	5G1.5	8.5	78.0	120.0
FMC600.15.07	7G1.5	10.0	109.0	167.0
FMC600.15.12	12G1.5	12.0	186.0	260.0
FMC600.15.18	18G1.5	14.5	279.0	370.0
FMC600.15.25	25G1.5	17.5	387.0	514.0
FMC600.25.03	3G2.5	8.5	121.0	136.0
FMC600.25.04	4G2.5	9.0	103.0	150.0
FMC600.25.05	5G2.5	10.0	129.0	184.0
FMC600.25.07	7G2.5	12.0	181.0	252.0
FMC600.25.12	12G2.5	15.0	327.0	414.0

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC603 Control cables



- For twistable applications requirements
- PVC outer jacket
- Flame-retardant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	3 m/s
		Gliding	2 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travels and up to 50 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional < 0.5 mm ² : Color code in accordance with DIN 47100 Cross -sectional ≥ 0.5 mm ² : Black cores with white numbers, one green-yellow core.
	Outer jacket	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 600V, 80°C

Guaranteed service life

Double strokes	5 million times		7.5 million times		10 million times	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
	Temperature, from/to [°C] R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	10	12.5	11	13.5	12	14.5
+15/+60	7.5	10	8.5	11	9.5	12
+60/+70	10	12.5	11	13.5	12	14.5

FMC603 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC603.02.03	3×0.25	5	9	26
FMC603.02.04	4×0.25	5.5	11	35
FMC603.02.06	6×0.25	6	16	48
FMC603.02.07	7×0.25	6.5	19	56
FMC603.02.12	12×0.25	8.5	33	96
FMC603.02.18	18×0.25	10	46	123
FMC603.02.20	20×0.25	10.5	51	145
FMC603.02.25	25×0.25	11.5	66	164
FMC603.02.30	30×0.25	12.5	75	188
FMC603.03.02	2×0.34	5	8	27
FMC603.03.05	5×0.34	6	18	42
FMC603.05.02	2×0.5	5.5	11	38
FMC603.05.03	3G0.5	5.5	16	40
FMC603.05.04	4G0.5	6	21	47
FMC603.05.05	5G0.5	6.5	26	56
FMC603.05.07	7G0.5	7.5	37	76
FMC603.05.12	12G0.5	10	63	140
FMC603.05.18	18G0.5	12	94	192
FMC603.05.25	25G0.5	13.5	129	259
FMC603.07.02	2×0.75	6	16	48
FMC603.07.03	3G0.75	6	23	50
FMC603.07.04	4G0.75	6.5	31	60
FMC603.07.05	5G0.75	7	38	70
FMC603.07.07	7G0.75	8	54	96
FMC603.07.12	12G0.75	11	91	175
FMC603.07.18	18G0.75	13.5	134	248
FMC603.07.25	25G0.75	16	186	346
FMC603.07.36	36G0.75	19	293	531
FMC603.07.42	42G0.75	21	341	608
FMC603.10.02	2×1.0	6	21	55
FMC603.10.03	3G1.0	6.5	31	61
FMC603.10.04	4G1.0	7	41	74
FMC603.10.05	5G1.0	7.5	50	87
FMC603.10.07	7G1.0	9	71	118
FMC603.10.12	12G1.0	12.5	120	228

FMC603
FLEXMOV®
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Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC603.10.18	18G1.0	15	179	308
FMC603.10.25	25G1.0	17.5	248	410
FMC603.15.02	2×1.5	6.5	31	71
FMC603.15.03	3G1.5	7	46	76
FMC603.15.04	4G1.5	8	61	93
FMC603.15.05	5G1.5	8.5	75	111
FMC603.15.07 ^{⑦)}	7G1.5	10.5	105	166
FMC603.15.12	12G1.5	13	179	288
FMC603.15.18	18G1.5	17	268	438
FMC603.15.25	25G1.5	19.5	371	563
FMC603.15.36	36G1.5	23	579	887
FMC603.25.03	3G2.5	8.5	75	118
FMC603.25.04	4G2.5	9.5	100	149
FMC603.25.07 ^{⑦)}	7G2.5	12	174	250
FMC603.25.12	12G2.5	16.5	297	445
FMC603.40.03	3G4.0	10	119	209
FMC603.40.05	5G4.0	12	198	294
FMC603.60.04	4G6.0	13	237	392
FMC603.60.05	5G6.0	14	299	471

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC605 Control cables



- PVC outer jacket
- UV-resistance
- Flame-retardant
- Oil-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	6.8 x d
		Flexible moving	5 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Cross -sectional ≤ 0.5 mm ² : Mechanically high-quality TPE mixture.
		Cross -sectional ≥ 0.75 mm ² : Mechanically high-quality PVC mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional < 0.5 mm ² : Color code in accordance with DIN 47100
		Cross -sectional ≥ 0.5 mm ² : Black cores with white numbers, one green-yellow core.
	Outer jacket	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Green RAL 6005

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 600V, 80°C

Guaranteed service life

Temperature, from/to [°C]	Double strokes		5 million times		7.5 million times		10 million times	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	7.5	10	8.5	11	9.5	12		
+15/+60	6.8	7.5	7.8	8.5	8.8	9.5		
+60/+70	7.5	10	8.5	11	9.5	12		

FMC605 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC605.02.36	36×0.25	15	99	209
FMC605.03.15	15×0.34	11	55	113
FMC605.03.18	18×0.34	12	67	143
FMC605.03.25	25×0.34	14	92	194
FMC605.05.02	2×0.5	6	11	38
FMC605.05.03	3G0.5	6	16	41
FMC605.05.04	4G0.5	6.5	21	47
FMC605.05.05	5G0.5	7	25	59
FMC605.05.07	7G0.5	8	36	78
FMC605.07.03	3G0.75	6.5	23	54
FMC605.07.04	4G0.75	7	32	67
FMC605.07.05	5G0.75	7.5	39	82
FMC605.07.07	7G0.75	9	56	115
FMC605.07.12	12G0.75	12.5	91	189
FMC605.07.18	18G0.75	15	134	269
FMC605.07.25	25G0.75	17.5	190	384
FMC605.07.36	36G0.75	22	267	587
FMC605.07.42	42G0.75	23.5	313	745
FMC605.10.03	3G1.0	6.5	31	56
FMC605.10.04	4G1.0	7	41	78
FMC605.10.05	5G1.0	8	50	94
FMC605.10.07	7G1.0	9.5	74	130
FMC605.10.12	12G1.0	13	119	227
FMC605.10.18	18G1.0	16.5	179	306
FMC605.10.25	25G1.0	19.5	248	487
FMC605.15.03	3G1.5	7.5	46	74
FMC605.15.04	4G1.5	8	61	105
FMC605.15.05	5G1.5	9	75	127
FMC605.15.07 ^{⑦)}	7G1.5	10.5	105	180
FMC605.15.12	12G1.5	15	179	264
FMC605.15.18	18G1.5	19.5	267	478
FMC605.15.25	25G1.5	21.5	371	645
FMC605.15.36	36G1.5	26.5	529	960
FMC605.25.04	4G2.5	10	96	170
FMC605.25.05	5G2.5	11	120	200
FMC605.25.07 ^{⑦)}	7G2.5	13	169	279
FMC605.25.12	12G2.5	18.5	284	480
FMC605.25.18	18G2.5	23.5	427	765
FMC605.25.25	25G2.5	27.5	591	1054

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC610 Control cables



- PVC outer jacket
- Shielded
- Flame-retardant
- Low cost

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	3 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travel distances up to 10 m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228)
	Conductor insulation	Mechanically high-quality PVC mixture.
	Conductor construction	Cores wound with an optimised pitch length.
	Color code	Black cores with white numbers, one green-yellow core.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Optical approx. 80 %
	Outer jacket	Low-adhesion PVC mixture, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 600V, 80°C

Guaranteed service life

Double strokes	1 million times	3 million times	5 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	15	16	17
+15/+60	12.5	13.5	14.5
+60/+70	15	16	17

FMC610 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC610.05.03	(3G0.5)C	6.0	28.0	47.0
FMC610.05.04	(4G0.5)C	6.5	35.0	54.0
FMC610.05.05	(5G0.5)C	7.0	41.0	65.0
FMC610.05.07	(7G0.5)C	8.0	59.0	75.0
FMC610.05.12	(12G0.5)C	9.0	91.0	125.0
FMC610.05.18	(18G0.5)C	11.0	136.0	177.0
FMC610.05.25	(25G0.5)C	13.0	210.0	243.0
FMC610.07.02	(2×0.75)C	6.5	30.0	50.0
FMC610.07.03	(3G0.75)C	7.0	37.0	66.0
FMC610.07.04	(4G0.75)C	7.5	46.0	72.0
FMC610.07.05	(5G0.75)C	8.0	61.0	87.0
FMC610.07.07	(7G0.75)C	9.0	83.0	112.0
FMC610.07.12	(12G0.75)C	10.5	124.0	170.0
FMC610.07.18	(18G0.75)C	12.0	183.0	238.0
FMC610.07.25	(25G0.75)C	14.5	222.0	309.0
FMC610.10.02	(2×1.0)C	6.5	30.0	52.0
FMC610.10.03	(3G1.0)C	7.0	46.0	73.0
FMC610.10.04	(4G1.0)C	7.5	63.0	102.0
FMC610.10.05	(5G1.0)C	8.0	76.0	110.0
FMC610.10.07	(7G1.0)C	9.5	100.0	130.0
FMC610.10.12	(12G1.0)C	11.5	167.0	229.0
FMC610.10.18	(18G1.0)C	13.0	213.0	281.0
FMC610.10.25	(25G1.0)C	16.0	291.0	390.0
FMC610.15.02	(2×1.5)C	7.5	60.0	71.0
FMC610.15.03	(3G1.5)C	7.5	63.0	87.0
FMC610.15.04	(4G1.5)C	8.5	90.0	111.0
FMC610.15.05	(5G1.5)C	9.0	94.0	131.0
FMC610.15.07	(7G1.5)C	11.0	153.0	183.0
FMC610.15.12	(12G1.5)C	13.0	212.0	282.0
FMC610.15.18	(18G1.5)C	15.0	399.0	458.0
FMC610.15.25	(25G1.5)C	18.5	425.0	573.0
FMC610.25.03	(3G2.5)C	10.0	114.0	171.0
FMC610.25.04	(4G2.5)C	10.0	141.0	163.0
FMC610.25.05	(5G2.5)C	11.0	149.0	195.0
FMC610.25.07	(7G2.5)C	13.0	204.0	262.0
FMC610.25.12	(12G2.5)C	16.0	342.0	428.0

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC616 Control cables



- Shielded
- PVC outer jacket
- UV-resistance
- Flame-retardant
- Oil-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	6.8 x d
		Flexible moving	5 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Cross -sectional $\leq 0.5 \text{ mm}^2$: Mechanically high-quality TPE mixture. Cross -sectional $\geq 0.75 \text{ mm}^2$: Mechanically high-quality PVC mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12 : Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional $< 0.5 \text{ mm}^2$: Color code in accordance with DIN 47100 Cross -sectional $\geq 0.5 \text{ mm}^2$: Black cores with white numbers, one green-yellow core.
	Inner jacket	PVC mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Green RAL 6005

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 600V, 80°C

Guaranteed service life

Double strokes	5 million times		7.5 million times		10 million times	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	7.5	10	8.5	11	9.5	12
+15/+60	6.8	7.5	7.8	8.5	8.8	9.5
+60/+70	7.5	10	8.5	11	9.5	12

FMC616 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC616.02.04	(4×0.25)C	7	29	61
FMC616.02.25	(25×0.25)C	14.5	111	260
FMC616.03.05	(5×0.34)C	7.5	37	90
FMC616.05.02	(2×0.5)C	7	30	77
FMC616.05.05	(5G0.5)C	8.5	49	106
FMC616.05.07	(7G0.5)C	10	64	127
FMC616.05.09	(9G0.5)C	12	80	154
FMC616.05.12	(12G0.5)C	13	98	232
FMC616.05.18	(18G0.5)C	15	145	286
FMC616.05.25	(25G0.5)C	17.5	192	399
FMC616.07.03	(3G0.75)C	8	46	98
FMC616.07.04	(4G0.75)C	8.5	56	113
FMC616.07.05	(5G0.75)C	9	67	128
FMC616.07.07	(7G0.75)C	10.5	87	152
FMC616.07.12	(12G0.75)C	14	128	266
FMC616.07.18	(18G0.75)C	17.5	196	400
FMC616.07.25	(25G0.75)C	19.5	265	536
FMC616.10.03	(3G1.0)C	8	54	107
FMC616.10.04	(4G1.0)C	9	65	116
FMC616.10.05	(5G1.0)C	9.5	77	136
FMC616.10.07	(7G1.0)C	12	103	205
FMC616.10.12	(12G1.0)C	15	161	319
FMC616.10.18	(18G1.0)C	19	245	482
FMC616.10.25	(25G1.0)C	21	322	595
FMC616.15.03	(3G1.5)C	9	72	122
FMC616.15.04	(4G1.5)C	9.5	88	155
FMC616.15.05	(5G1.5)C	10.5	105	177
FMC616.15.07 ⁽⁷⁾	(7G1.5)C	12.5	146	258
FMC616.15.12	(12G1.5)C	17	225	375
FMC616.15.18	(18G1.5)C	21	345	581
FMC616.15.25	(25G1.5)C	24	462	865
FMC616.25.03	(3G2.5)C	10.5	107	180
FMC616.25.04	(4G2.5)C	11.5	131	222

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC800 Control cables



- PUR outer jacket
- Indoor and outdoor applications, UV-resistant
- Oil and bio-oil-resistant
- Low cost

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	-20°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	3 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travel distances up to 10 m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228)
	Conductor insulation	Mechanically high-quality PVC mixture.
	Conductor construction	Cores wound with an optimised pitch length.
	Color code	Black cores with white numbers, one green-yellow core.
	Outer jacket	Low adhesion mixture on the basis of PUR, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20940, 600V, 80°C

Guaranteed service life

Double strokes	1 million times	3 million times	5 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-20/-10	15	16	17
-10/+70	12.5	13.5	14.5
+70/+80	15	16	17

FMC800 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC800.05.02	2×0.5	5.0	11.0	30.0
FMC800.05.03	3G0.5	5.5	16.0	34.0
FMC800.05.04	4G0.5	6.0	21.0	44.0
FMC800.05.05	5G0.5	6.5	26.0	53.0
FMC800.05.07	7G0.5	7.5	37.0	70.0
FMC800.05.12	12G0.5	8.5	63.0	105.0
FMC800.05.18	18G0.5	10.0	94.0	155.0
FMC800.05.25	25G0.5	12.0	128.0	222.0
FMC800.07.02	2×0.75	5.5	16.0	38.0
FMC800.07.03	3G0.75	6.0	24.0	46.0
FMC800.07.04	4G0.75	6.5	32.0	58.0
FMC800.07.05	5G0.75	7.0	40.0	71.0
FMC800.07.07	7G0.75	8.0	56.0	96.0
FMC800.07.12	12G0.75	10.0	94.0	146.0
FMC800.07.18	18G0.75	11.5	140.0	162.0
FMC800.07.25	25G0.75	13.5	194.0	278.0
FMC800.10.02	2×1.0	6.0	21.0	46.0
FMC800.10.03	3G1.0	6.5	32.0	56.0
FMC800.10.04	4G1.0	7.0	42.0	58.0
FMC800.10.05	5G1.0	7.5	52.0	89.0
FMC800.10.07	7G1.0	8.5	73.0	117.0
FMC800.10.12	12G1.0	10.5	124.0	178.0
FMC800.10.18	18G1.0	12.5	186.0	273.0
FMC800.10.25	25G1.0	15.0	258.0	375.0
FMC800.15.02	2×1.5	6.5	32.0	62.0
FMC800.15.03	3G1.5	7.0	47.0	76.0
FMC800.15.04	4G1.5	7.5	63.0	97.0
FMC800.15.05	5G1.5	8.5	78.0	117.0
FMC800.15.07	7G1.5	10.0	109.0	163.0
FMC800.15.12	12G1.5	12.0	186.0	256.0
FMC800.15.18	18G1.5	14.5	279.0	362.0
FMC800.15.25	25G1.5	17.5	387.0	502.0
FMC800.25.03	3G2.5	8.5	118.0	136.0
FMC800.25.04	4G2.5	9.0	103.0	145.0
FMC800.25.05	5G2.5	10.0	129.0	175.0
FMC800.25.07	7G2.5	12.0	181.0	246.0
FMC800.25.12	12G2.5	15.0	327.0	408.0
FMC800.25.25	25G2.5	21.5	638.0	786.0

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC810 Control cables



- PUR outer jacket
- UV-resistant
- Shielded
- Oil and bio-oil-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	-20°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	3 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travel distances up to 10 m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228)
	Conductor insulation	Mechanically high-quality PVC mixture.
	Conductor construction	Cores wound with an optimised pitch length.
	Color code	Black cores with white numbers, one green-yellow core.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Optical approx. 80 %
	Outer jacket	Low adhesion mixture on the basis of PUR, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20940, 600V, 80°C

Guaranteed service life

Double strokes	1 million times	3 million times	5 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-20/-10	15	16	17
-10/+70	12.5	13.5	14.5
+70/+80	15	16	17

FMC810 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC810.05.02	(2×0.5)C	6	18	37
FMC810.05.03	(3G0.5)C	6	28	45
FMC810.05.05	(5G0.5)C	7	41	62
FMC810.05.12	(12G0.5)C	9	91	122
FMC810.05.18	(18G0.5)C	11	136	174
FMC810.05.25	(25G0.5)C	13	210	234
FMC810.07.02	(2×0.75)C	6.5	30	48
FMC810.07.03	(3G0.75)C	7	37	63
FMC810.07.04	(4G0.75)C	7.5	46	68
FMC810.07.05	(5G0.75)C	8	61	85
FMC810.07.07	(7G0.75)C	9	83	109
FMC810.07.12	(12G0.75)C	10.5	124	166
FMC810.07.18	(18G0.75)C	12	183	232
FMC810.07.25	(25G0.75)C	14.5	222	299
FMC810.10.02	(2×1.0)C	6.5	30	50
FMC810.10.03	(3G1.0)C	7	46	71
FMC810.10.04	(4G1.0)C	7.5	63	98
FMC810.10.05	(5G1.0)C	8	76	105
FMC810.10.07	(7G1.0)C	9.5	100	126
FMC810.10.12	(12G1.0)C	11.5	167	224
FMC810.10.18	(18G1.0)C	13	213	276
FMC810.10.25	(25G1.0)C	16	291	382
FMC810.15.02	(2×1.5)C	7.5	60	69
FMC810.15.03	(3G1.5)C	7.5	63	85
FMC810.15.04	(4G1.5)C	8.5	90	108
FMC810.15.05	(5G1.5)C	9	94	129
FMC810.15.07	(7G1.5)C	11	153	177
FMC810.15.12	(12G1.5)C	13	212	276
FMC810.15.25	(25G1.5)C	18.5	425	560
FMC810.25.04	(4G2.5)C	10	141	157
FMC810.25.05	(5G2.5)C	11	149	192
FMC810.25.07	(7G2.5)C	13	204	255

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC900 Control cables



- TPE outer jacket
- Oil and bio-oil-resistant
- Indoor and outdoor applications
- Resistant to hydrolysis and microbes
- Low-temperature-flexibility
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	5 x d
		Flexible moving	4 x d
		Fixed installation	3 x d
	Temperature	Moving in cable carriers	-35°C to +100°C
		Flexible moving	-50°C to +100°C
		Fixed installation	-55°C to +100°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travel distances and for gliding applications up to 400 m and more	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross-sectional < 0.75 mm ² : Color code in accordance with DIN 47100 Cross-sectional ≥ 0.75 mm ² : Black with white numbers, one conductor green-yellow FMC900.02.03.INI: brown, blue, black FMC900.03.04.INI: brown, blue, black, white FMC900.03.05.INI: brown, blue, black, white, green-yellow FMC900.03.16.07.03.INI: 0.34mm ² : violet/red/grey/red-blue, green/grey-pink/white-green/white-yellow, white-grey/black/yellow-brown/brown-green, white/yellow/pink/grey-brown 0.75mm ² : blue/green-yellow/brown
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Steel blue RAL 5011

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22187, 600V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

FMC900 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC900.02.02	2×0.25	4.5	6.0	18.0
FMC900.02.03.INI	3×0.25	4.5	9.0	22.0
FMC900.02.06	6×0.25	5.5	16.0	36.0
FMC900.02.07	7×0.25	6.5	18.0	42.0
FMC900.02.08	8×0.25	6.5	21.0	48.0
FMC900.02.12	12×0.25	8.0	31.0	71.0
FMC900.02.18	18×0.25	9.0	46.0	100.0
FMC900.02.20	20×0.25	9.5	50.0	108.0
FMC900.02.25	25×0.25	10.5	63.0	137.0
FMC900.03.04.INI	4×0.34	5.0	15.0	31.0
FMC900.03.05.INI	5×0.34	5.5	18.0	37.0
FMC900.03.06	6×0.34	6.0	21.0	42.0
FMC900.03.08	8×0.34	7.0	29.0	56.0
FMC900.03.16.07.03.INI	16×0.34+3×0.75	11.0	77.0	152.0
FMC900.05.02	2×0.5	5.0	11.0	26.0
FMC900.05.03	3×0.5	5.0	16.0	32.0
FMC900.05.04	4×0.5	5.5	21.0	39.0
FMC900.05.05	5×0.5	6.0	25.0	47.0
FMC900.05.07	7×0.5	7.0	36.0	65.0
FMC900.05.12	12×0.5	10.0	61.0	115.0
FMC900.05.18	18×0.5	11.5	91.0	169.0
FMC900.05.25	25×0.5	13.0	124.0	223.0
FMC900.05.36	36×0.5	15.5	179.0	316.0
FMC900.07.04	4G0.75	6.0	31.0	55.0
FMC900.07.05	5G0.75	6.5	38.0	65.0
FMC900.07.07	7G0.75	8.0	54.0	90.0
FMC900.07.12	12G0.75	10.5	91.0	162.0
FMC900.07.20	20G0.75	13.0	149.0	253.0
FMC900.07.25	25G0.75	14.5	186.0	315.0
FMC900.10.03	3G1.0	6.0	31.0	52.0
FMC900.10.04	4G1.0	6.5	41.0	67.0
FMC900.10.05	5G1.0	7.5	50.0	81.0
FMC900.10.12	12G1.0	11.5	120.0	203.0
FMC900.10.18	18G1.0	14.0	179.0	297.0
FMC900.10.25	25G1.0	16.5	248.0	420.0

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC900.15.02	2×1.5	6.5	31.0	56.0
FMC900.15.04	4G1.5	7.5	61.0	92.0
FMC900.15.05	5G1.5	8.0	76.0	110.0
FMC900.15.07 ^{⑦)}	7G1.5	9.5	107.0	157.0
FMC900.15.12	12G1.5	13.5	179.0	284.0
FMC900.15.18	18G1.5	16.5	268.0	422.0
FMC900.15.25	25G1.5	20.0	371.0	600.0
FMC900.15.36	36G1.5	23.5	530.0	847.0
FMC900.25.04	4G2.5	8.5	100.0	151.0
FMC900.25.05	5G2.5	10.0	124.0	186.0
FMC900.25.07 ^{⑦)}	7G2.5	12.0	176.0	269.0
FMC900.25.12	12G2.5	17.5	297.0	492.0
FMC900.25.16	16G2.5	19.5	396.0	654.0
FMC900.25.18 ^{⑩)}	18G2.5	22.5	445.0	766.0
FMC900.25.25	25G2.5	23.5	612.0	980.0
FMC900.40.04	4G4.0	10.5	159.0	227.0
FMC900.60.04	4G6.0	12.5	238.0	317.0
FMC900.60.05	5G6.0	13.5	297.0	389.0
FMC900.100.04	4G10	16.5	396.0	549.0
FMC900.160.04	4G16	20.5	628.0	873.0

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

⑩) Nominal voltage: 600/1000V

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC901 Control cables



- TPE outer jacket
- Flame-retardant
- UV-resistance
- Oil and bio-oil-resistant
- Resistant to hydrolysis and microbes
- Low-temperature-flexibility
- PVC free

Dynamic Information

	Min. bending radius	Moving in cable carriers	5 x d
		Flexible moving	4 x d
		Fixed installation	3 x d
	Temperature	Moving in cable carriers	-35°C to +100°C
		Flexible moving	-45°C to +100°C
		Fixed installation	-50°C to +100°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional < 0.75 mm ² : Color code in accordance with DIN 47100 Cross -sectional ≥ 0.75 mm ² : Black with white numbers, one conductor green-yellow FMC901.02.03.INI: brown, blue, black FMC901.03.04.INI: brown, blue, black, white FMC901.03.05.INI: brown, blue, black, white, green-yellow
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Slate grey RAL 7015

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22187, 600V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

FMC901 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC901.02.02	2×0.25	5	6	28
FMC901.02.03.INI	3×0.25	5.5	9	32
FMC901.02.04	4×0.25	5.5	11	37
FMC901.02.06	6×0.25	6.5	16	48
FMC901.02.08	8×0.25	7.5	21	64
FMC901.02.12	12×0.25	8.5	31	93
FMC901.03.04.INI	4×0.34	6	15	43
FMC901.03.05.INI	5×0.34	6.5	18	49
FMC901.03.06	6×0.34	6.5	21	55
FMC901.03.08	8×0.34	7.5	29	74
FMC901.05.02	2×0.5	6	11	43
FMC901.05.03	3×0.5	6.5	16	50
FMC901.05.04	4×0.5	7	21	59
FMC901.05.05	5×0.5	7.5	25	68
FMC901.05.07	7×0.5	8.5	36	93
FMC901.05.12	12×0.5	11.5	61	167
FMC901.05.18	18×0.5	13.5	91	233
FMC901.07.05	5G0.75	8	38	93
FMC901.07.07	7G0.75	9.5	54	127
FMC901.07.12	12G0.75	13	91	226
FMC901.07.25	25G0.75	17	186	416
FMC901.10.03	3G1.0	7.5	31	77
FMC901.10.04	4G1.0	8	41	94
FMC901.10.12	12G1.0	14	120	273
FMC901.10.18	18G1.0	16.5	179	396
FMC901.10.25	25G1.0	18.5	248	512
FMC901.15.04	4G1.5	9	61	121
FMC901.15.05	5G1.5	9.5	75	144
FMC901.15.07 ^{②)}	7G1.5	11.5	105	199
FMC901.15.12	12G1.5	16	179	369
FMC901.15.18	18G1.5	19	268	529
FMC901.15.25	25G1.5	22	371	722
FMC901.25.04	4G2.5	10.5	100	186
FMC901.25.05	5G2.5	11	124	219
FMC901.25.07 ^{②)}	7G2.5	13.5	174	301
FMC901.25.12	12G2.5	19	297	600
FMC901.25.18	18G2.5	24	445	850
FMC901.25.25	25G2.5	27	612	1132
FMC901.40.04	4G4.0	12	159	270

②) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC905 Control cables



- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- UV-resistance
- Resistant to hydrolysis and microbes
- PVC and halogen-free
- Low-temperature-flexibility

Dynamic Information

	Min. bending radius	Moving in cable carriers	5 x d
		Flexible moving	4 x d
		Fixed installation	3 x d
	Temperature	Moving in cable carriers	-35°C to +100°C
		Flexible moving	-50°C to +100°C
		Fixed installation	-55°C to +100°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional < 0.75mm ² : Color code in accordance with DIN 47100 Cross -sectional ≥ 0.75 mm ² : Black with white numbers, one conductor green-yellow FMC905.03.05.INI: brown, blue, black, white, green-yellow
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Steel blue RAL 5011

Electrical Information

	Nominal voltage	U ₀ /U: 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22187, 600V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

FMC905 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC905.01.12	(12×0.14)C	8	38	78
FMC905.01.18	(18×0.14)C	9.5	64	121
FMC905.02.04	(4×0.25)C	6.5	24	49
FMC905.02.08	(8×0.25)C	8	40	78
FMC905.02.12	(12×0.25)C	9.5	66	122
FMC905.02.25	(25×0.25)C	12.5	112	212
FMC905.03.05.INI	(5×0.34)C	7	34	63
FMC905.05.04	(4×0.5)C	7	37	67
FMC905.05.05	(5×0.5)C	7.5	43	76
FMC905.05.07	(7×0.5)C	8.5	57	99
FMC905.05.12	(12×0.5)C	11.5	106	185
FMC905.05.18	(18×0.5)C	13.5	144	251
FMC905.05.25	(25×0.5)C	15	186	318
FMC905.07.04	(4G0.75)C	7.5	48	83
FMC905.07.05	(5G0.75)C	8	58	95
FMC905.07.07	(7G0.75)C	9.5	89	140
FMC905.07.12	(12G0.75)C	12	136	230
FMC905.07.20	(20G0.75)C	15	212	345
FMC905.07.25	(25G0.75)C	16	253	420
FMC905.10.02	(2×1.0)C	7.5	37	70
FMC905.10.03	(3G1.0)C	7.5	48	80
FMC905.10.04	(4G1.0)C	8	61	99
FMC905.10.05	(5G1.0)C	8.5	70	116
FMC905.10.07	(7G1.0)C	10	109	170
FMC905.10.12	(12G1.0)C	13.5	175	286
FMC905.10.18	(18G1.0)C	15.5	246	391
FMC905.10.25	(25G1.0)C	18	322	520
FMC905.15.04	(4G1.5)C	9	94	142
FMC905.15.05	(5G1.5)C	10	112	166
FMC905.15.07 ⁽⁷⁾	(7G1.5)C	11.5	149	231
FMC905.15.12	(12G1.5)C	15.5	243	383
FMC905.15.18	(18G1.5)C	19	372	579
FMC905.25.04	(4G2.5)C	11	140	220
FMC905.25.07 ⁽⁷⁾	(7G2.5)C	13.5	228	347
FMC905.25.12	(12G2.5)C	19.5	375	619
FMC905.40.04	(4G4.0)C	12.5	208	305
FMC905.40.05	(5G4.0)C	13.5	254	370

⁽⁷⁾ When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC907 Control cables



- For twistable applications requirements
- PUR outer jacket
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	6.8 x d
		Flexible moving	5 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-25°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	
	Torsion	±180°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross-sectional < 0.5 mm ² : Color code in accordance with DIN 47100 Cross-sectional ≥ 0.5 mm ² : Black cores with white numbers, one green-yellow core. FMC907.02.03.INI: brown, blue, black FMC907.03.04.INI: brown, blue, black, white FMC907.03.05.INI: brown, blue, black, white, green-yellow
	Outer jacket	Low-adhesion mixture on the basis of PUR, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20234, 600V, 80°C

Guaranteed service life

Temperature, from/to [°C]	Double strokes		5 million times		7.5 million times		10 million times	
			< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
			R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15			8.5	10	9.5	11	10.5	12
-15/+70			6.8	7.5	7.5	8.5	8.5	9.5
+70/+80			8.5	10	9.5	11	10.5	12

FMC907 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC907.02.03.INI	3×0.25	5.0	9.0	29.0
FMC907.02.04	4×0.25	5.5	11.0	35.0
FMC907.02.05	5×0.25	6.0	13.0	39.0
FMC907.02.07	7×0.25	6.5	18.0	51.0
FMC907.02.12	12×0.25	9.0	32.0	78.0
FMC907.02.18	18×0.25	10.5	47.0	127.0
FMC907.02.25	25×0.25	11.5	63.0	155.0
FMC907.03.04.INI	4×0.34	6.0	16.0	39.0
FMC907.03.05.INI	5×0.34	6.0	17.0	35.0
FMC907.05.04	4G0.5	6.0	21.0	46.0
FMC907.05.05	5G0.5	6.5	26.0	53.0
FMC907.05.07	7G0.5	7.5	39.0	78.0
FMC907.05.12	12G0.5	10.0	63.0	130.0
FMC907.05.18	18G0.5	12.0	94.0	184.0
FMC907.05.25	25G0.5	14.0	129.0	243.0
FMC907.05.30	30G0.5	15.0	155.0	315.0
FMC907.07.03	3G0.75	6.5	23.0	52.0
FMC907.07.04	4G0.75	7.0	31.0	59.0
FMC907.07.05	5G0.75	7.5	38.0	71.0
FMC907.07.07	7G0.75	8.5	54.0	100.0
FMC907.07.12	12G0.75	12.0	91.0	180.0
FMC907.07.18	18G0.75	13.5	134.0	239.0
FMC907.07.20	20G0.75	14.5	149.0	269.0
FMC907.07.25	25G0.75	16.0	186.0	336.0
FMC907.07.36	36G0.75	19.0	279.0	506.0
FMC907.07.42	42G0.75	21.0	341.0	580.0
FMC907.10.02	2×1.0	6.5	21.0	51.0
FMC907.10.03	3G1.0	6.5	31.0	58.0
FMC907.10.04	4G1.0	7.0	41.0	73.0
FMC907.10.05	5G1.0	8.0	50.0	90.0
FMC907.10.07	7G1.0	9.0	71.0	120.0
FMC907.10.12	12G1.0	12.5	120.0	220.0
FMC907.10.18	18G1.0	15.0	179.0	314.0
FMC907.10.25	25G1.0	17.5	248.0	431.0
FMC907.10.42	42G1.0	22.5	433.0	699.0

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC907.15.03	3G1.5	7.0	46.0	71.0
FMC907.15.04	4G1.5	7.5	61.0	88.0
FMC907.15.05	5G1.5	8.0	75.0	105.0
FMC907.15.07 ^{⑦)}	7G1.5	9.5	105.0	152.0
FMC907.15.12	12G1.5	13.0	179.0	297.0
FMC907.15.18	18G1.5	17.0	268.0	405.0
FMC907.15.25	25G1.5	19.5	297.0	564.0
FMC907.15.36	36G1.5	23.5	551.0	848.0
FMC907.25.03	3G2.5	8.5	75.0	132.0
FMC907.25.04	4G2.5	9.5	95.0	167.0
FMC907.25.05	5G2.5	10.0	124.0	196.0
FMC907.25.07 ^{⑦)}	7G2.5	12.0	174.0	270.0
FMC907.25.12	12G2.5	17.0	297.0	479.0
FMC907.40.04 ^{⑧)}	4G4.0	11.5	165.0	245.0
FMC907.40.05 ^{⑧)}	5G4.0	12.0	198.0	284.0
FMC907.60.05 ^{⑧)}	5G6.0	13.5	297.0	412.0
FMC907.160.05	5G16	22.5	845.0	1098.0

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

⑧) Torsion ±90°

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC912 Control cables



- TPE outer jacket
- Shielded
- Flame resistance
- Oil and bio-oil-resistant
- UV-resistance
- Resistant to hydrolysis and microbes
- PVC free
- Low-temperature-flexibility

Dynamic Information

	Min. bending radius	Moving in cable carriers	5 x d
		Flexible moving	4 x d
		Fixed installation	3 x d
	Temperature	Moving in cable carriers	-35°C to +100°C
		Flexible moving	-45°C to +100°C
		Fixed installation	-50°C to +100°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Cross -sectional < 0.75mm ² : Color code in accordance with DIN 47100 Cross -sectional ≥ 0.75 mm ² : Black with white numbers, one conductor green-yellow
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Slate grey RAL 7015

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22187, 600V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

FMC912 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC912.02.04	(4×0.25)C	7	26	67
FMC912.02.08	(8×0.25)C	9	39	102
FMC912.02.12	(12×0.25)C	10.5	66	155
FMC912.02.25	(25×0.25)C	13	112	252
FMC912.05.04	(4×0.5)C	8.5	39	96
FMC912.05.05	(5×0.5)C	8.5	39	96
FMC912.05.12	(12×0.5)C	13	110	254
FMC912.05.25	(25×0.5)C	16.5	191	396
FMC912.07.04	(4G0.75)C	9	51	119
FMC912.07.05	(5G0.75)C	10	71	149
FMC912.07.07	(7G0.75)C	10	94	194
FMC912.07.12	(12G0.75)C	14.5	148	324
FMC912.07.20	(20G0.75)C	17	220	467
FMC912.07.25	(25G0.75)C	19.5	288	593
FMC912.10.02	(2×1.0)C	8.5	40	102
FMC912.10.03	(3G1.0)C	9	50	117
FMC912.10.04	(4G1.0)C	10	74	151
FMC912.10.05	(5G1.0)C	10.5	87	174
FMC912.10.07	(7G1.0)C	12	110	189
FMC912.15.04	(4G1.5)C	10.5	98	186
FMC912.15.05	(5G1.5)C	11.5	116	214
FMC912.15.07 ^{⑦)}	(7G1.5)C	13	154	278
FMC912.15.12	(12G1.5)C	17.5	251	497
FMC912.15.18	(18G1.5)C	21.5	387	732
FMC912.25.04	(4G2.5)C	12	145	258
FMC912.25.07 ^{⑦)}	(7G2.5)C	15	234	423
FMC912.25.12	(12G2.5)C	21.5	417	796
FMC912.40.04	(4G4.0)C	13.5	213	362

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMC918 Control cables



- Shielded
- PUR outer jacket
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	6.8 x d
		Flexible moving	5 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-25°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Number of conductors < 12: Conductors cabled in a layer with short pitch length. Number of conductors ≥ 12: Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	Color code	Black cores with white numbers, one green-yellow core.
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55 %, optical approx. 80 %
	Outer jacket	Low-adhesion mixture on the basis of PUR, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U_0/U : 300/500 V (following VDE0298-3)
	Test voltage	2000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20234, 600V, 80°C

Guaranteed service life

Temperature, from/to [°C]	Double strokes		5 million times		7.5 million times		10 million times	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	8.5	10	9.5	11	10.5	12		
-15/+70	6.8	7.5	7.5	8.5	8.5	9.5		
+70/+80	8.5	10	9.5	11	10.5	12		

FMC918 Control cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMC918.05.04	(4G0.5)C	8	38	77
FMC918.05.05	(5G0.5)C	8	45	91
FMC918.05.07	(7G0.5)C	9.5	59	115
FMC918.05.09	(9G0.5)C	11	77	143
FMC918.05.12	(12G0.5)C	12.5	92	202
FMC918.05.18	(18G0.5)C	14.5	146	248
FMC918.05.25	(25G0.5)C	16	168	354
FMC918.07.03	(3G0.75)C	8	42	79
FMC918.07.04	(4G0.75)C	8.5	49	96
FMC918.07.05	(5G0.75)C	9.5	61	112
FMC918.07.07	(7G0.75)C	10.5	83	151
FMC918.07.12	(12G0.75)C	13.5	136	249
FMC918.07.18	(18G0.75)C	15.5	194	354
FMC918.07.36	(36G0.75)C	22	390	702
FMC918.10.03	(3G1.0)C	8.5	50	96
FMC918.10.04	(4G1.0)C	9	62	112
FMC918.10.05	(5G1.0)C	9.5	74	129
FMC918.10.07	(7G1.0)C	11	104	176
FMC918.10.12	(12G1.0)C	14.5	166	300
FMC918.10.18	(18G1.0)C	17	240	407
FMC918.10.25	(25G1.0)C	20	325	545
FMC918.15.03	(3G1.5)C	9.5	68	122
FMC918.15.04	(4G1.5)C	10	86	145
FMC918.15.05	(5G1.5)C	9.5	108	159
FMC918.15.07 ^{⑦)}	(7G1.5)C	11.5	144	217
FMC918.15.12	(12G1.5)C	16	233	387
FMC918.15.18	(18G1.5)C	19	346	541
FMC918.15.25	(25G1.5)C	22.5	464	724
FMC918.15.36	(36G1.5)C	26.5	663	1095
FMC918.15.42	(42G1.5)C	29.5	820	1296
FMC918.25.03	(3G2.5)C	10	106	174
FMC918.25.04	(4G2.5)C	11.5	140	203
FMC918.25.05	(5G2.5)C	12	166	235
FMC918.25.07 ^{⑦)}	(7G2.5)C	14.5	230	334
FMC918.25.12	(12G2.5)C	19	382	585
FMC918.40.04	(4G4.0)C	13	203	328

⑦) When using the cables with "7G1.5mm²" and "7G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMD611 Data cables



- PVC outer jacket
- Shielded
- Oil-resistant
- Flame resistance
- Low cost

Dynamic Information

	Min. bending radius	Moving in cable carriers	7,5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	5 m/s
		Gliding	3 m/s
	a max.	50 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	

Cable structure

	Conductor	Fine bare copper stranded wires with high flexibility design
	Conductor insulation	Mechanically high-quality TPE compound.
	Conductor construction	Cores twisted in pairs with a short pitch length, core pairs then wound with short pitch lengths.
	Color code	Colour code following DIN 47100
	Intermediate layer	Foil taping over the outer layer.
	Overall shield	Extremely flexible braiding made of tinned copper wires. Coverage linear approx. 70%, optical approx. 90%
	Outer jacket	Low-adhesion, oil-resistant PVC mixture, adapted to suit the requirements in cable carriers. Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U ₀ /U: 300/300 V (following VDE0298-3)
	Test voltage	1500 V (following EN50395)

Properties and approvals

	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2464, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	10	11	12
+15/+60	7.5	8.5	9.5
+60/+70	10	11	12

FMD611 Data cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMD611.02.01.02	(2×0.25)C	5.0	18.0	33.0
FMD611.02.02.02 ^{④)}	(2x(2x0.25))C	6.5	25.0	51.0
FMD611.02.03.02	(3x(2x0.25))C	7.0	36.0	63.0
FMD611.02.04.02	(4x(2x0.25))C	7.5	44.0	76.0
FMD611.02.05.02	(5x(2x0.25))C	8.5	52.0	92.0
FMD611.02.06.02	(6x(2x0.25))C	9.0	62.0	105.0
FMD611.02.08.02	(8x(2x0.25))C	10.5	78.0	137.0
FMD611.02.10.02	(10x(2x0.25))C	12.0	90.0	170.0
FMD611.02.14.02	(14x(2x0.25))C	12.0	119.0	204.0
FMD611.03.03.02	(3x(2x0.34))C	8.0	44.0	86.0
FMD611.03.08.02	(8x(2x0.34))C	12.0	102.0	206.0
FMD611.05.01.02	(2×0.5)C	6.0	25.0	51.0
FMD611.05.02.02 ^{④)}	(2x(2x0.5))C	7.0	46.0	90.0
FMD611.05.03.02	(3x(2x0.5))C	9.0	61.0	109.0
FMD611.05.04.02	(4x(2x0.5))C	9.5	74.0	125.0
FMD611.05.05.02	(5x(2x0.5))C	11.0	91.0	153.0
FMD611.05.06.02	(6x(2x0.5))C	11.5	103.0	189.0
FMD611.05.08.02	(8x(2x0.5))C	13.0	137.0	234.0
FMD611.05.10.02	(10x(2x0.5))C	15.5	181.0	326.0
FMD611.05.14.02	(14x(2x0.5))C	16.0	193.0	341.0

④) Cables marked with ④ are four-star twisted design.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMD612 Data cables



- PVC outer jacket
- Shielded
- Oil-resistant
- Flame resistance
- Low cost

Dynamic Information

	Min. bending radius	Moving in cable carriers	10 x d
		Flexible moving	8 x d
		Fixed installation	5 x d
	Temperature	Moving in cable carriers	5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	3 m/s
		Gliding	2 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travels and up to 50 m for gliding applications	

Cable structure

	Conductor	Fine bare copper stranded wires with high flexibility design
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	The individual cores are wound in layers with a short pitch length.
	Color code	Colour code following DIN 47100
	Intermediate layer	Foil taping over the outer layer.
	Overall shield	Extremely flexible braiding made of tinned copper wires. Coverage linear approx. 70%, optical approx. 90%
	Outer jacket	Low adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers. Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U ₀ /U: 300/300 V (following VDE0298-3)
	Test voltage	1500 V (following EN50395)

Properties and approvals

	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2464, 300V, 80°C

Guaranteed service life

Temperature, from/to [°C]	Double strokes		5 million times		7.5 million times		10 million times	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	12.5	15	13.5	16	14.5	17		
+15/+60	10	12.5	11	13.5	12	14.5		
+60/+70	12.5	15	13.5	16	14.5	17		

FMD612 Data cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMD612.01.03	(3×0.14)C	5.0	12.0	28.0
FMD612.01.04	(4×0.14)C	5.0	17.0	32.0
FMD612.01.05	(5×0.14)C	5.5	19.0	37.0
FMD612.01.07	(7×0.14)C	6.0	25.0	47.0
FMD612.01.14	(14×0.14)C	7.0	41.0	75.0
FMD612.01.18	(18×0.14)C	7.5	51.0	90.0
FMD612.01.24	(24×0.14)C	8.5	64.0	125.0
FMD612.02.03	(3×0.25)C	5.0	19.0	35.0
FMD612.02.04	(4×0.25)C	5.5	23.0	45.0
FMD612.02.05	(5×0.25)C	6.0	28.0	49.0
FMD612.02.07	(7×0.25)C	6.5	35.0	61.0
FMD612.02.08	(8×0.25)C	7.0	39.0	68.0
FMD612.02.14	(14×0.25)C	7.5	60.0	92.0
FMD612.02.18	(18×0.25)C	8.5	71.0	122.0
FMD612.02.24	(24×0.25)C	10.0	95.0	161.0
FMD612.03.02	(2×0.34)C	5.5	21.0	37.0
FMD612.03.03	(3×0.34)C	5.5	29.0	42.0
FMD612.03.04	(4×0.34)C	6.0	33.0	51.0
FMD612.03.05	(5×0.34)C	6.5	38.0	56.0
FMD612.03.07	(7×0.34)C	7.5	50.0	77.0
FMD612.03.10	(10×0.34)C	8.0	58.0	97.0
FMD612.03.14	(14×0.34)C	8.0	74.0	112.0
FMD612.03.18	(18×0.34)C	9.0	91.0	139.0
FMD612.03.24	(24×0.34)C	10.0	119.0	177.0

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMD900 Data cables



- TPE outer jacket
- Shielded
- Oil-resistant
- UV-resistance
- Resistant to hydrolysis and microbes
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	6.8 x d
		Flexible moving	5 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +100°C
		Flexible moving	-50°C to +100°C
		Fixed installation	-55°C to +100°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m and more for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	Cores twisted in pairs with a short pitch length, core pairs then wound with short pitch lengths.
	Color code	Cross -sectional < 1.0mm ² : Color code in accordance with DIN 47100 Cross -sectional ≥ 1.0 mm ² : Black cores with white numbers.
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Steel blue RAL 5011

Electrical Information

	Nominal voltage	U ₀ /U: 300/300 V (following VDE0298-3)
	Test voltage	1500 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL21481, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	7.5	8.5	9.5
-25/+90	6.8	7.5	8.5
+90/+100	7.5	8.5	9.5

FMD900 Data cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMD900.01.04.02	(4×(2×0.14))C	7.5	30.0	63.0
FMD900.01.18.02	(18×(2×0.14))C	12.5	101.0	202.0
FMD900.02.01.02	(2×0.25)C	6.0	17.0	39.0
FMD900.02.02.02 ④)	(2×(2×0.25))C	6.5	26.0	47.0
FMD900.02.03.02	(3×(2×0.25))C	8.0	35.0	78.0
FMD900.02.04.02	(4×(2×0.25))C	8.5	42.0	90.0
FMD900.02.05.02	(5×(2×0.25))C	9.0	49.0	100.0
FMD900.02.06.02	(6×(2×0.25))C	10.0	69.0	125.0
FMD900.02.09.02	(9×(2×0.25))C	12.5	102.0	208.0
FMD900.02.10.02	(10×(2×0.25))C	13.5	103.0	207.0
FMD900.02.14.02	(14×(2×0.25))C	14.0	124.0	228.0
FMD900.03.08.02	(8×(2×0.34))C	13.0	106.0	209.0
FMD900.05.04.02	(4×(2×0.5))C	9.5	77.0	140.0
FMD900.05.06.02	(6×(2×0.5))C	12.0	103.0	198.0
FMD900.05.08.02	(8×(2×0.5))C	14.5	135.0	251.0
FMD900.07.03.02	(3×(2×0.75))C	10.5	83.0	155.0
FMD900.10.04.02	(4×(2×1))C	12.5	125.0	232.0
FMD900.15.06.02	(6×(2×1.5))C	16.5	247.0	420.0

④) Cables marked with ④ are four-star twisted design.

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMD910 Data cables



- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- UV-resistance
- Notch-resistant
- Resistant to hydrolysis and microbes
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	10 x d
		Flexible moving	8 x d
		Fixed installation	5 x d
	Temperature	Moving in cable carriers	-25°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	3 m/s
		Gliding	2 m/s
	a max.	20 m/s ²	
	Travel distance	Unsupported travels and up to 50 m for gliding applications	

Cable structure

	Conductor	Fine bare copper stranded wires with high flexibility design
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	The individual cores are wound in layers with a short pitch length.
	Color code	Color code in accordance with DIN 47100
	Intermediate layer	Foil taping over the outer layer.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of PUR, adapted to suit the requirements in cable carriers (following DIN EN 50363-10-2). Color: Grey RAL 7001

Electrical Information

	Nominal voltage	U ₀ /U: 300/300 V (following VDE0298-3)
	Test voltage	1500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20233, 300V, 80°C

Guaranteed service life

Temperature, from/to [°C]	Double strokes		5 million times		7.5 million times		10 million times	
			< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
			R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15			12.5	15	13.5	16	14.5	17
-15/+70			10	12.5	11	13.5	12	14.5
+70/+80			12.5	15	13.5	16	14.5	17

FMD910 Data cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMD910.01.04	(4×0.14)C	5.5	15	39
FMD910.01.07	(7×0.14)C	6.5	24	54
FMD910.01.08	(8×0.14)C	7	26	64
FMD910.01.14	(14×0.14)C	7.5	41	79
FMD910.01.18	(18×0.14)C	8	51	97
FMD910.01.25	(25×0.14)C	8.5	66	101
FMD910.02.03	(3×0.25)C	5.5	18	41
FMD910.02.04	(4×0.25)C	6	22	45
FMD910.02.05	(5×0.25)C	6	25	50
FMD910.02.07	(7×0.25)C	7	33	65
FMD910.02.08	(8×0.25)C	7	39	72
FMD910.02.14	(14×0.25)C	8	60	103
FMD910.02.18	(18×0.25)C	9	71	122
FMD910.02.25	(25×0.25)C	10.5	97	152
FMD910.03.03	(3×0.34)C	5	25	47
FMD910.03.04	(4×0.34)C	5.5	30	54
FMD910.03.05	(5×0.34)C	6	34	60
FMD910.03.07	(7×0.34)C	6.5	45	84
FMD910.03.14	(14×0.34)C	8	74	126
FMD910.03.18	(18×0.34)C	8.5	91	156

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMB610 Bus cables



- PVC outer jacket
- Shielded
- Flame resistance
- Oil-resistant
- UV-resistance

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	3 m/s
		Gliding	2 m/s
	a max.	30 m/s ²	
	Travel distance	Unsupported travels and up to 20 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	According to bus specification.
	Conductor construction	According to bus specification.
	Color code	According to bus specification.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55 %, optical approx. 80 %
	Outer jacket	Low-adhesion PVC mixture, adapted to suit the requirements in cable carriers. Color: Red lilac RAL 4001

Electrical Information

	Nominal voltage	50 V (following VDE0298-3)
	Test voltage	500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2464, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	15	16	17
+15/+60	12.5	13.5	14.5
+60/+70	15	16	17

FMB610 Bus cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
Profibus				
FMB610.001	(2x0.25)C	8.5	25	75
CAN-Bus				
FMB610.020 ④	(4x0.25)C	7.0	23	64
FMB610.021	(2x0.5)C	8.5	32	82
FMB610.022 ④	(4x0.5)C	8.5	43	91
CC-Link				
FMB610.035	(3x0.5)C	8.0	40	76
Ethernet/CAT5				
FMB610.040 ④	(4x0.25)C	6.5	29	69
Ethernet/CAT5e				
FMB610.045	(4x(2x0.15))C	7.5	33	66
Ethernet/CAT6				
FMB610.049	(4x(2x0.15))C	7.5	33	66
Ethernet/CAT6A				
FMB610.050	4x(2x0.20)C	10.0	65	120
Ethernet/CAT7				
FMB610.052	(4x(2x0.15)C)C	9.5	89	129
FireWireIEEE 1394b				
FMB610.056	(2x(2x0.15)C+2x0.38)C	9.0	59	91
Profinet				
FMB610.060 ④ ⑥	(4x0.38)C	7.0	33	64
USB3.0				
FMB610.068	(2x(2xAWG28)+2x(2xAWG28)C)C	7.0	39	64

- ④) Cables marked with ④ are four-star twisted design.
⑥) Outer jacket color is yellow-green (similar to RAL 6018)

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

AWG: American Wire Gauge

Part No.	Characteristic wave impedance approx. [Ω]	Core group	Colour code
Profibus			
FMB610.001	150	(2x0.25)C	red, green
CAN-Bus			
FMB610.020	120	(4x0.25)C	white, green, brown, yellow (Star-quad)
FMB610.021	120	(2x0.5)C	white,brown
FMB610.022	120	(4x0.5)C	white, green, brown, yellow (Star-quad)
CC-Link			
FMB610.035	110	(3x0.5)C	white, blue, yellow
Ethernet/CAT5			
FMB610.040	100	(4x0.25)C	white, green, brown, yellow (Star-quad)
Ethernet/CAT5e			
FMB610.045	100	(4x(2x0.15))C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6			
FMB610.049	100	(4x(2x0.15))C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6A			
FMB610.050	100	4x(2x0.20)C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT7			
FMB610.052	100	(4x(2x0.15)C)C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
FireWireIEEE 1394b			
FMB610.056	110	2x(2x0.15)C	orange/blue, blue/red
		2x0.38	black,white
Profinet			
FMB610.060	100	(4x0.38)C	white, orange, blue, yellow (Star-quad)
USB3.0			
FMB610.068	90	2x(2xAWG28)	red/black, green/white-green
		2x(2xAWG28)C	blue/yellow,orange/purple

FMB910 Bus cables



- TPE outer jacket
- Shielded
- Flame resistance
- Oil-resistant
- Hydrolysis and microbe-resistant
- UV-resistance

Dynamic Information

	Min. bending radius	Moving in cable carriers	10 x d (FMB910.001-.049和FMB910.060) 12.5 x d (FMB910.050-.055和FMB910.070)
		Flexible moving	8 x d
		Fixed installation	5 x d
	Temperature	Moving in cable carriers	-35°C to +70°C
		Flexible moving	-45°C to +70°C
		Fixed installation	-50°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travel distances and for gliding applications up to 400 m and more	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	According to bus specification.
	Conductor construction	According to bus specification.
	Color code	According to bus specification.
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Red lilac RAL 4001

Electrical Information

	Nominal voltage	50 V (following VDE0298-3)
	Test voltage	500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1FMB910.030/FMB910.065/FMB910.066: According to IEC 60332-1-2, FT2
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL21481, 300V, 80°C

Guaranteed service life

Double strokes	5 million times		7.5 million times		10 million times	
	FMB910.001-.049	FMB910.050-.070	FMB910.001-.049	FMB910.050-.070	FMB910.001-.049	FMB910.050-.070
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	12.5	15	13.5	16	14.5	17
-25/+60	10	12.5	11	13.5	12	14.5
+60/+70	12.5	15	13.5	16	14.5	17

FMB910 Bus cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
Profibus				
FMB910.001	(2×0.25)C	9.0	33.0	92.0
FMB910.002	(2×0.25)C+4×1.5	12.5	94.0	191.0
FMB910.003	(2×0.25)C+3G0.75	11.5	55.0	145.0
Interbus				
FMB910.010	(3×(2×0.25))C	9.0	47.0	91.0
FMB910.011	(3×(2×0.25)+(3G1.0)C	10.5	87.0	152.0
CAN-Bus				
FMB910.020 ^{④)}	(4×0.25)C	6.5	28.0	58.0
FMB910.021	(2×0.5)C	8.0	39.0	81.0
FMB910.022 ^{④)}	(4×0.5)C	8.0	43.0	87.0
DeviceNet				
FMB910.030 ^{④)}	((2×AWG24)C+2×AWG22)C	7.0	36.0	57.0
FMB910.031 ^{④)}	((2×AWG18)C+2×AWG15)C	11.5	103.0	174.0
CC-Link				
FMB910.035	(3×AWG20)C	8.5	43.0	96.0
Ethernet/CAT5				
FMB910.040	(4×0.25)C	7.0	33.0	59.0
Ethernet/CAT5e				
FMB910.045	(4×(2×0.15))C	8.5	42.0	84.0
Ethernet/CAT6				
FMB910.049	(4×(2×0.15))C	8.5	42.0	84.0
Ethernet/CAT6A				
FMB910.050	(4×(2×0.15)C)C	10.5	83.0	134.0
Ethernet/CAT7				
FMB910.052	(4×(2×0.15)C)C	10.5	89.0	133.0
FireWireIEEE 1394a				
FMB910.055	2×(2×0.15)C+2×(0.34)C	8.0	39.0	76.0
Profinet				
FMB910.060 ^{④ ⑤)}	(4×0.38)C	7.5	39.0	74.0
USB				
FMB910.065	((2×AWG28)+2×AWG20)C	5.5	28.0	45.0
FMB910.066	((2×AWG24)+2×AWG20)C	6.5	32.0	51.0
DVI				
FMB910.070	(4×(2×AWG28)C+(2×AWG28)+3×AWG28)C	9.0	35.0	95.0

- ④) Cables marked with ④ are four-star twisted design.
 ⑤) Without inner jacket
 ⑥) Outer jacket color is yellow-green (similar to RAL 6018)

Note: The outer diameters are reference values.
 G: With green-yellow earth core
 x: Without earth core
 AWG: American Wire Gauge

Part No.	Characteristic wave impedance approx. [Ω]	Core group	Colour code
Profibus			
FMB910.001	150	(2x0.25)C	red, green
FMB910.002	150	(2x0.25)C	red/green
		4x1.5	black with white numbers 1-4
FMB910.003	150	(2x0.25)C	red/green
		3G0.75	black, blue, green-yellow
Interbus			
FMB910.010	100	3x(2x0.25)	white/brown, green/yellow, grey/pink
FMB910.011	100	3x(2x0.25)	white/brown, green/yellow, grey/pink
		(3G1.0)	red, blue, green-yellow
CAN-Bus			
FMB910.020	120	(4x0.25)C	white, green, brown, yellow (Star-quad)
FMB910.021	120	(2x0.5)C	white, brown
FMB910.022	120	(4x0.5)C	white, green, brown, yellow (Star-quad)
DeviceNet			
FMB910.030	120	(2xAWG24)C	white/blue
		2xAWG22	red, black
FMB910.031	120	(2xAWG18)C	white/blue
		2xAWG15	red, black
CC-Link			
FMB910.035	110	3xAWG20	white, blue, yellow
Ethernet/CAT5			
FMB910.040	100	(4x0.25)C	white, green, brown, yellow (Star-quad)
Ethernet/CAT5e			
FMB910.045	100	4x(2x0.15)	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6			
FMB910.049	100	4x(2x0.15)	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6A			
FMB910.050	100	4x(2x0.15)C	white/blue, white/orange, white/green, white/brown
Ethernet/CAT7			
FMB910.052	100	4x(2x0.15)C	white/blue, white/orange, white/green, white/brown
FireWireIEEE 1394a			
FMB910.055	100	2x(2x0.15)C	orange/blue, green/red
		2x(0.34)C	white, black
Profinet			
FMB910.060	100	4x0.38	white, orange, blue, yellow (Star-quad)

Part No.	Characteristic wave impedance approx. [Ω]	Core group	Colour code
USB			
FMB910.065	90	(2xAWG28)	white/green
		2xAWG20	red, black
FMB910.066	90	(2xAWG28)	white/green
		2xAWG20	red, black
DVI			
FMB910.070	100	4x(2xAWG28)C	4 x white/yellow with element-shield in blue, black, red, white
		(2xAWG28)	white/brown
		3xAWG28	green, yellow, grey

FMB911 Bus cables



- PUR outer jacket
- Shielded
- Coolant-resistant
- Notch-resistant
- Flame resistance
- Oil-resistant
- Hydrolysis and microbe-resistant
- UV-resistance

Dynamic Information

	Min. bending radius	Moving in cable carriers	12.5 x d
		Flexible moving	10 x d
		Fixed installation	7 x d
	Temperature	Moving in cable carriers	-20°C to +70°C
		Flexible moving	-40°C to +70°C
		Fixed installation	-50°C to +70°C
	v max.	Unsupported	3 m/s
		Gliding	2 m/s
	a max.	30 m/s ²	
	Travel distance	Unsupported travels and up to 20 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to EN 60228).
	Conductor insulation	According to bus specification.
	Conductor construction	According to bus specification.
	Color code	According to bus specification.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of PUR, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Red lilac RAL 4001

Electrical Information

	Nominal voltage	50 V (following VDE0298-3)
	Test voltage	500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	Halogen-free	Following IEC60754
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20233, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-20/-10	15	16	17
-10/+60	12.5	13.5	14.5
+60/+70	15	16	17

FMB911 Bus cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
Profibus				
FMB911.001	(2x0.25)C	8.5	25	75
CAN-Bus				
FMB911.020 ^④	(4x0.25)C	7.5	23	64
FMB911.021	(2x0.5)C	8.5	32	82
FMB911.022 ^④	(4x0.5)C	8.5	43	91
CC-Link				
FMB911.035	(3x0.5)C	8	40	76
Ethernet/CAT5				
FMB911.040 ^④	(4x0.25)C	6.5	29	69
Single Pair Ethernet				
FMB911.042	(2x0.15)C	5.5	12	33
Ethernet/CAT5e				
FMB911.045	(4x(2x0.15))C	7.5	33	66
Ethernet/CAT6				
FMB911.049	(4x(2x0.15))C	7.5	33	66
Ethernet/CAT6A				
FMB911.050	4x(2x0.2)C	10	65	120
Ethernet/CAT7				
FMB911.052	(4x(2x0.15)C)C	9.5	89	129
FireWireIEEE 1394b				
FMB911.056	(2x(2x0.15)C+2x0.38)C	9	59	91
Profinet				
FMB911.060 ^{④ ⑥}	(4x0.38)C	7	33	64
USB3.0				
FMB911.068	(2x(2xAWG28)+2x(2xAWG28)C)C	7	39	64

- ④) Cables marked with ④ are four-star twisted design.
 ⑥) Outer jacket color is yellow-green (similar to RAL 6018)

Note: The outer diameters are reference values.
 G: With green-yellow earth core
 x: Without earth core
 AWG: American Wire Gauge

Part No.	Characteristic wave impedance approx. [Ω]	Core group	Colour code
Profibus			
FMB911.001	150	(2x0.25)C	red, green
CAN-Bus			
FMB911.020	120	(4x0.25)C	white, green, brown, yellow (Star-quad)
FMB911.021	120	(2x0.5)C	white,brown
FMB911.022	120	(4x0.5)C	white, green, brown, yellow (Star-quad)
CC-Link			
FMB911.035	110	(3x0.5)C	white, blue, yellow
Ethernet/CAT5			
FMB911.040	100	(4x0.25)C	white, green, brown, yellow (Star-quad)
Single Pair Ethernet			
FMB911.042	100	(2x0.15)C	white/blue
Ethernet/CAT5e			
FMB911.045	100	(4x(2x0.15))C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6			
FMB911.049	100	(4x(2x0.15))C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT6A			
FMB911.050	100	(4x(2x0.2))C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
Ethernet/CAT7			
FMB911.052	100	(4x(2x0.15)C)C	white-blue/blue, white-orange/orange, white-green/green, white-brown/brown
FireWireIEEE 1394b			
FMB911.056	110	2x(2x0.15)C	orange/blue, blue/red
		2x0.38	black,white
Profinet			
FMB911.060	100	(4x0.38)C	white, orange, blue, yellow (Star-quad)
USB3.0			
FMB911.068	90	2x(2xAWG28)	red/black, green/white-green
		2x(2xAWG28)C	red/black, green/white-green

FMM600 Motor cables



- PVC outer jacket
- Flame resistance
- UV-resistance
- Oil-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Cross -sectional < 10 mm ² : Stranded conductor in especially bending-resistant version consisting of bare copper wires (according to DIN EN 60228).
		Cross -sectional ≥ 10 mm ² : Conductor cable consisting of pre-leads(according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Cores wound with a short pitch length around a high tensile strength centre element.
	Color code	Black cores with white numbers, one green-yellow core. Core1: U/L1/C/L+ Core2: V/L2 Core3: W/L3/D/L- Core4: 4/N
	Outer jacket	Low adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U_0/U : 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	10	11	12
+15/+60	7.5	8.5	9.5
+60/+70	10	11	12

FMM600 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM600.15.04	4G1.5	8	61	104
FMM600.25.04	4G2.5	10	100	166
FMM600.25.05	5G2.5	11	124	203
FMM600.40.04	4G4.0	11.5	163	249
FMM600.40.05	5G4.0	12.5	204	302
FMM600.60.04	4G6.0	13.5	237	343
FMM600.60.05	5G6.0	15	297	410
FMM600.100.04	4G10	16.5	407	548
FMM600.100.05	5G10	19.5	515	684
FMM600.160.04	4G16	20	646	826
FMM600.160.05	5G16	23.5	815	1067
FMM600.250.04	4G25	25	1014	1320
FMM600.350.04	4G35	28.5	1439	1795

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM610 Motor cables



- PVC outer jacket
- Shielded
- Flame resistance
- UV-resistance
- Oil-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	

Cable structure

	Conductor	Cross -sectional < 10 mm ² : Stranded conductor in especially bending-resistant version consisting of bare copper wires (according to DIN EN 60228).
		Cross -sectional ≥ 10 mm ² : Conductor cable consisting of pre-leads (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Cores wound with a short pitch length around a high tensile strength centre element.
	Color code	Black cores with white numbers, one green-yellow core. Core1: U/L1/C/L+ Core2: V/L2 Core3: W/L3/D/L- Core4: 4/N
	Inner jacket	PVC mixture adapted to suit the requirements in cable carriers.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70%, optical approx. 90%
	Outer jacket	Low adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	10	11	12
+15/+60	7.5	8.5	9.5
+60/+70	10	11	12

FMM610 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM610.15.04	(4G1.5)C	10	89	157
FMM610.25.04	(4G2.5)C	11.5	133	221
FMM610.25.05	(5G2.5)C	13	163	271
FMM610.40.04	(4G4.0)C	13	203	300
FMM610.40.05	(5G4.0)C	14.5	258	354
FMM610.60.04	(4G6.0)C	16	288	455
FMM610.60.05	(5G6.0)C	17	356	532
FMM610.100.04	(4G10)C	18.5	468	670
FMM610.100.05	(5G10)C	21.5	609	857
FMM610.160.04	(4G16)C	23	738	1035
FMM610.250.04	(4G25)C	27.5	1153	1586
FMM610.350.04	(4G35)C	31	1592	2104
FMM610.500.04	(4G50)C	36.5	2224	2902
FMM610.700.04	(4G70)C	43	3203	4173

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM900 Motor cables



- TPE outer jacket
- Flame resistance
- UV-resistance
- Oil-resistant
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-45°C to +90°C
		Fixed installation	-50°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m and more for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	According to measuring system specification.
	Color code	yellow-green
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U_0/U : 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2、VW-1、FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM900 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM900.15.01	1G1.5	4.5	16.0	31.0
FMM900.25.01	1G2.5	5.5	25.0	42.0
FMM900.40.01	1G4.0	6.0	41.0	59.0
FMM900.60.01	1G6.0	7.0	61.0	83.0
FMM900.100.01	1G10	7.5	100.0	124.0
FMM900.160.01	1G16	9.5	159.0	195.0
FMM900.250.01	1G25	11.5	248.0	294.0
FMM900.350.01	1G35	12.5	347.0	395.0
FMM900.500.01	1G50	14.5	495.0	551.0
FMM900.700.01	1G70	16.5	725.0	813.0
FMM900.950.01	1G95	20.0	936.0	1080.0

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM902 Motor cables



- TPE outer jacket
- UV-resistance
- Oil-resistant
- Hydrolysis and microbe-resistant
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	7,5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-50°C to +90°C
		Fixed installation	-55°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m and more for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following DIN EN 60754
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM902 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM902.60.01	1×6.0	7	61	77
FMM902.100.01	1×10	7.5	100	119
FMM902.160.01	1×16	9.5	159	181
FMM902.250.01	1×25	11.5	248	284
FMM902.350.01	1×35	12.5	347	385
FMM902.500.01	1×50	14.5	495	534
FMM902.700.01	1×70	16.5	710	754
FMM902.950.01	1×95	20	936	1015
FMM902.1200.01	1×120	21.5	1184	1265
FMM902.1500.01	1×150	23.5	1469	1548
FMM902.1850.01	1×185	26.5	1928	2016

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM903 Motor cables



- TPE outer jacket
- Flame resistance
- UV-resistance
- Oil-resistant
- Resistant to hydrolysis and microbes

Dynamic Information

	Min. bending radius	Moving in cable carriers	7,5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-45°C to +90°C
		Fixed installation	-50°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Cross -sectional < 10 mm ² : Stranded conductor in especially bending-resistant version consisting of bare copper wires (according to DIN EN 60228).
		Cross -sectional ≥ 10 mm ² : Conductor cable consisting of pre-leads (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Cores wound with a short pitch length around a high tensile strength centre element.
	Color code	Black cores with white numbers, one green-yellow core. Core1: U/L1/C/L+ Core2: V/L2 Core3: W/L3/D/L- Core4: 4/N
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U_0/U : 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22188, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM903 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM903.15.04	4G1.5	8	61	102
FMM903.25.04	4G2.5	10	100	159
FMM903.40.04	4G4.0	11.5	163	236
FMM903.60.04	4G6.0	13.5	237	332
FMM903.60.05	5G6.0	15	297	406
FMM903.100.04	4G10	16.5	407	537
FMM903.100.05	5G10	19.5	515	670
FMM903.160.04	4G16	20	646	819
FMM903.160.05	5G16	22.5	815	1009
FMM903.250.04	4G25	24.5	1014	1271

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM907 Motor cables



- TPE outer jacket
- UV-resistance
- Oil-resistant
- Resistant to hydrolysis and microbes
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-50°C to +90°C
		Fixed installation	-55°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	
	Torsion	±90°/m	

Cable structure

	Conductor	Cross -sectional < 10 mm ² : Stranded conductor in especially bending-resistant version consisting of bare copper wires (according to DIN EN 60228).
		Cross -sectional ≥ 10 mm ² : Conductor cable consisting of pre-leads (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Cores wound with a short pitch length around a high tensile strength centre element.
	Color code	Black cores with white numbers, one green-yellow core. Core1: U/L1/C/L+ Core2: V/L2 Core3: W/L3/D/L- Core4: 4/N
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following DIN EN 60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22188, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM907 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM907.15.04	4G1.5	8	61	95
FMM907.25.04	4G2.5	10	100	149
FMM907.40.04	4G4.0	11.5	163	221
FMM907.60.04	4G6.0	13.5	237	317
FMM907.60.05	5G6.0	15	297	387
FMM907.100.04	4G10	16.5	407	503
FMM907.100.05	5G10	19	515	634
FMM907.160.04	4G16	20	646	773
FMM907.160.05	5G16	22.5	815	963
FMM907.250.04	4G25	24	1014	1203

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM912 Motor cables



- TPE outer jacket
- Shielded
- UV-resistance
- Oil-resistant
- Hydrolysis and microbe-resistant
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-50°C to +90°C
		Fixed installation	-55°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m and more for gliding applications	

电缆结构 Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following DIN EN 60754
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM902 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM912.40.01	(1×4.0)C	7.0	54	74
FMM912.60.01	(1×6.0)C	7.5	76	97
FMM912.100.01	(1×10)C	8.5	117	145
FMM912.160.01	(1×16)C	10.0	178	209
FMM912.250.01	(1×25)C	12.0	271	309
FMM912.350.01	(1×35)C	13.5	383	420
FMM912.500.01	(1×50)C	15.0	525	567
FMM912.700.01	(1×70)C	17.5	763	816
FMM912.950.01	(1×95)C	21.0	995	1072
FMM912.1200.01	(1×120)C	22.0	1245	1315
FMM912.1500.01	(1×150)C	24.5	1560	1608
FMM912.1850.01	(1×185)C	27.5	1890	2110

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMM917 Motor cables



- TPE outer jacket
- Shielded
- UV-resistance
- Oil-resistant
- Resistant to hydrolysis and microbes
- PVC and halogen-free

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-50°C to +90°C
		Fixed installation	-55°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 400 m for gliding applications	

Cable structure

	Conductor	Cross -sectional < 10 mm ² : Stranded conductor in especially bending-resistant version consisting of bare copper wires (according to DIN EN 60228).
		Cross -sectional ≥ 10 mm ² : Conductor cable consisting of pre-leads (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Cores wound with a short pitch length around a high tensile strength centre element.
	Color code	Black cores with white numbers, one green-yellow core. Core1: U/L1/C/L+ Core2: V/L2 Core3: W/L3/D/L- Core4: 4/N
	Inner jacket	TPE mixture adapted to suit the requirements in cable carriers.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: black RAL 9005

Electrical Information

	Nominal voltage	U ₀ /U: 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	High
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following DIN EN 60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL22188, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FMM917 Motor cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FMM917.15.04	(4G1.5)C	10	89	140
FMM917.25.04	(4G2.5)C	11.5	133	198
FMM917.40.04	(4G4.0)C	13	203	280
FMM917.60.04	(4G6.0)C	16	288	409
FMM917.100.04	(4G10)C	18.5	468	613
FMM917.160.04	(4G16)C	23	738	943
FMM917.250.04	(4G25)C	27	1153	1432

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMV610 Servo cables



- PVC outer jacket
- Shielded
- Oil-resistant
- Flame resistance

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	+5°C to +70°C
		Flexible moving	-5°C to +70°C
		Fixed installation	-15°C to +70°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	80 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
	Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1: U / L1 / C / L+ 2: V / L2 3: W / L3 / D / L- 1 Control pair: Black with white numbers, 4/ 5 2 Control pairs: Black with white numbers, 5/6/7/8
	Element shield	Bending-resistant braiding made of tinned copper wires.
	Inner jacket	PVC mixture adapted to suit the requirements in cable carriers.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70%, optical approx. 90%
	Outer jacket	Low adhesion mixture on the basis of PVC, adapted to suit the requirements in cable carriers. Color: Green RAL 6005

Electrical Information

	Nominal voltage	U_0/U : 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL2570, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	10	11	12
+15/+60	7.5	8.5	9.5
+60/+70	10	11	12

FMV610 Servo cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
1 Control pair shielded				
FMV610.07.05.02.01	(4G0.75+(2x0.5)C)C	11	76	159
FMV610.15.15.02.01	(4G1.5+(2x1.5)C)C	13	145	256
FMV610.25.15.02.01	(4G2.5+(2x1.5)C)C	14.5	199	330
FMV610.40.15.02.01	(4G4.0+(2x1.5)C)C	16	256	406
FMV610.60.15.02.01	(4G6.0+(2x1.5)C)C	18	343	546
FMV610.100.15.02.01	(4G10+(2x1.5)C)C	21.5	536	828
2 Control pair shielded				
FMV610.07.03.02.02	(4G0.75+2x(2x0.34)C)C	12.5	103	208
FMV610.10.07.02.02	(4G1.0+2x(2x0.75)C)C	13.5	148	269
FMV610.15.07.02.02	(4G1.5+2x(2x0.75)C)C	14.5	167	309
FMV610.25.15.02.02	(4G2.5+2x(2x1.5)C)C	17	254	434
FMV610.40.15.02.02	(4G4.0+2x(2x1.5)C)C	18	308	515
FMV610.60.15.02.02	(4G6.0+2x(2x1.5)C)C	21	412	695
FMV610.100.15.02.02	(4G10+2x(2x1.5)C)C	23	592	925
FMV610.160.15.02.02	(4G16+2x(2x1.5)C)C	26.5	878	1287

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FMV910 Servo cables



- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- Flame resistance
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	10 x d
		Flexible moving	8 x d
		Fixed installation	5 x d
	Temperature	Moving in cable carriers	-25°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	10 m/s
		Gliding	2 m/s
	a max.	50 m/s ²	
	Travel distance	Unsupported travels and up to 10 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
	Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1: U / L1 / C / L+ 2: V / L2 3: W / L3 / D / L- 1 Control pair: Black with white numbers, 4/ 5 2 Control pairs: Black with white numbers, 5/6/7/8
	Element shield	Bending-resistant braiding made of tinned copper wires.
	Intermediate layer	Foil taping over the outer layer.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55%, optical approx. 80%
	Outer jacket	Low-adhesion, highly abrasion resistant PUR mixture, adapted to suit the requirements in cable carriers. Color: Pink orange RAL 2003

Electrical Information

	Nominal voltage	U_0/U : 600/1000 V (following VDE0298-3)
	Test voltage	4000 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	Halogen-free	Following IEC60754
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20234, 1000V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	12.5	13.5	14.5
-15/+70	10	11	12
+70/+80	12.5	13.5	14.5

FMV910 Servo cables

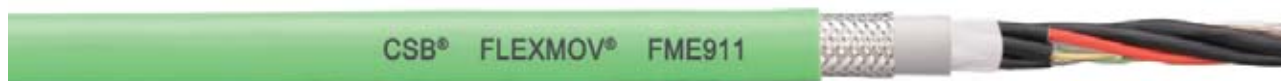
Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
1 Control pair shielded				
FMV910.15.15.02.01	(4G1.5+(2x1.5)C)C	12.5	154	247
FMV910.25.15.02.01	(4G2.5+(2x1.5)C)C	14	210	301
FMV910.40.15.02.01	(4G4.0+(2x1.5)C)C	15	255	392
FMV910.60.15.02.01	(4G6.0+(2x1.5)C)C	16.5	343	491
FMV910.100.15.02.01	(4G10+(2x1.5)C)C	21	526	788
FMV910.160.15.02.01	(4G16+(2x1.5)C)C	24	771	1126
2 Control pair shielded				
FMV910.07.03.02.02	(4G0.75+2x(2x0.34)C)C	12	105	192
FMV910.10.07.02.02	(4G1.0+2x(2x0.75)C)C	13	135	245
FMV910.15.07.02.02	(4G1.5+2x(2x0.75)C)C	13.5	161	280
FMV910.25.15.02.02	(4G2.5+2x(2x1.5)C)C	16	244	384
FMV910.40.15.02.02	(4G4.0+2x(2x1.5)C)C	17	309	477
FMV910.60.15.02.02	(4G6.0+2x(2x1.5)C)C	19	403	600
FMV910.100.15.02.02	(4G10+2x(2x1.5)C)C	22.5	576	887
FMV910.160.15.02.02	(4G16+2x(2x1.5)C)C	26	815	1206
FMV910.250.15.02.02	(4G25+2x(2x1.5)C)C	28.5	1223	1686
Without control pair				
FMV910.07.04	(4G0.75)C	8	45	95
FMV910.15.04	(4G1.5)C	10	86	140
FMV910.25.04	(4G2.5)C	11.5	146	210
FMV910.40.04	(4G4.0)C	13	195	296
FMV910.60.04	(4G6.0)C	15	289	416
FMV910.100.04	(4G10)C	18	449	644
FMV910.160.04	(4G16)C	22	698	997
FMV910.250.04	(4G25)C	25.5	1045	1384
FMV910.350.04	(4G35)C	33	1520	2111
Spindle cable/Single core				
FMV910.60.01	(1x6.0)C	7.5	72	95
FMV910.100.01	(1x10)C	8.5	114	145
FMV910.160.01	(1x16)C	9.5	178	209
FMV910.250.01	(1x25)C	11	269	304
FMV910.350.01	(1x35)C	13	374	419
FMV910.500.01	(1x50)C	15	525	579
FMV910.700.01	(1x70)C	17	751	804

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

FME911 Measuring system cables



- TPE outer jacket
- Oil-resistant
- PVC-free
- Halogen-free
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-35°C to +90°C
		Flexible moving	-50°C to +90°C
		Fixed installation	-55°C to +90°C
	v max.	Unsupported	10 m/s
		Gliding	6 m/s
	a max.	100 m/s ²	
	Travel distance	Unsupported travels and up to 400 m and more for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	According to measuring system specification.
	Color code	According to measuring system specification.
	Element shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % optical
	Element jacket	TPE mixture on pair shielding adapted to suit the requirements in cable carriers.
	Inner jacket	TPE mixture on pair shielding adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Yellow-green RAL 6018

Electrical Information

	Nominal voltage	50 V (following VDE0298-3)
	Test voltage	500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-55°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Halogen-free	Following IEC60754
	REACH	According to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL21481, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	10	11	12
-25/+80	7.5	8.5	9.5
+80/+90	10	11	12

FME911 Measuring system cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FME911.001	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	10.0	71.0	119.0
FME911.002	(3x(2x0.14)C+2x(0.5)C)C	10.0	74.0	125.0
FME911.003	(3x(2x0.14)+2x1.0)C	8.0	56.0	86.0
FME911.004	(2x(2x(2x0.14))+(4x0.14)C+(4x0.5))C	11.0	78.0	127.0
FME911.005	(4x(2x0.14)+4x0.5)C	9.0	60.0	97.0
FME911.006	(3x(2x0.14)C+(4x0.14)+(4x0.25)+(2x0.5))C	10.5	85.0	139.0
FME911.007 ^③	(4x0.34)C	6.0	31.0	48.0
FME911.008	(3x(2x0.25))C	7.5	36.0	60.0
FME911.009	(4x(2x0.25)+2x0.5)C	8.5	57.0	91.0
FME911.010	(4x(2x0.25)+2x1.0)C	9.0	68.0	105.0
FME911.011	(4x(2x0.34)+4x0.5)C	10.0	81.0	124.0
FME911.012	(3x(2x0.14)C+(3x0.14)C+(4x0.14)+(2x0.14+2x0.5))C	11.0	89.0	140.0
FME911.013	(3x(2x0.14)C+2x0.5)C	9.0	62.0	104.0
FME911.014	(4x(2x0.25)C+(2x0.5))C	11.0	86.0	138.0
FME911.015	(4x(2x0.14)+4x0.5)C	9.0	60.0	97.0
FME911.016	(3x(2x0.25)C)C	9.5	60.0	108.0
FME911.017 ^③	(4x(2x0.14)+(4x0.14)C+4x1.0)C	10.0	100.0	126.0
FME911.018 ^③	(2x(2x0.25)+2x0.5)C	6.5	41.0	51.0
FME911.019 ^③	(3x(2x0.25)C+(3x0.25)+2x1.0)C	10.0	93.0	120.0
FME911.021	((4x0.25)+3x(2x0.25+2x0.5))C	10.0	88.0	130.0
FME911.022	((2x0.25)+5x0.5)C	7.5	54.0	79.0
FME911.025	(3x(2x0.14)C+(2x0.5)C)C	10.0	72.0	123.0
FME911.027	(5x(2x0.14)+2x0.5)C	8.5	52.0	88.0
FME911.028	(2x(2x0.20)+(2x0.38))C	7.5	44.0	63.0
FME911.029	(5x(2x0.25)C+(2x0.25+2x0.5))C	12.5	119.0	270.0
FME911.031	(2x(2x0.25)C+2x1.0)C	9.5	69.0	116.0
FME911.032 ^③	3x(2x0.14)C+(3x0.14)C	8.0	35.0	71.0
FME911.033 ^③	4x(2x0.14)C+2x(1.0)C	9.5	64.0	104.0
FME911.034	3x(2x0.14)C+(4x0.14)C+2x(2x0.5)C	11.0	71.0	119.0
FME911.035	(4x(2x0.25)C+2x(2x0.5))C	12.0	99.0	154.0
FME911.038	(3x(2x0.14)+(2x0.34))C	8.0	36.0	71.0
FME911.040	(3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C	10.0	88.0	130.0

③) Without overall shield

④) Cables marked with ④ are four-star twisted design.

⑤) Without inner jacket

Note: The outer diameters are reference values.

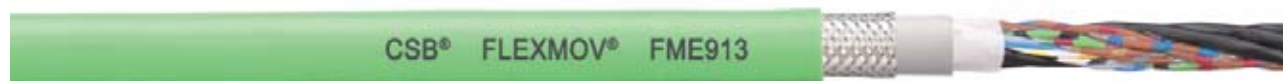
G: With green-yellow earth core

x: Without earth core

Part No.	Core group	Colour code
FME911.001	(3x(2x0.14)C	green/yellow, black/brown, red/orange
	(4x0.14)	grey/blue/white-yellow/white-black
	(2x0.5))C	brown-red/brown-blue
FME911.002	3x(2x0.14)C	green/yellow, black/brown, red/orange
	2x(0.5)C	black, red
FME911.003	3x(2x0.14)	white/brown, green/yellow, grey/pink
	2x1.0	blue, red
FME911.004	2x(2x(2x0.14))	(brown/green)/(yellow/violet), (grey/pink)/(red/black)
	(4x0.14)C	yellow-black/red-black/green-black/blue-black
	(4x0.5)	brown-green/white-green/blue/white
FME911.005	4x(2x0.14)	white/brown, green/yellow, grey/pink, blue/red
	4x0.5	black, violet, grey-pink, red-blue
FME911.006	3x(2x0.14)C	green/yellow, black/brown, red/orange
	(4x0.14)	grey/blue/white-yellow/white-black
	(4x0.25)	yellow-brown/grey-brown/green-black/green-red
	(2x0.5)	brown-red/brown-blue
FME911.007	(4x0.34)C	white, green, brown, yellow (Star-quad)
FME911.008	(3x(2x0.25))C	white/brown, green/yellow, grey/pink
FME911.009	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black
	2x0.5	white, brown
FME911.010	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black
	2x1.0	white, brown
FME911.011	4x(2x0.34)	black/brown, red/orange, green/yellow, blue/violet
	4x0.5	black-white, red-white, yellow-white, blue-white
FME911.012	3x(2x0.14)C	green/yellow, white/grey, blue/red
	(3x0.14)C	red/green/brown
	(4x0.14)	grey/yellow/pink/violet
	(2x0.14+2x0.5)	blue/brown-blue/grey/brown-red
FME911.013	3x(2x0.14)C	white/brown, green/yellow, grey/pink
	2x0.5	blue, red
FME911.014	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red
	(2x0.5)	black no. 1/black no. 2
FME911.015	4x(2x0.14)	brown/green, yellow/violet, grey/pink, red/black
	4x0.5	blue, white, brown-green, white-green
FME911.016	(3x(2x0.25)C)C	white/brown, green/yellow, grey/pink
FME911.017	4x(2x0.14)	red/black, brown/green, yellow/violet, grey/pink
	(4x0.14)C	blue-black/yellow-black/red-black/green-black
	4x1.0	white-green, brown-green, blue, white
FME911.018	2x(2x0.25)	red/black, grey/pink
	2x0.5	white, brown
FME911.019	3x(2x0.25)C	brown/green, grey/pink, red/black
	(3x0.25)	blue/violet/yellow
	2x1.0	white, brown

Part No.	Core group	Colour code
FME911.021	(4x0.25)	white/brown/grey/black
	3x2x0.25	white/yellow, white/grey, black/orange
	(2x0.5)	black no. 1/black no. 2, black no. 3/black no. 4, black no. 5/black no. 6
FME911.022	(2x0.25)	white/brown
	5x0.5	green, yellow, grey, pink, blue
FME911.025	3x(2x0.14)C	green/yellow, blue/red, grey/pink
	(2x0.5)	white/brown
FME911.027	5x(2x0.14)	brown/green, yellow/grey, white/violet, red/black, pink/blue
	2x0.5	white-green, white-red
FME911.028	2x(2x0.20)	green/yellow, pink/blue
	(2x0.38)	red/black
FME911.029	5x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red, black/violet
	(2x0.25+2x0.5)	gray-pink/brown-green/white-green/red-blue
FME911.031	2x(2x0.25)C	white/brown, green/yellow
	2x1.0	black no. 1, black no. 2
FME911.032	3x(2x0.14)C	green/black, yellow/black, red/black
	(3x0.14)C	grey/pink/black
FME911.033	4x(2x0.14)C	yellow/black, red/black, blue/black, green/black
	2x(1.0)C	white, brown
FME911.034	3x(2x0.14)C	green/black, violet/black, blue/black
	(4x0.14)C	red/yellow/black-red/black-yellow
	2x(2x0.5)C	black/white, black/brown
FME911.035	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red
	2x(2x0.5)	black no. 1/black no. 2, black no. 3/black no. 4
FME911.038	3x(2x0.14)	white/brown, green/yellow, grey/pink
	(2x0.34)	blue/red
FME911.040	3x(4x0.14)	black/red/white-black/white-red, green/blue/white-green/white-blue, yellow/brown/white-yellow/white-brown
	(2x0.14+2x0.34)	violet/orange/white-violet/white-orange
	2x1.5	white-grey, grey

FME913 Measuring system cables



- PUR outer jacket
- Oil-resistant and coolant-resistant
- PVC and halogen-free
- Shielded
- Flame-retardant
- Notch-resistant
- Hydrolysis and microbe-resistant

Dynamic Information

	Min. bending radius	Moving in cable carriers	7.5 x d
		Flexible moving	6 x d
		Fixed installation	4 x d
	Temperature	Moving in cable carriers	-25°C to +80°C
		Flexible moving	-40°C to +80°C
		Fixed installation	-50°C to +80°C
	v max.	Unsupported	10 m/s
		Gliding	5 m/s
	a max.	50 m/s ²	
	Travel distance	Unsupported travels and up to 100 m for gliding applications	

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality TPE mixture.
	Conductor construction	According to measuring system specification.
	Color code	According to measuring system specification.
	Element shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % optical
	Element jacket	TPE mixture on pair shielding adapted to suit the requirements in cable carriers.
	Inner jacket	TPE mixture on pair shielding adapted to suit the requirements in cable carriers.
	Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
	Outer jacket	Low-adhesion mixture on the basis of PUR, especially abrasion-resistant and highly flexible, adapted to suit the requirements in cable carriers. Color: Yellow-green RAL 6018

Electrical Information

	Nominal voltage	50 V (following VDE0298-3)
	Test voltage	500 V (following EN50395)

Properties and approvals

	UV-resistance	Medium
	Hydrolysis-resistance	High
	Cold-resistant	-50°C
	Oil resistance	Oil-resistant (following IEC60811-404, tested by SGS), bio-oil-resistant (following VDMA24568, tested by SGS)
	Flame resistance	According to IEC 60332-1-2, VW-1, FT1
	Halogen-free	Following IEC60754
	REACH	Accordding to the regulation (EC) No. 1907/2006 (REACH)
	EAC	Certificate No. KG 417/043.CN.02.00249
	Lead-free	Following 2015/863/EU (RoHS-II Tested by SGS)
	Cleanroom	Following ISO 14644-1
	CE	Following 2014/35/EU
	UL	Following UL20233, 300V, 80°C

Guaranteed service life

Double strokes	5 million times	7.5 million times	10 million times
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	10	11	12
-15/+70	7.5	8.5	9.5
+70/+80	10	11	12

FME913 Measuring system cables

Part No.	Number of cores and conductor nominal cross-section [mm]	Outer diameter [mm]	Copper index [kg/km]	Weight [kg/km]
FME913.001	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	10	71	137
FME913.002	(3x(2x0.14)C+2x(0.5)C)C	10	74	144
FME913.003	(3x(2x0.14)+2x1.0)C	8	56	103
FME913.004	(2x(2x(2x0.14)))+(4x0.14)C+(4x0.5))C	11	78	152
FME913.005	(4x(2x0.14)+4x0.5)C	9	60	115
FME913.006	(3x(2x0.14)C+(4x0.14)+(4x0.25)+(2x0.5))C	11	85	158
FME913.007 ^③	(4x0.34)C	6.5	31	54
FME913.008	(3x(2x0.25))C	7.5	36	76
FME913.009	(4x(2x0.25)+2x0.5)C	8.5	57	99
FME913.010	(4x(2x0.25)+2x1.0)C	9	68	122
FME913.011	(4x(2x0.34)+4x0.5)C	10	81	142
FME913.013	(3x(2x0.14)C+2x0.5)C	9	62	121
FME913.014	(4x(2x0.25)C+(2x0.5))C	11	86	163
FME913.015	(4x(2x0.14)+4x0.5)C	9	60	114
FME913.016	(3x(2x0.25)C)C	10	60	126
FME913.017 ^③	(4x(2x0.14)+(4x0.14)C+4x1.0)C	10	100	150
FME913.018 ^③	(2x(2x0.25)+2x0.5)C	6.5	41	65
FME913.019 ^③	(3x(2x0.25)C+(3x0.25)+2x1.0)C	10	93	143
FME913.022	((2x0.25)+5x0.5)C	8	54	94
FME913.025	(3x(2x0.14)C+(2x0.5)C)C	10	72	141
FME913.027	(5x(2x0.14)+2x0.5)C	9	52	105
FME913.028 ^③	(2x(2x0.20)+(2x0.38))C	7.5	44	69
FME913.029	(5x(2x0.25)C+(2x0.25+2x0.5))C	12	105	192
FME913.032 ^③	3x(2x0.14)C+(3x0.14)C	8.5	35	82
FME913.033 ^③	4x(2x0.14)C+2x(1.0)C	9.5	64	111
FME913.036	(5x(2x0.25))C	8.5	51	103
FME913.037	(6x(2x0.25))C	9	58	114
FME913.038	(3x(2x0.14)+(2x0.34))C	8.5	36	87
FME913.040	(3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C	10	88	155

③) Without overall shield

④) Cables marked with ④ are four-star twisted design.

⑤) Without inner jacket

Note: The outer diameters are reference values.

G: With green-yellow earth core

x: Without earth core

Measuring system cables

Part No.	Core group	Colour code
FME913.001	3x(2x0.14)C	green/yellow, black/brown, red/orange
	(4x0.14)	grey/blue/white-yellow/white-black
	(2x0.5)	brown-red/brown-blue
FME913.002	3x(2x0.14)C	green/yellow, black/brown, red/orange
	2x(0.5)C	black, red
FME913.003	3x(2x0.14)C	white/brown, green/yellow, grey/pink
	2x1.0	blue, red
FME913.004	2x(2x(2x0.14)	(brown/green)/(yellow/violet), (grey/pink)/(red/black)
	(4x0.14)C	yellow-black/red-black/green-black/blue-black
	(4x0.5)	brown-green/white-green/blue/white
FME913.005	4x(2x0.14)	white/brown, green/yellow, grey/pink, blue/red
	4x0.5	black, violet, grey-pink, red-blue
FME913.006	3x(2x0.14)C	green/yellow, black/brown, red/orange
	(4x0.14)	grey/blue/white-yellow/white-black
	(4x0.25)	yellow-brown/grey-brown/green-black/green-red
	(2x0.5)	brown-red/brown-blue
FME913.007	4x0.34	white, green, brown, yellow (Star-quadrant)
FME913.008	3x(2x0.25)	white/brown, green/yellow, grey/pink
FME913.009	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black
	2x0.5	white, brown
FME913.010	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black
	2x1.0	white, brown
FME913.011	4x(2x0.34)	black/brown, red/orange, green/yellow, blue/violet
	4x0.5	black-white, red-white, yellow-white, blue-white
FME913.013	3x(2x0.14)C	white/brown, green/yellow, grey/pink
	2x0.5	blue, red
FME913.014	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red
	(2x0.5)	black no. 1/black no. 2
FME913.015	4x(2x0.14)	brown/green, blue/violet, grey/pink, red/black
	4x0.5	blue, white, brown-green, white-green
FME913.016	3x(2x0.25)C	white/brown, green/yellow, grey/pink
	4x(2x0.14)	red/black, brown/green, yellow/violet, grey/pink
	(4x0.14)C	blue-black/yellow-black/red-black/green-black
FME913.017	4x1.0	white-green, brown-green, blue, white
	2x(2x0.25)	red/black, grey/pink
	2x0.5	white, brown
FME913.019	3x(2x0.25)C	brown/green, grey/pink, red/black
	(3x0.25)	blue/violet/yellow
	2x1.0	white, brown
FME913.022	(2x0.25)	white, brown
	5x0.5	green, yellow, grey, pink, blue
FME913.025	3x(2x0.14)C	green/yellow, blue/red, grey/pink
	(2x0.5)C	white, brown

Part No.	Core group	Colour code
FME913.027	5x(2x0.14)	brown/green, yellow/grey, white/violet, red/black, pink/blue
	2x0.5	white-green, white-red
FME913.028	2x(2x0.20)	green/yellow, pink/blue
	(2x0.38)	red/black
FME913.029	5x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red, black/violet
	(2x0.25+2x0.5)	gray-pink/brown-green/white-green/red-blue
FME913.032	3x(2x0.14)C	green/black, yellow/black, red/black
	(3x0.14)C	grey/pink/black
FME913.033	4x(2x0.14)C	yellow/black, red/black, blue/black, green/black
	2x(1.0)C	white, brown
FME913.036	5x(2x0.25)	white/brown, green/yellow, grey/pink, blue/red, black/violet
FME913.037	6x(2x0.25)	white/brown, green/yellow, grey/pink, blue/red, black/violet, grey-pink/red-blue
FME913.038	3x(2x0.14)	white/brown, green/yellow, grey/pink
	(2x0.34)	blue/red
FME913.040	3x(4x0.14)	black/red/white-black/white-red, green/blue/white-green/white-blue, yellow/brown/white-yellow/white-brown
	(2x0.14+2x0.34)	violet/orange/white-violet/white-orange
	2x1.5	white-grey, grey

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