technergy™
INTEGRATED CABLING SOLUTIONS

PROTOFLEX EMV-FC 2YSLCY-J 0,6/1 kV

For frequency converter controlled low voltage AC drives in industries

PIRELLI

MOTOR POWER SUPPLY CABLE 05DS501.02E

PROTOFLEX EMV-FC 2YSLCY-J 0,6/1 kV

Selection and design criteria

	Name	**PROTOFLEX EMV-FC**
	Type	2YSLCY-J
	Standards/Approvals	DIN VDE 0250 part 1 / DESINA
	Application	Especialy for frequency converter controlled AC drives. For fixed installation and occasional free flexing indoors in dry, damp and wet conditions as well as outdoor for medium mechanical stress. For areas with explosion hazard. Not suitable for the installation direct in ground and in water.

Electrical characteristics	Nominal voltage in three phase AC-operation	U_0/U 0.6/1 kV U_m 1.2 kV
	test AC voltage	4 kV_{eff}
	Max. permissible peak AC voltage	$\hat{U}$ 1.7 kV
	For connection on 1-level frequency converter with a nominal voltage	U max. 690 V
	Coupling resistance	≤ 250 Ω/km at 30 MHz
	Current carrying capacity	The definitions in DIN VDE 0298 part 4 apply. (see also capter selection and order data)

For other ambient temperature as 30 °C, the current-carrying capacity values in the table "Selection and order data" are calculated by applying the following factors k.

temperature °C	15	20	25	35	40	45	50	55	60
factor k	1.17	1.12	1.06	0.94	0.87	0.79	0.71	0.61	0.50

Thermal characteristics	Permissible temperature at the conductor under	
	- continuous load	max 70 °C
	- short-circuit conditions	max 160 °C
	Permissible ambient temperature during	
	- transportation and storage	- 40 °C ... 70 °C
	- laying	5 °C ... 70 °C
	- operation	
	fixed installation	- 40 °C ... 60 °C
	free flexing	5 °C ... 60 °C

Mechanical characteristics	Permissible tensile stress [1)]			
	- free flexing	max. 15 N/mm²		
	- fixed installation	max. 50 N/mm²		
	Minimum bending radii	outer diameter D of the cable		
		≤ 12 mm	≤ 20 mm	> 20 mm
	- fixed installation	5 x D	7.5 x D	10 x D
	- free flexing	10 x D	15 x D	20 x D

1) For the cables 3x…+3x… only the phase conductors with full cross-section have to be taken into account

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2YSLCY-J 3x25+3x4

Selection and design criteria

Chemical characteristics	Weatherability	Artificial weathering according DIN 53384	
Electromagnetic compatibility	Radio frequency interference (RFI) and RFI-voltage	Optimization of the design of cable and screen [1)]	
Other characteristics	Fire performance	according IEC 60332-1 resp. DIN VDE 0482 part 265-2-1	

Design

	Name	**PROTOFLEX EMV-FC**	
	Conductor according DIN VDE 0295	Copper, plain, finely stranded, class 5	
	Protective conductor according DIN VDE 0295	Copper, plain, finely stranded, class 5 - for cross-sections >16 mm² the protective conductor is divided into three cores	
	Insulation according DIN VDE 0207 part 2	Thermoplastic compound on the basis of polyethylene (PE); compound 2YI1	
	Core identification according DIN VDE 0293	green/yellow, black, blue, brown	
	Screen - 1. layer - 2. layer	Multilayer screen [1)] Al-coated plastic tape braid of tinned copper wires	
	Sheath according DIN VDE 0207 part 5	PVC-compound YM2 colour of sheath: orange, transparent	
	Marking Cables with rated cross-section up to 10 mm² Cables with rated cross-section from 16 mm²	*year of manufactoring* PROTOFLEX EMV-FC 2YSLCY-J *number of cores* x *cross-section* 600/1000 V PROTOFLEX EMV-CY 2YSLCY-J *number of cores* x *cross-section* 600/1000 V *year of manufactoring* PROTOFLEX EMV-FC 2YSLCY-J *number of cores* x *cross-section* 600/1000 V PROTOFLEX EMV-CY 3PLUS 2YSLCY-J *number of cores* x *cross-section* 600/1000 V	

1) EMC-optimized regarding to radio frequency interference field strength and radio frequency interference voltage according EN 55011 resp. DIN VDE 0875 part 11. Limit values according Class A1 and B1.

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Selection and order data

Number of cores and conductor rated cross-section	Order-Nr.	Conductor design approx. No. of strands x max. strand diameter	Approx. dia-meter over screen	Max. Outer diameter	Minimum bending radii during fixed installation	Minimum bending radii during free-flexing	Net weight per 1000 m	Current-carrying capacity 1)	Operating capacitance at 1kHz and 70 °C (approx.) 2)	Electr. cross-section of screen (approx.) 3)
mm²		mm	mm	mm	mm	mm	kg	A	nF/km	mm²
4x1.5	5DE6 500	28x0.25	9.0	11.0	55	110	149	18	110	2.7
4x2.5	5DE6 501	46x0.25	10.0	12.5	94	188	204	26	130	3.1
4x4	5DE6 502	51x0.30	12.5	15.5	116	232	321	34	140	5.0
4x6	5DE6 503	77x0.30	14.0	17.5	131	262	419	44	150	5.7
4x10	5DE6 504	78x0.39	16.5	19.5	146	292	600	61	180	6.4
3x16+3x2.5	5DE6 505	126x0.39	18.5	22.5	225	450	800	82	210	8.5
3x25+3x4	5DE6 506	196x0.39	22.0	26.0	260	520	1150	108	240	10.0
3x35+3x6	5DE6 507	271x0.39	25.0	29.5	295	590	1550	135	280	12.5
3x50+3x10	5DE6 508	388x0.39	29.5	35.0	350	700	2250	168	330	17.9
3x70+3x10	5DE6 510	553x0.39	32.5	38.5	385	770	2890	207	380	19.0
3x95+3x16	5DE6 511	729x0.39	38.0	44.0	440	880	3820	250	430	25.8
3x120+3x16	5DE6 512	932x0.39	41.5	48.0	480	960	4630	292	480	27.7
3x150+3x25	5DE6 513	1166x0.39	46.0	53.0	530	1060	5880	335	520	34.4
3x185+3x35	5DE6 514	1425x0.39	50.5	57.5	575	1150	7190	382	560	40.3
3x240+3x42.5	5DE6 515	1887x0.39	53.5	66.0	660	1320	9540	453	620	53.6
3x300+3x50	5DE6 516	2350x0.39	62.5	73.0	730	1460	11560	523	660	62.5

Further delivery details available on request.
Subject to change without prior notice.

1) Value for one cable touching a horizontal or vertical surface, continuous operation and ambient temperature 30 °C.

2) Definition and calculation of the operating capacitance are described in the book "Kabel und Leitungen für Starkstrom" Heinhold, Stubbe; Publicis MCD Verlag, Erlangen, ISBN 3-89578-088-X.

Short circuit in the motor power supply cable used in earthed motor circuits:

3) Caused for example by external damage a short circuit can occur between a phase conductor and the screen or between a phase conductor and a protective conductor. In these cases only the cross section of the screen or the cross section of one protective conductor is available to carry the fault current. The effective resistance of the screen or protective conductor is given by the distance between the point of the fault and the ground connection.

Note to the electromagnetic compatibility (EMC)

In order to confirm with the radio interference suppression requirements the screen must be connected at both ends with low impedance. This can be achieved by using a big rectangular copper cross-section and limiting the distance to maximal a few centimetres. Twisted ends of the screen (pigtails) must not be used.
The screen shall be connected around it entire circumference.

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