Fireguard

Flame Retardant Power & Control Cables

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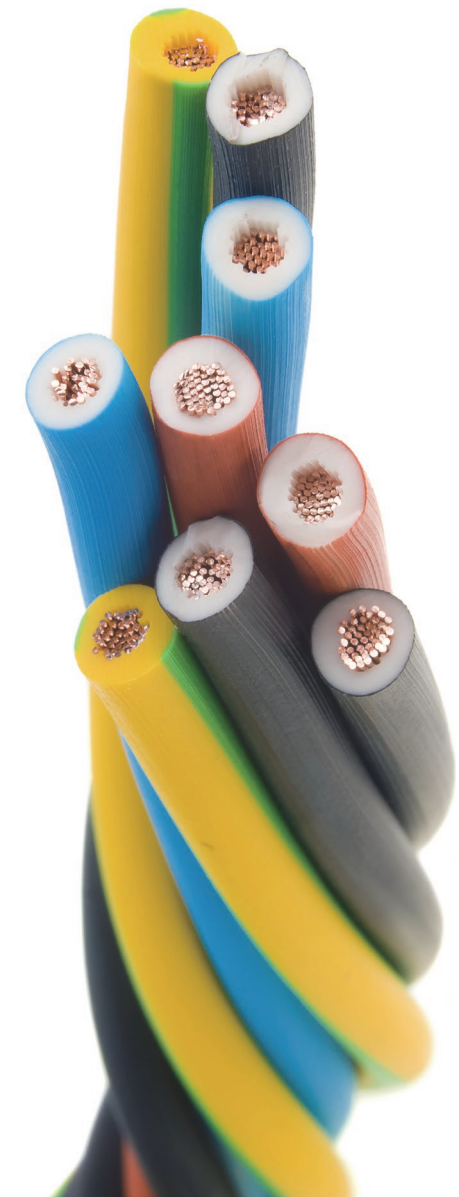

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FIREGUARD Flame Retardant Power & Control Cables

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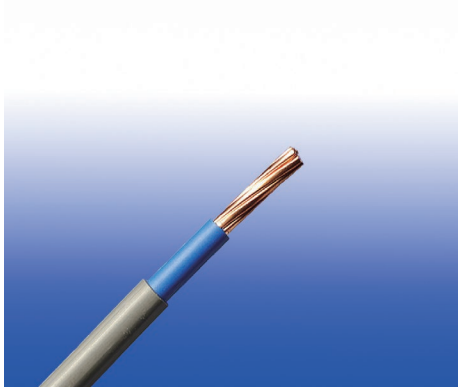
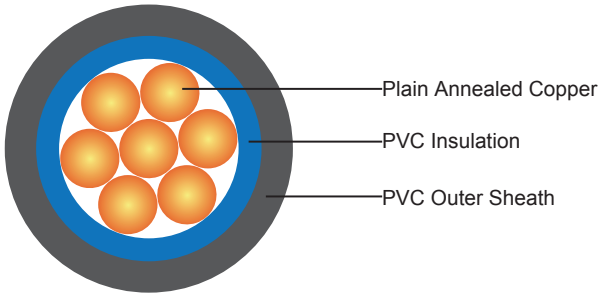
300/500V PVC Insulated, PVC Sheathed Power Cables to BS 6004 (Single Core)

FGD300 05VV-U/R (CU/PVC/PVC 300/500V Class 1/2)

BS Code: 6181Y (CU/PVC/PVC)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 6004: 2012

Approvals:

TUV Certification (B 098200 0028 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, class 1 (1.0mm² to 2.5mm²) or class 2 (4mm² to 35mm²) according to BS EN 60228.

Insulation: PVC Type TI 1 according to BS EN 50363-3.

Outer Sheath: PVC Type 6 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC

can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue.

Sheath Colour: Grey, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 10mm² - Fixed: 3 x overall diameter

10mm² to 25mm² - Fixed: 4 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 05VV-U/R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
1x1.0	1	0.6	0.8	4.5	27
1x1.5	1	0.7	0.8	5.0	36
1x2.5	1	0.8	0.8	5.7	52
1x4.0	2	0.8	0.9	6.7	76
1x6.0	2	0.8	0.9	7.3	100
1x10	2	1.0	0.9	8.8	160
1x16	2	1.0	1.0	10.1	230
1x25	2	1.2	1.1	12.1	340
1x35	2	1.2	1.1	13.5	440

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	11.0	10.5	13.5	12.0	15.5	14	-	-	-	-	-

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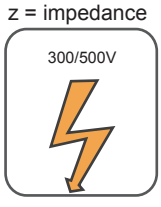
Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4.0	26	24	32	28	37	33	-	-	-	-	-
6.0	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.													
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C & F (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.0	44	44			44			44			38			38			38			38		
1.5	29	29			29			29			25			25			25			25		
2.5	18	18			18			18			15			15			15			15		
4.0	11	11			11			11			9.5			9.5			9,5			9.5		
6.0	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.8	0.33	1.8	1.75	0.20	1.75	1.75	0.29	1.8	1.5	0.29	1.55	1.5	0.175	1.5	1.5	0.25	1.55	1.5	0.32	1.55
35	1.25	1.3	0.31	1.3	1.25	0.195	1.25	1.25	0.28	1.3	1.1	0.27	1.10	1.1	0.170	1.1	1.1	0.24	1.10	1.1	0.32	1.15

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

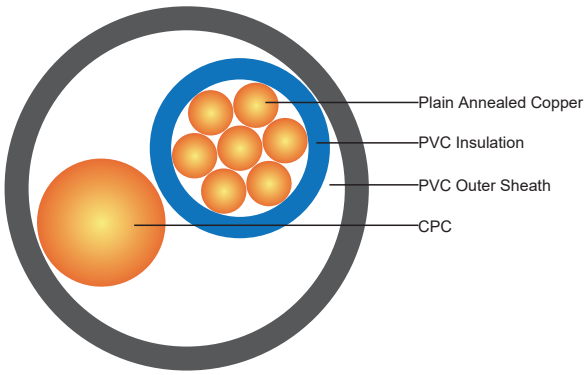
Standard

Flame Retardancy
BS EN 60332-1-2

300/500V PVC Insulated,
PVC Sheathed Power Cables to BS 6004 (Single Core)

FGD300-E 05VV-U/R (CU/PVC/PVC 300/500V Class 1/2)

BS Code: 6141Y (CU/PVC/PVC)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 6004: 2012

Approvals:

TUV Certification (B 098200 0028 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, class 1 (1.0mm² to 2.5mm²) or class 2 (4mm² to 35mm²) according to BS EN 60228.

Insulation: PVC Type TI 1 according to BS EN 50363-3.

Circuit Protective Conductor (CPC): Annealed plain copper class 1.

Outer Sheath: PVC Type 6 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite

properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue.

Sheath Colour: Grey, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 10mm² - Fixed: 3 x overall diameter

10mm² to 25mm² - Fixed: 4 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 05VV-U/R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Cross Section Area of CPC	Class of CPC	Maximum Overall Diameter	Approx. Weight
No.xmm²		mm	mm			mm	kg/km
1x1.0	1	0.6	0.8	1.0	1	4.8x6.0	37
1x1.5	1	0.7	0.8	1.0	1	5.3x6.6	57
1x1.5	2	0.7	0.9	1.0	1	5.4x6.7	65

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm²	A	A	A	A	A	A	A	A	A	A	A
1.0	11.0	10.5	13.5	12.0	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
4.0	26	24	32	28	37	33	-	-	-	-	-
6.0	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.													
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C & F (clipped direct, on trays or in free air)							
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat	
1	2	3			4			5			6			7			8			9	
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	
1.0	44	44			44			44			38			38			38			38	
1.5	29	29			29			29			25			25			25			25	
2.5	18	18			18			18			15			15			15			15	
4.0	11	11			11			11			9.5			9.5			9,5			9.5	
6.0	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4	
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8	
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4	
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.8	0.33	1.8	1.75	0.20	1.75	1.75	0.29	1.8	1.5	0.29	1.55	1.5	0.175	1.5	1.5	0.25	1.55	1.5	0.32	1.55
35	1.25	1.3	0.31	1.3	1.25	0.195	1.25	1.25	0.28	1.3	1.1	0.27	1.10	1.1	0.170	1.1	1.1	0.24	1.10	1.1	0.32	1.15

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

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FIREGUARD Flame Retardant Power & Control Cables

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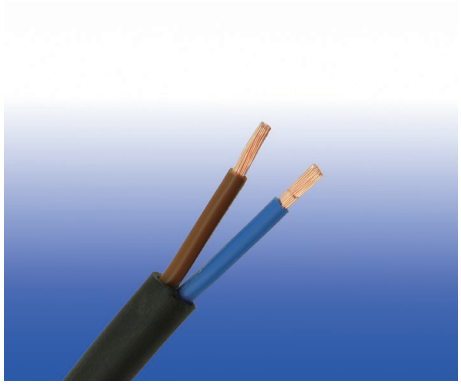
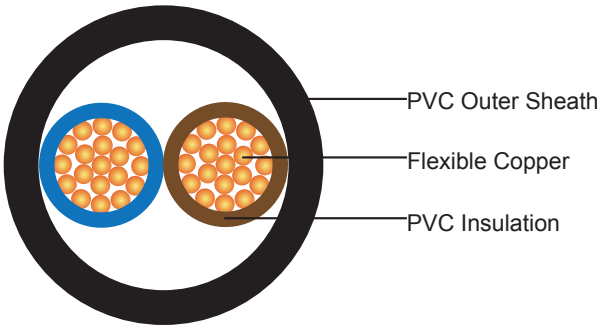
300/500V PVC Insulated,
PVC Sheathed Power Cables to BS EN 50525 (2-5 Cores)

FGD200 05VV-F (CU/PVC/PVC 300/500V Class 5)

BS Code: 3182Y/3183Y/3184Y/3185Y

HAR Code: H05VV-F





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS EN 50525-2-11(formerly BS 6500)

Approvals:

TUV Certification (Z1 18 02 98200 018)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Flexible copper wire according to EN 60228 class 5.

Insulation: PVC Type TI 2 according to EN 50363-3.

Filling: For circular cable having two cores, the space between the cores shall be filled either by separate fillers or by the sheath filling the interstices. For circular cables with three, four or five cores, a centre filler may be used.

Outer Sheath: PVC Type TM 2 according to EN 50363-4-1. A tape may be applied around the core assembly before application of the sheath.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Cables and cords with a green-and-yellow cores

No. of cores	Colour of cores[b]				
	Protective	Live			
3 Cores	Yellow/Green	Blue	Brown		
4 Cores	Yellow/Green	-	Brown	Black	Grey
4 Cores[a]	Yellow/Green	Blue	Brown	Black	
5 Cores	Yellow/Green	Blue	Brown	Black	Grey

[a] For certain applications only.
[b] In this table an uninsulated concentric conductor, such as a metallic sheath, armour or screen wire, is not regarded as a core. A concentric conductor is identified by its position and, therefore, need not be identified by colour.

Cables and cords without a green-and-yellow cores

No. of cores	Colour of cores[b]				
2 Cores	Blue	Brown			
3 Cores	-	Brown	Black	Grey	
3 Cores[a]	Blue	Brown	Black		
4 Cores	Blue	Brown	Black	Grey	
5 Cores	Blue	Brown	Black	Grey	Black

[a] For certain applications only.
[b] In this table an uninsulated concentric conductor, such as a metallic sheath, armour or screen wire, is not regarded as a core. A concentric conductor is identified by its position and, therefore, need not be identified by colour.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 12mm²: 3 x overall diameter

Above 12mm²: 4 x overall diameter

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CONSTRUCTION PARAMETERS

Conductor		FGD200 05VV-F			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
2x0.75	5	0.6	0.8	7.2	57
2x1.0	5	0.6	0.8	7.5	65
2x1.5	5	0.7	0.8	8.6	87
2x2.5	5	0.8	1.0	10.6	134
2x4.0	5	0.8	1.1	12.1	174
3x0.75	5	0.6	0.8	7.6	68
3x1.0	5	0.6	0.8	8.0	79
3x1.5	5	0.7	0.9	9.4	111
3x2.5	5	0.8	1.1	11.4	169
3x4.0	5	0.8	1.2	13.1	233
4x0.75	5	0.6	0.8	8.3	84
4x1.0	5	0.6	0.9	9.0	101
4x1.5	5	0.7	1.0	10.5	142
4x2.5	5	0.8	1.1	12.5	211
4x4.0	5	0.8	1.2	14.3	292
5x0.75	5	0.6	0.9	9.3	106
5x1.0	5	0.6	0.9	9.8	123
5x1.5	5	0.7	1.1	11.6	176
5x2.5	5	0.8	1.2	13.9	262
5x4.0	5	0.8	1.4	16.1	369

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Current-Carrying Capacities (Amp) according to BS7671:2008 table 4F3A

Conductor cross-sectional area	Single-phase a.c.	Three-phase a.c.
mm^2	A	A
0.75	6	6
1.0	10	10
1.5	16	16
2.5	25	20
4.0	32	25

Voltage Drop (Per Amp Per Meter) according to BS7671:2008 table 4F3B

Conductor cross-sectional area	d.c. or single-phase a.c.	Three-phase a.c.
mm^2	mV/A/m	mV/A/m
0.75	62	54
1.0	46	40
1.5	32	27
2.5	19	16
4.0	12	10

Rated Voltage

Standard

Flame Retardancy
EN 60332-1-2

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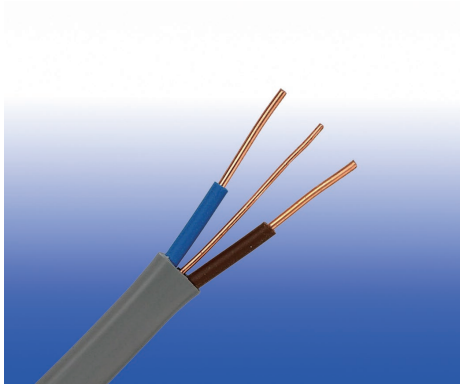
FIREGUARD Flame Retardant Power & Control Cables

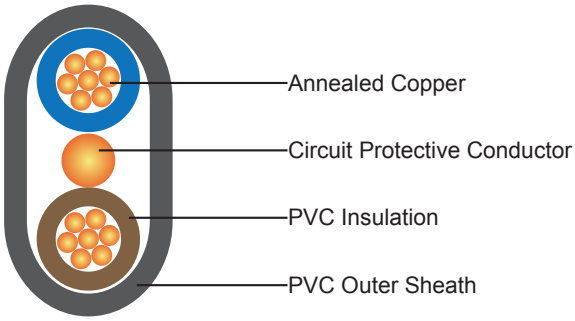
www.caledonian-cables.co.uk www.addison-cables.com

300/500V PVC Insulated, PVC Sheathed, Twin & Earth Cables (2-3 Cores)

FGD200-E 05VV-U/R (CU/PVC/PVC 300/500V Class 1/2)

BS Code: 6242Y/6243Y





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 6004:2012

Approvals:

TUV Certification (B 098200 0028 Rev.00)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, class 1 (1.0mm² to 2.5mm²) or class 2 (4mm² to 35mm²) according to BS EN 60228.

Insulation: PVC Type TI 1 according to BS EN 50363-3.

Circuit Protective Conductor (CPC): Annealed plain copper (class 1 or 2)

Position of CPC: Centrally placed between cores in same plane (twin); centrally placed between black and

grey cores in same plane(3-core).

Outer Sheath: PVC Type 6 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Twin: brown and blue, alternatively, for 2 x 1.0 and 2 x 1.5 cables, brown and brown;

3-core: brown, black (centre core), and grey

Sheath Colour: Grey, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius: 6 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD200 05VV-U/R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Cross-Section Area of CPC	Class of CPC	Nominal Sheath Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm^2		mm	mm	kg/km
2x1.0	1	0.6	1.0	1	0.9	4.8x8.7	68
2x1.5	1	0.7	1.0	1	0.9	5.3x9.7	85
2x2.5	1	0.8	1.5	1	1.0	6.2x11.7	120
2x4.0	2	0.8	1.5	1	1.0	6.9x13.1	175
2x6.0	2	0.8	2.5	1	1.1	7.8x15.0	240
2x10	2	1.0	4.0	2	1.2	9.5x18.9	390
2x16	2	1.0	6.0	2	1.3	10.8x21.9	560
3x1.0	1	0.6	1.0	1	0.9	4.8x11.4	91
3x1.5	1	0.7	1.0	1	0.9	5.3x12.9	115
3x2.5	1	0.8	1.5	1	1.0	6.2x15.3	170
3x4.0	2	0.8	1.5	1	1.1	7.1x17.9	250
3x6.0	2	0.8	2.5	1	1.1	7.8x20.2	340
3x10	2	1.0	4.0	2	1.2	9.5x25.7	540
3x16	2	1.0	6.0	2	1.3	10.8x29.7	790

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

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Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) and Voltage Drop (Per Amp Per Meter) according to BS7671:2008 table 4D5

Conductor cross-sectional area	Reference Method 100# (above a plasterboard ceiling covered by thermal insulation not exceeding 100 mm in thickness)	Reference Method 101# (above a plasterboard ceiling covered by thermal insulation exceeding 100 mm in thickness)	Reference Method 102# (in a stud wall with thermal insulation with cable touching the inner wall surface)	Reference Method 103# (in a stud wall with thermal insulation with cable not touching the inner wall surface)	Reference Method C* (clipped direct)	Reference Method A* (enclosed in conduit in an insulated wall)	Voltage Drop (per ampere per meter)
1	2	3	4	5	6	7	8
mm^2	A	A	A	A	A	A	mV/A/m
1.0	13	10.5	13	8.0	16	11.5	44
1.5	16	13	16	10	20	14.5	29
2.5	21	17	21	13.5	27	20	18
4.0	27	22	27	17.5	37	26	11
6.0	34	27	35	23.5	47	32	7.3
10	45	36	47	32	64	44	4.4
16	57	46	63	42.5	85	57	2.8

A* For full installation method refer to Table 4A2 (BS 7671-2008) Installation Method 2 but for flat twin and earth cable
C* For full installation method refer to Table 4A2 (BS 7671-2008) Installation Method 20 but for flat twin and earth cable
100# For full installation method refer to Table 4A2 (BS 7671-2008) Installation Method 100
102# For full installation method refer to Table 4A2 (BS 7671-2008) Installation Method 102
103# For full installation method refer to Table 4A2 (BS 7671-2008) Installation Method 103
Wherever practicable, a cable is to be fixed in a position such that it will not be covered with thermal insulation.
Regulation 523.7, BS 5803-5 Appendix C: Avoidance of overheating of electric cables, Building Regulations Approved document B and Thermal insulation: avoiding risks, BR 262, BRE, 2001 refer.

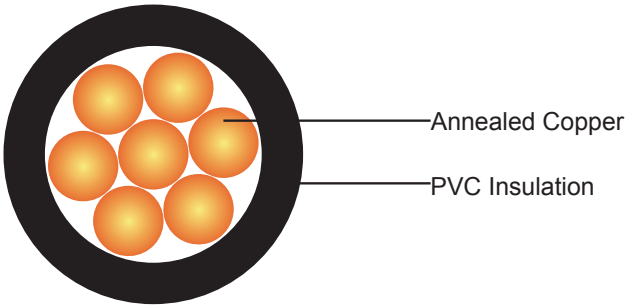
Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

300/500V PVC Insulated, Non-sheathed Power Cables (Single Core)

FGD100 05V-U/R/K (CU/PVC 300/500V Class 1/2/5)
BS Code: 2491X
HAR Code: H05V-U, H05V-R, H05V-K



APPLICATION

This cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design to BS EN 50525-2-31(formerly BS 6004:2000)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor:
H05V-U: Class 1 solid copper conductor to BS EN 60228.
H05V-R: Class 2 stranded copper conductor to BS EN 60228.
H05V-K: Class 5 stranded copper conductor to BS EN 60228.
Insulation: PVC Type TI 1 according to BS EN 50363-3.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow. Bi-colours of any combination of the above mono-colours are permitted.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

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Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 8mm²: 4 x overall diameter

8mm² to 12mm²: 5 x overall diameter

Above 12mm²: 6 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD100 05V-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm²		mm	mm	kg/km
1x0.50	1	0.6	2.3	8
1x0.75	1	0.6	2.5	11
1x1.0	1	0.6	2.7	14
1x0.50	2	0.6	2.4	9
1x0.75	2	0.6	2.6	12
1x1.0	2	0.6	2.8	14
1x0.50	5	0.6	2.5	8
1x0.75	5	0.6	2.7	11
1x1.0	5	0.6	2.8	13

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	PVC insulated types (HD 21)	
	single-phase a.c.	three-phase a.c.
mm²	A	A
0.50	3	3
0.75	6	6
1.0	10	10

Note: These values apply to the majority of cases. Further information should be sought in unusual cases eg.:
(i) When high ambient temperatures are involved, ie. above 30°C
(ii) Where long lengths are used
(iii) Where ventilation is restricted
(iv) Where the cords are used for other purposes, ego internal wiring of apparatus.

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Conductor cross-sectional area	d.c. or single-phase a.c.	Three-phase a.c.
mm²	mV/A/m	mV/A/m
0.50	93	80
0.75	62	54
1.0	46	40

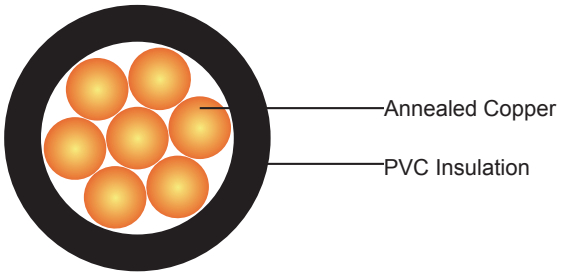
Rated Voltage

Standard

Flame Retardancy
EN 60332-1-2

300/500V PVC Insulated, Non-sheathed Power Cables (Single Core 90°C)

FGD100 05V2-U/R/K (CU/PVC 300/500V Class 1/2/5)
BS Code: 2491XHR
HAR Code: H05V2-U, H05V2-R, H05V2-K



APPLICATION

This cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design to BS EN 50525-2-31(formerly BS 6004:2000)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2

VOLTAGE RATING

300/500V

CABLE CONSTRUCTION

Conductor:
H05V2-U: Class 1 solid copper conductor to BS EN 60228.
H05V2-R: Class 2 stranded copper conductor to BS EN 60228.
H05V2-K: Class 5 stranded copper conductor to BS EN 60228.
Insulation: PVC Type TI 3 according to BS EN 50363-3.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow. Bi-colours of any combination of the above mono-colours are permitted.

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PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 90°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 8mm²: 4 x overall diameter

8mm² to 12mm²: 5 x overall diameter

Above 12mm²: 6 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD100 05V2-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm²		mm	mm	kg/km
1x0.50	1	0.6	2.3	8
1x0.75	1	0.6	2.5	11
1x1.0	1	0.6	2.7	14
1x0.50	2	0.6	2.4	9
1x0.75	2	0.6	2.6	12
1x1.0	2	0.6	2.8	14
1x0.50	5	0.6	2.5	8
1x0.75	5	0.6	2.7	11
1x1.0	5	0.6	2.8	13

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Current-Carrying Capacities (Amp) according to HD516 Table 7 (a)

Conductor cross-sectional area	PVC insulated types (HD 21)	
	single-phase a.c.	three-phase a.c.
mm²	A	A
0.50	3	3
0.75	6	6
1.0	10	10

Note: These values apply to the majority of cases. Further information should be sought in unusual cases eg.:
(i) When high ambient temperatures are involved, ie. above 30°C
(ii) Where long lengths are used
(iii) Where ventilation is restricted
(iv) Where the cords are used for other purposes, ego internal wiring of apparatus.

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Ref. Methods A and B (enclosed in conduit or trunking)	Ref. Methods C, F & G (clipped direct, on trays or in free air)		Ref. Methods A & B (enclosed in conduit or trunking	Ref. Methods C, F & G (clipped direct, on trays or in free air)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
mm^2	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
0.50	93	93	93	93	80	80	80	80
0.75	62	62	62	62	54	54	54	54
1.0	46	46	46	46	40	40	40	40

Rated Voltage

Standard

Flame Retardancy
EN 60332-1-2

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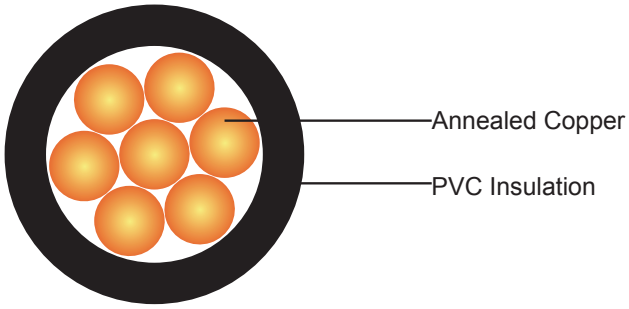
450/750V PVC Insulated, Non-sheathed Power Cables (Single Core)

FGD100 07V-U/R/K (CU/PVC 450/750V Class 1/2/5)

BS Code: 6491X

HAR Code: H07V-U, H07V-R, H07V-K



APPLICATION

This cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is CE and TUV approved.

STANDARDS

Basic design to BS EN 50525-2-31(formerly BS 6004:2000).

Approvals:

CE Certification (N8A 17 07 98200 006)

TUV Certification (B 17 07 98200 007)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor:

H07V-U: Class 1 solid copper conductor to BS EN 60228.

H07V-R: Class 2 stranded copper conductor to BS EN 60228.

H07V-K: Class 5 stranded copper conductor to BS EN 60228.

Insulation: PVC Type TI 1 according to BS EN 50363-3.

COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 8mm²: 4 x overall diameter

8mm² to 12mm²: 5 x overall diameter

Above 12mm²: 6 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD100 07V-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm²		mm	mm	kg/km
1x1.5	1	0.7	3.2	21
1x2.5	1	0.8	3.9	33
1x4.0	1	0.8	4.4	49
1x6.0	1	0.8	5.0	69
1x10	1	1.0	6.4	115
1x1.5	2	0.7	3.3	23
1x2.5	2	0.8	4.0	35
1x4.0	2	0.8	4.6	51
1x6.0	2	0.8	5.2	71
1x10	2	1.0	6.7	120
1x16	2	1.0	7.8	170
1x25	2	1.2	9.7	260
1x35	2	1.2	10.9	350
1x50	2	1.4	12.8	480
1x70	2	1.4	14.6	680
1x95	2	1.6	17.1	930
1x120	2	1.6	18.8	1160
1x150	2	1.8	20.9	1430
1x185	2	2.0	23.3	1780
1x240	2	2.2	26.6	2360
1x300	2	2.4	29.6	2940
1x400	2	2.6	33.2	3740
1x500	2	2.8	36.9	4950
1x630	2	2.8	41.1	6300
1x800	2	2.8	45.7	8610
1x1000	2	3.0	51.0	10820
1x1.5	5	0.7	3.4	20
1x2.5	5	0.8	4.1	31
1x4.0	5	0.8	4.8	48

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Conductor		FGD100 07V-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	kg/km
1x6.0	5	0.8	5.3	69
1x10	5	1.0	6.8	121
1x16	5	1.0	8.1	211
1x25	5	1.2	10.2	303
1x35	5	1.2	11.7	417
1x50	5	1.4	13.9	539
1x70	5	1.4	16.0	730
1x95	5	1.6	18.2	900
1x120	5	1.6	20.2	1135
1x150	5	1.8	22.5	1410
1x185	5	2.0	24.9	1845
1x240	5	2.2	28.4	2270

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4.0	26	24	32	28	37	33	-	-	-	-	-
6.0	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	-	-	546	467	694	634	754	689	656	852	795
500	-	-	626	533	792	723	868	789	749	982	920
630	-	-	720	611	904	826	1005	905	855	1138	1070
800	-	-	-	-	1030	943	1086	1020	971	1265	1188
1000	-	-	-	-	1154	1058	1216	1149	1079	1420	1337

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.													
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C & F (clipped direct, on trays or in free air)							
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat	
1	2	3			4			5			6			7			8			9	
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m	
1.5	29	29			29			29			25			25			25			25	
2.5	18	18			18			18			15			15			15			15	
4.0	11	11			11			11			9.5			9.5			9,5			9.5	
6.0	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4	
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8	
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4	
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.3	1.0	0.93	0.19	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.8	0.165	0.82	0.8	0.24	0.84	0.8	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.16	0.57	0.55	0.24	0.6	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.18	0.5	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.4	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.15	0.36	0.32	0.23	0.4	0.32	0.3	0.44
150	0.29	0.31	0.27	0.41	0.3	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.15	0.3	0.26	0.23	0.34	0.26	0.3	0.4
185	0.23	0.25	0.27	0.37	0.24	0.17	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.3	0.36
240	0.18	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.16	0.145	0.22	0.16	0.22	0.27	0.16	0.29	0.34

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Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.												
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C & F (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
300	0.145	0.16	0.26	0.31	0.15	0.165	0.22	0.15	0.25	0.29	0.14	0.23	0.27	0.13	0.14	0.19	0.13	0.22	0.25	0.13	0.29	0.32
400	0.105	0.13	0.26	0.29	0.12	0.16	0.2	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.14	0.175	0.105	0.21	0.24	0.1	0.29	0.31
500	0.086	0.11	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.1	0.22	0.25	0.086	0.135	0.16	0.086	0.21	0.23	0.081	0.29	0.3
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.15	0.072	0.21	0.22	0.066	0.28	0.29
800	0.053	-	-	-	0.068	0.15	0.165	0.061	0.24	0.25	-	-	-	0.06	0.13	0.145	0.06	0.21	0.22	0.053	0.28	0.29
1000	0.042	-	-	-	0.059	0.15	0.16	0.05	0.24	0.24	-	-	-	0.052	0.13	0.14	0.052	0.2	0.21	0.044	0.28	0.28

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

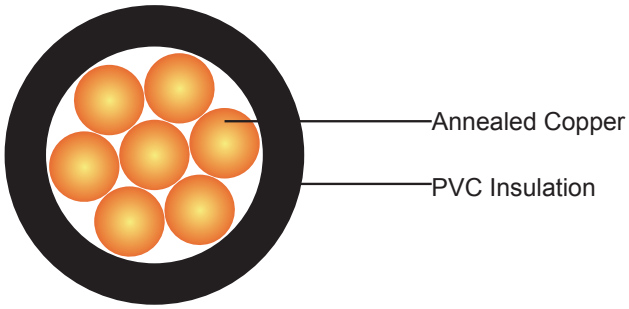
Rated Voltage

Standard

Flame Retardancy
EN 60332-1-2

450/750V PVC Insulated, Non-sheathed Power Cables (Single Core 90°C)

FGD100 07V2-U/R/K (CU/PVC 450/750V Class 1/2/5)
BS Code: 6491XHR
HAR Code: H07V2-U, H07V2-R, H07V2-K



APPLICATION

This cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is CE and TUV approved.

STANDARDS

Basic design to BS EN 50525-2-31(formerly BS 6004:2000)

Approvals:
CE Certification (N8A 17 07 98200 006)
TUV Certification (B 17 07 98200 007)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2

VOLTAGE RATING

450/750V

CABLE CONSTRUCTION

Conductor:
H07V2-U: Class 1 solid copper conductor to BS EN 60228.
H07V2-R: Class 2 stranded copper conductor to BS EN 60228.
H07V2-K: Class 5 stranded copper conductor to BS EN 60228.
Insulation: PVC Type TI 3 according to BS EN 50363-3.

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COLOUR CODE

Black, Blue, Brown, Grey, Orange, Pink, Red, Turquoise, Violet, White, Green and Yellow.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 90°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Up to 8mm²: 4 x overall diameter

8mm² to 12mm²: 5 x overall diameter

Above 12mm²: 6 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD100 07V2-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm²		mm	mm	kg/km
1x1.5	1	0.7	3.2	21
1x2.5	1	0.8	3.9	33
1x4.0	1	0.8	4.4	49
1x6.0	1	0.8	5.0	69
1x10	1	1.0	6.4	115
1x1.5	2	0.7	3.3	23
1x2.5	2	0.8	4.0	35
1x4.0	2	0.8	4.6	51
1x6.0	2	0.8	5.2	71
1x10	2	1.0	6.7	120
1x16	2	1.0	7.8	170
1x25	2	1.2	9.7	260
1x35	2	1.2	10.9	350
1x50	2	1.4	12.8	480
1x70	2	1.4	14.6	680
1x95	2	1.6	17.1	930
1x120	2	1.6	18.8	1160
1x150	2	1.8	20.9	1430
1x185	2	2.0	23.3	1780
1x240	2	2.2	26.6	2360
1x300	2	2.4	29.6	2940
1x400	2	2.6	33.2	3740
1x500	2	2.8	36.9	4950
1x630	2	2.8	41.1	6300
1x800	2	2.8	45.7	8610
1x1000	2	3.0	51.0	10820
1x1.5	5	0.7	3.4	20
1x2.5	5	0.8	4.1	31
1x4.0	5	0.8	4.8	48
1x6.0	5	0.8	5.3	69

Conductor		FGD100 07V2-U/R/K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	kg/km
1x10	5	1.0	6.8	121
1x16	5	1.0	8.1	211
1x25	5	1.2	10.2	303
1x35	5	1.2	11.7	417
1x50	5	1.4	13.9	539
1x70	5	1.4	16.0	730
1x95	5	1.6	18.2	900
1x120	5	1.6	20.2	1135
1x150	5	1.8	22.5	1410
1x185	5	2.0	24.9	1845
1x240	5	2.2	28.4	2270

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Reference Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4.0	35	31	42	37	46	41	-	-	-	-	-
6.0	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527

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Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Reference Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	113	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C, F & G(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C, F & G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4.0	12	12			12			12			10			10			10			10		
6.0	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.									
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C, F & G(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C, F & G (clipped direct, on trays or in free air)						
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m				mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-	-	-	0.072	0.150	0.170	0.064	0.24	0.25	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-	-	-	0.063	0.150	0.165	0.054	0.24	0.24	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance

Rated Voltage

Standard

Flame Retardancy
EN 60332-1-2

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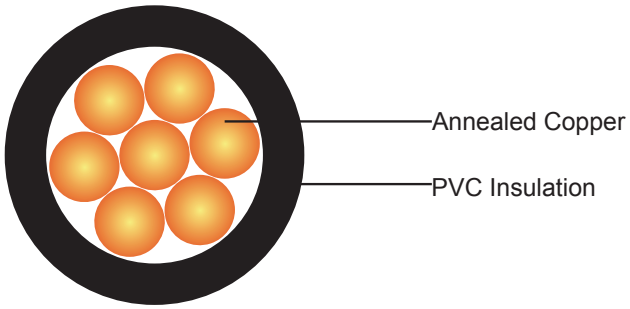
600/1000V PVC Insulated, Non-sheathed Flexible Cables (Single Core)

FGD100 1V-K (CU/PVC 600/1000V Class 5)

BS Code: TYPE BK/TYPE CK(CU/PVC)



APPLICATION

The cables are intended for use in the wiring of switch, control, metering, relay and instrument panels of power switchgear, and for such purposes as internal connections in rectifier equipment and its motor starters and controllers.

STANDARDS

Basic design to BS 6231: 2006

Approvals:

TUV Certification (Z1 18 01 98200 016)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper conductor, class 5 according to BS EN 60228.

Insulation: PVC Type TI 1 according to BS EN 50363-3 for cable type BK, and type TI 3 according to BS EN 50363-3 for cable type CK.

COLOUR CODE

Black, Blue, Brown, Red, White, Grey, Violet, Pink, Green and Yellow. Other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C (TYPE BK): 90°C (TYPE CK)

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius: 6 x overall diameter

CONSTRUCTION PARAMETERS

Conductor		FGD100 1V-K		
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Maximum Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	kg/km
1x0.50	5	0.8	3.0	12
1x0.75	5	0.8	3.1	15
1x1.0	5	0.8	3.3	18
1x1.5	5	0.8	3.6	23
1x2.5	5	0.8	4.1	34
1x4.0	5	0.8	4.8	48
1x6.0	5	0.8	5.3	67
1x10	5	1.0	7.2	119
1x16	5	1.0	9.0	187
1x25	5	1.2	11.5	291
1x35	5	1.2	12.5	406
1x50	5	1.4	15.4	580
1x70	5	1.4	17.5	780
1x95	5	1.6	19.2	1055
1x120	5	1.6	21.2	1175
1x150	5	1.8	23.9	1425
1x185	5	2.0	25.9	1735
1x240	5	2.2	28.9	2310

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

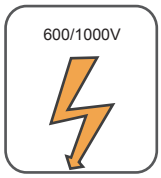
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical etc)				
							Touching			Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.0	11.0	10.5	13.5	12.0	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4.0	26	24	32	28	37	33	-	-	-	-	-
6.0	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C & F (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.0	44	44			44			44			38			38			38			38		
1.5	29	29			29			29			25			25			25			25		
2.5	18	18			18			18			15			15			15			15		
4.0	11	11			11			11			9.5			9.5			9,5			9.5		
6.0	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.3	1.0	0.93	0.19	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.8	0.165	0.82	0.8	0.24	0.84	0.8	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.16	0.57	0.55	0.24	0.6	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.18	0.5	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.4	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.15	0.36	0.32	0.23	0.4	0.32	0.3	0.44
150	0.29	0.31	0.27	0.41	0.3	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.15	0.3	0.26	0.23	0.34	0.26	0.3	0.4
185	0.23	0.25	0.27	0.37	0.24	0.17	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.3	0.36
240	0.18	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.16	0.145	0.22	0.16	0.22	0.27	0.16	0.29	0.34

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

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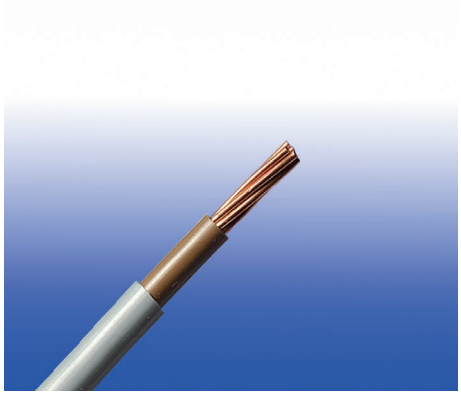
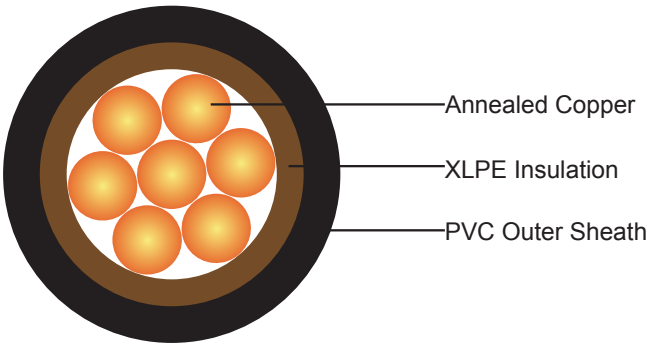
600/1000V XLPE Insulated, PVC Sheathed,

Unarmoured Power Cables to BS 7889 (Single Core)

FGD300 1RV-R (CU/XLPE/PVC 600/1000V Class 2)

BS Code: 6181X





APPLICATION

The cables are mainly use in fixed installations in industrial areas, buildings and similar applications but not for burial in the ground, either directly or in ducts. This product type is TUV approved.

STANDARDS

Basic design to BS 7889:2012

Approvals:

TUV Certification (Z1 17 08 98200 008)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3.

Inner Covering Option: The optional inner covering, where used, shall consist of an extruded layer of synthetic polymeric material. It shall surround the single core and the laid-up two, three, four or five cores, giving the assembly a practically circular shape.

Outer Sheath: PVC Type 9 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (XLPE): 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius:

Circular copper conductor (OD ≤ 25mm): 4 x Overall Diameter

Circular copper conductor (OD > 25mm): 6 x Overall Diameter

Shaped copper conductor: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
1x1.5	2	0.7	1.4	6.1	36
1x2.5	2	0.7	1.4	6.8	52
1x4.0	2	0.7	1.4	7.4	76
1x6.0	2	0.7	1.4	8.2	100
1x10	2	0.7	1.4	9.2	160
1x16	2	0.7	1.4	10.7	230
1x25	2	0.9	1.4	12.5	340
1x35	2	0.9	1.4	13.5	440
1x50	2	1.0	1.4	13.7	541
1x70	2	1.1	1.4	15.8	749
1x95	2	1.1	1.5	17.5	1000
1x120	2	1.2	1.5	19.3	1241
1x150	2	1.4	1.6	21.5	1523
1x185	2	1.6	1.6	24.7	1942
1x240	2	1.7	1.7	27.7	2514
1x300	2	1.8	1.8	30.6	3125
1x400	2	2.0	1.9	34.2	3967
1x500	2	2.2	2.0	38.0	5063
1x630	2	2.4	2.2	42.9	6491
1x800	2	2.6	2.3	46.0	8075
1x1000	2	2.8	2.4	63.0	9860

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

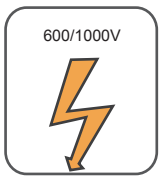
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Reference Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4.0	35	31	42	37	46	41	-	-	-	-	-
6.0	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	113	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C, F & G(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C, F & G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4.0	12	12			12			12			10			10			10			10		
6.0	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-	-	-	0.072	0.150	0.170	0.064	0.24	0.25	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-	-	-	0.063	0.150	0.165	0.054	0.24	0.24	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

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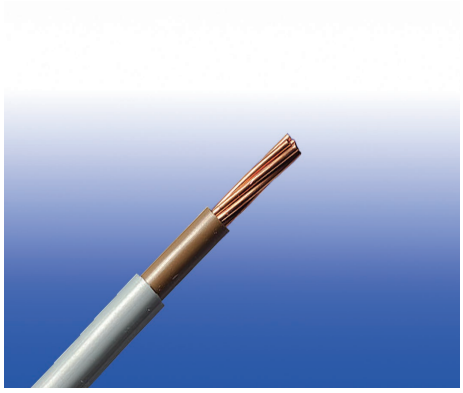
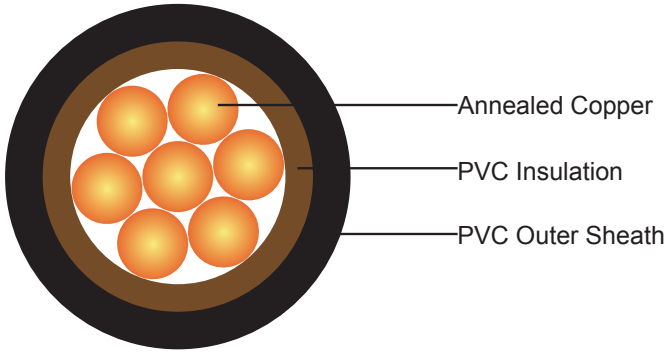
600/1000V XLPE Insulated, PVC Sheathed,

Unarmoured Power Cables to IEC 60502 (Single Core)

FGD300 1RV-R (CU/XLPE/PVC 600/1000V Class 2)
VDE Code: N2XY





APPLICATION

The cables are mainly use in fixed installations in industrial areas, buildings and similar applications but not for burial in the ground, either directly or in ducts. This product type is TUV approved.

STANDARDS

Basic design to IEC 60502-1

Approvals:
TUV Certification (Z1 17 01 98200 004)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper, stranded according to IEC 60228 class 2.
Insulation: XLPE according to IEC 60502-1.
Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design.

LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue, other colours can be offered upon request.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 80°C (For ST_1 Sheath); 90°C (For ST_2 Sheath)

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius:

Circular copper conductor (OD ≤ 25mm): 4 x Overall Diameter

Circular copper conductor (OD > 25mm): 6 x Overall Diameter

Shaped copper conductor: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
1x1.5	2	0.7	1.4	6.1	36
1x2.5	2	0.7	1.4	6.8	52
1x4.0	2	0.7	1.4	7.4	76
1x6.0	2	0.7	1.4	8.2	100
1x10	2	0.7	1.4	9.2	160
1x16	2	0.7	1.4	10.7	230
1x25	2	0.9	1.4	12.5	340
1x35	2	0.9	1.4	13.5	440
1x50	2	1.0	1.4	13.7	541
1x70	2	1.1	1.4	15.8	749
1x95	2	1.1	1.5	17.5	1000
1x120	2	1.2	1.5	19.3	1241
1x150	2	1.4	1.6	21.5	1523
1x185	2	1.6	1.6	24.7	1942
1x240	2	1.7	1.7	27.7	2514
1x300	2	1.8	1.8	30.6	3125
1x400	2	2.0	1.9	34.2	3967
1x500	2	2.2	2.0	38.0	5063
1x630	2	2.4	2.2	42.9	6491
1x800	2	2.6	2.3	46.0	8075
1x1000	2	2.8	2.4	63.0	9860

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

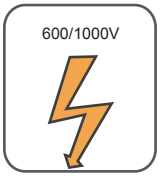
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical etc) Touching			Reference Method G (in free air) Spaced by one cable diameter	
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three -phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	19	17	23	20	25	23	-	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-	-
4.0	35	31	42	37	46	41	-	-	-	-	-
6.0	45	40	54	48	59	54	-	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-	-
25	106	95	133	117	143	130	161	141	135	182	161
35	131	117	164	144	176	161	200	176	169	226	201
50	158	141	198	175	228	209	242	216	207	275	246
70	200	179	253	222	293	268	310	279	268	353	318
95	241	216	306	269	355	326	377	342	328	430	389
120	278	249	354	312	413	379	437	400	383	500	454
150	318	285	393	342	476	436	504	464	444	577	527
185	362	324	449	384	545	500	575	533	510	661	605
240	424	380	528	450	644	590	679	634	607	781	719
300	486	435	603	514	743	681	783	736	703	902	833
400	-	-	683	584	868	793	940	868	823	1085	1008
500	-	-	783	666	990	904	1083	998	946	1253	1169
630	-	-	900	764	113	1033	1254	1151	1088	1454	1362
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.									3 or 4 cables, three-phase a.c.											
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C, F & G(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C, F & G (clipped direct, on trays or in free air)								
					Cables touching			Cables spaced*						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	31	31			31			31			27			27			27			27		
2.5	19	19			19			19			16			16			16			16		
4.0	12	12			12			12			10			10			10			10		
6.0	7.9	7.9			7.9			7.9			6.8			6.8			6.8			6.8		
10	4.7	4.7			4.7			4.7			4.0			4.0			4.0			4.0		
16	2.9	2.9			2.9			2.9			2.5			2.5			2.5			2.5		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800	0.056	-	-	-	0.072	0.150	0.170	0.064	0.24	0.25	-	-	-	0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000	0.045	-	-	-	0.063	0.150	0.165	0.054	0.24	0.24	-	-	-	0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

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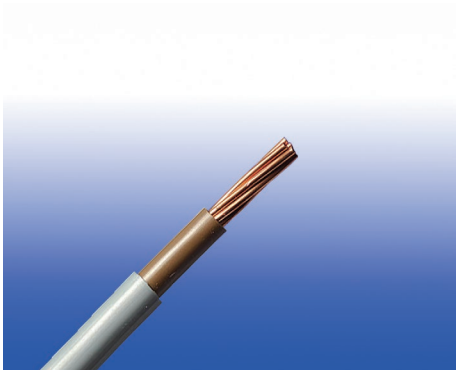
600/1000V PVC Insulated, PVC Sheathed,

Unarmoured Power Cables to IEC 60502 (Single Core)

FGD300 1VV-R (CU/PVC/PVC 600/1000V Class 2)
VDE Code: NYY



APPLICATION

The cables are mainly use in fixed installations in industrial areas, buildings and similar applications but not for burial in the ground, either directly or in ducts.

STANDARDS

Basic design to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Plain annealed copper, stranded according to IEC 60228 class 2.
Insulation: PVC/A according to IEC 60502-1.
Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue, other colours can be offered upon request.
Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 70°C

Maximum short circuit temperature (5 Seconds):

Conductor cross-section ≤300 mm^2:160°C

Conductor cross-section >300 mm^2:140°C

Minimum bending radius:

Circular copper conductor (OD ≤ 25mm): 4 x Overall Diameter

Circular copper conductor (OD > 25mm): 6 x Overall Diameter

Shaped copper conductor: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 IVV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
1x1.5	2	0.8	1.4	5.8	55
1x2.5	2	0.8	1.4	6.2	70
1x4.0	2	1.0	1.4	7.1	98
1x6.0	2	1.0	1.4	7.6	124
1x10	2	1.0	1.4	8.4	173
1x16	2	1.0	1.4	9.3	240
1x25	2	1.2	1.4	10.8	350
1x35	2	1.2	1.4	11.9	468
1x50	2	1.4	1.4	13.6	646
1x70	2	1.4	1.4	15.0	854
1x95	2	1.6	1.5	17.2	1154
1x120	2	1.6	1.5	18.6	1428
1x150	2	1.8	1.6	20.6	1764
1x185	2	2.0	1.7	22.7	2160
1x240	2	2.2	1.8	25.5	2796
1x300	2	2.4	1.9	28.1	3449
1x400	2	2.6	2.0	31.8	4570
1x500	2	2.8	2.1	35.0	5641
1x630	2	2.8	2.2	38.3	7015
1x800	2	2.8	2.3	42.1	8798
1x1000	2	3.0	2.5	46.7	10970

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

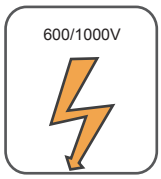
Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4D1A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical)				
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4.0	26	24	32	28	37	33	-	-	-	-	-
6.0	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	-	-	546	467	694	634	754	689	656	852	795
500	-	-	626	533	792	723	868	789	749	982	920
630	-	-	720	611	904	826	1005	905	855	1138	1070
800	-	-	-	-	1030	943	1086	1020	971	1265	1188
1000	-	-	-	-	1154	1058	1216	1149	1079	1420	1337

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4D1B

Nominal Cross Section Area	2 cables d.c.	2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.													
		Ref. Methods A and B (enclosed in conduit or trunking)			Ref. Methods C & F(clipped direct, on trays or in free air)						Ref. Methods A & B (enclosed in conduit or trunking			Ref. Methods C, F & G (clipped direct, on trays or in free air)								
					Cables touching			Cables touching						Cables touching, Trefoil			Cables touching, Flat			Cables spaced*, Flat		
1	2	3			4			5			6			7			8			9		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1.5	29	29			29			25			25			25			25			25		
2.5	18	18			18			18			15			15			15			15		
4.0	11	11			11			11			9.5			9.5			9.5			9.5		
6.0	7.3	7.3			7.3			7.3			6.4			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.24	1.10	1.10	0.32	1.15
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.24	0.84	0.80	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.24	0.60	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.40	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.23	0.40	0.32	0.30	0.44
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.23	0.34	0.26	0.30	0.40
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.27	0.160	0.29	0.34
300	0.145	0.160	0.26	0.31	0.150	0.165	0.22	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.22	0.25	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.175	0.105	0.21	0.24	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.160	0.086	0.21	0.23	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.150	0.072	0.21	0.22	0.066	0.28	0.29
800	0.053	-	-	-	0.068	0.150	0.165	0.061	0.24	0.25	-	-	-	0.060	0.130	0.145	0.060	0.21	0.22	0.053	0.28	0.29
1000	0.042	-	-	-	0.059	0.150	0.160	0.050	0.24	0.24	-	-	-	0.052	0.130	0.140	0.052	0.20	0.21	0.044	0.28	0.28

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

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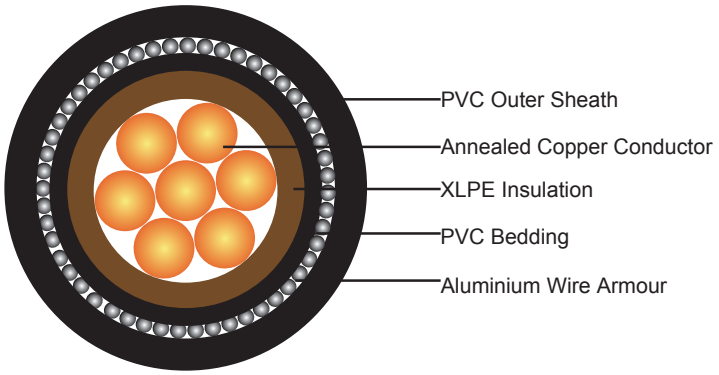
600/1000V XLPE Insulated, PVC Sheathed,

Armoured Power Cables to BS 5467 (Single Core)

FGD300 1RVMAV-R (CU/XLPE/PVC/AWA/PVC 600/1000V Class 2)

BS Code: 6941X



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 5467

Approvals:

TUV Certification (Z1 17 01 98200 003)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.

Insulation: Extruded XLPE GP 8 according to BS 7655-1.3.

Bedding: PVC or polymeric compound.

Armouring: Aluminium wire

Outer Sheath: PVC Type 9 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite

properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (XLPE): 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1RVMAV-R					
No. of Core X Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Aprrox Weight
No.×mm²		mm	mm	mm	mm	mm	kg/km
1x50	2	1.0	0.8	0.9	1.5	17.5	800
1x70	2	1.1	0.8	1.25	1.5	20.2	990
1x95	2	1.1	0.8	1.25	1.6	22.3	1280
1x120	2	1.2	0.8	1.25	1.6	24.2	1550
1x150	2	1.4	1.0	1.6	1.7	27.4	1900
1x185	2	1.6	1.0	1.6	1.8	30	2320
1x240	2	1.7	1.0	1.6	1.8	32.8	2930
1x300	2	1.8	1.0	1.6	1.9	35.6	3580
1x400	2	2.0	1.2	2.0	2.0	40.5	4600
1x500	2	2.2	1.2	2.0	2.1	44.2	5680
1x630	2	2.4	1.2	2.0	2.2	48.8	7160
1x800	2	2.6	1.4	2.5	2.4	55.4	9315
1x1000	2	2.8	1.4	2.5	2.5	60.6	11490

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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FIREGUARD Flame Retardant Power & Control Cables

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

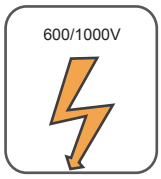
Current-Carrying Capacities (Amp) according to BS 7671: 2008 table 4E3A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	284	270	282	266	288	266
70	303	277	322	293	285	356	349	357	337	358	331
95	367	333	389	352	346	446	426	436	412	425	393
120	425	383	449	405	402	519	497	504	477	485	449
150	488	437	516	462	463	600	575	566	539	549	510
185	557	496	587	524	529	688	660	643	614	618	574
240	656	579	689	612	625	815	782	749	714	715	666
300	755	662	792	700	720	943	906	842	805	810	755
400	853	717	899	767	815	1137	1094	929	889	848	797
500	962	791	1016	851	918	1314	1266	1032	989	923	871
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978
1000	1261	961	1345	1055	1214	2100	2026	1289	1238	1110	1041

Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4E3B

Nominal Cross Section Area	2 cables d.c.	Ref. Methods C&F(clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.0	0.98	0.29	1.0	0.86	0.18	0.87	0.64	0.25	0.88	0.84	0.33	0.9
70	0.67	0.68	0.20	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.17	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

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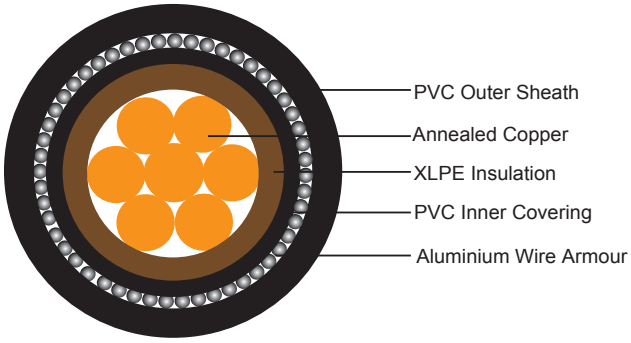
600/1000V XLPE Insulated, PVC Sheathed,

Armoured Power Cables to IEC 60502 (Single Core)

FGD300 1RVMAV-R (CU/XLPE/PVC/AWA/PVC 600/1000V Class 2)
VDE Code: N2XRY



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.This product type is TUV approved.

STANDARDS

Basic design to IEC 60502-1

Approvals:

TUV Certification (Z1 17 01 98200 004)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to IEC 60228 class 2.
Insulation: XLPE according to IEC 60502-1.
Inner Covering: Extruded PVC or polymeric compound.
Armouring: Aluminium wire

Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue, other colours can be offered upon request.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 80°C (For ST_1 Sheath); 90°C (For ST_2 Sheath)

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius:

Circular copper conductors: 6 x Overall Diameter

Shaped copper conductors: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1RVMAV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
1x1.5	2	0.7	1.0	0.8	1.8	10.2	150
1x2.5	2	0.7	1.0	0.8	1.8	10.6	169
1x4.0	2	0.7	1.0	0.8	1.8	11.2	196
1x6.0	2	0.7	1.0	0.8	1.8	11.7	228
1x10	2	0.7	1.0	0.8	1.8	12.7	290
1x16	2	0.7	1.0	0.8	1.8	13.7	372
1x25	2	0.9	1.0	0.8	1.8	15.4	507
1x35	2	0.9	1.0	1.25	1.8	17.5	681
1x50	2	1.0	1.0	1.25	1.8	19.0	848
1x70	2	1.1	1.0	1.25	1.8	21.0	1116
1x95	2	1.1	1.0	1.6	1.8	24.0	1511
1x120	2	1.2	1.0	1.6	1.8	25.8	1821
1x150	2	1.4	1.0	1.6	1.8	27.8	2165
1x185	2	1.6	1.0	1.6	1.8	30.4	2655
1x240	2	1.7	1.0	1.6	1.9	33.5	3352
1x300	2	1.8	1.0	2.0	2.0	37.5	4224
1x400	2	2.0	1.2	2.0	2.2	41.3	5263
1x500	2	2.2	1.2	2.0	2.3	44.2	7379
1x630	2	2.4	1.2	2.5	2.4	49.8	9611
1x800	2	2.6	1.4	2.5	2.6	55.3	11896
1x1000	2	2.8	1.4	2.5	2.7	60.4	14467

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

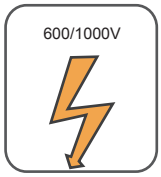
Current-Carrying Capacities (Amp) according to BS 7671: 2008 table 4E3A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	222	284	270	282	266	288	266
70	303	277	322	293	285	356	349	357	337	358	331
95	367	333	389	352	346	446	426	436	412	425	393
120	425	383	449	405	402	519	497	504	477	485	449
150	488	437	516	462	463	600	575	566	539	549	510
185	557	496	587	524	529	688	660	643	614	618	574
240	656	579	689	612	625	815	782	749	714	715	666
300	755	662	792	700	720	943	906	842	805	810	755
400	853	717	899	767	815	1137	1094	929	889	848	797
500	962	791	1016	851	918	1314	1266	1032	989	923	871
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978
1000	1261	961	1345	1055	1214	2100	2026	1289	1238	1110	1041

Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4E3B

Nominal Cross Section Area	2 cables d.c.	Ref. Methods C&F(clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.0	0.98	0.29	1.0	0.86	0.18	0.87	0.64	0.25	0.88	0.84	0.33	0.9
70	0.67	0.68	0.20	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.17	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

Caledonian

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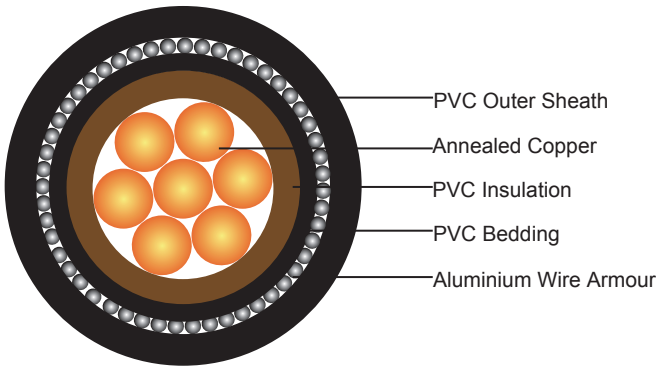
600/1000V PVC Insulated, PVC Sheathed,

Armoured Power Cables to BS 6346 (Single Core)

FGD300 1VVMAV-R (CU/PVC/PVC/AWA/PVC 600/1000V Class 2)



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design to BS 6346

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 50265-2-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS 6360 class 2.

Insulation: PVC TI 1 according to BS 7655-3.1.

Bedding: PVC.

Armouring: Aluminium wire

Outer Sheath: PVC TM 1 according to BS 7655-4.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Circular copper conductors: 6 x Overall Diameter

Shaped copper conductors: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1VVMAV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
1x50	2	1.4	0.8	1.25	1.5	19.1	820
1x70	2	1.4	0.8	1.25	1.6	21.1	1070
1x95	2	1.6	0.8	1.25	1.6	23.4	1390
1x120	2	1.6	1.0	1.6	1.7	26.3	1600
1x150	2	1.8	1.0	1.6	1.7	28.3	1900
1x185	2	2.0	1.0	1.6	1.8	30.8	2450
1x240	2	2.2	1.0	1.6	1.9	34.1	3100
1x300	2	2.4	1.0	1.6	1.9	37.0	3760
1x400	2	2.6	1.2	2.0	2.1	42.0	4850
1x500	2	2.8	1.2	2.0	2.1	45.6	5930
1x630	2	2.8	1.2	2.0	2.2	49.7	7390
1x800	2	2.8	1.4	2.5	2.4	55.8	9400
1x1000	2	3.0	1.4	2.5	2.5	61.0	11430

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

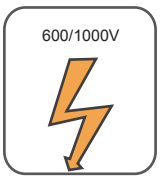
Current-Carrying Capacities (Amp) according to BS 7671: 2008 table 4D3A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	193	179	205	189	181	229	216	229	217	230	212
70	245	225	259	238	231	294	279	287	272	286	263
95	296	269	313	285	280	357	340	349	332	338	313
120	342	309	360	327	324	415	396	401	383	385	357
150	393	352	413	373	373	479	458	449	429	436	405
185	447	399	469	422	425	548	525	511	489	490	456
240	525	465	550	492	501	648	622	593	568	566	528
300	594	515	624	547	567	748	719	668	640	616	578
400	687	575	723	618	657	885	851	737	707	674	632
500	763	622	805	673	731	1035	997	810	777	721	676
630	843	669	891	728	809	1218	1174	893	856	771	723
800	919	710	976	777	886	1441	1390	943	905	824	772
1000	975	737	1041	808	945	1685	1627	1008	967	872	816

Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4D3B

Nominal Cross Section Area	2 cables d.c.	Ref. Methods C&F(clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.93	0.93	0.22	0.95	0.92	0.30	0.97	0.80	0.19	0.82	0.79	0.26	0.84	0.79	0.34	0.86
70	0.63	0.64	0.21	0.68	0.66	0.29	0.72	0.55	0.18	0.58	0.57	0.25	0.62	0.59	0.32	0.68
95	0.46	0.48	0.20	0.52	0.51	0.28	0.58	0.42	0.175	0.45	0.44	0.25	0.50	0.47	0.31	0.57
120	0.36	0.39	0.195	0.43	0.42	0.28	0.50	0.33	0.170	0.37	0.36	0.24	0.43	0.40	0.30	0.50
150	0.29	0.31	0.190	0.37	0.34	0.27	0.44	0.27	0.165	0.32	0.30	0.24	0.38	0.34	0.30	0.45
185	0.23	0.26	0.190	0.32	0.29	0.27	0.39	0.22	0.160	0.27	0.25	0.23	0.34	0.29	0.29	0.41
240	0.18	0.20	0.180	0.27	0.23	0.26	0.35	0.175	0.160	0.23	0.20	0.23	0.30	0.24	0.28	0.37
300	0.145	0.160	0.180	0.24	0.19	0.26	0.32	0.140	0.155	0.21	0.165	0.22	0.28	0.20	0.28	0.34
400	0.105	0.140	0.175	0.22	0.18	0.24	0.30	0.12	0.130	0.195	0.160	0.21	0.26	0.21	0.25	0.32
500	0.086	0.120	0.170	0.21	0.165	0.23	0.29	0.105	0.145	0.18	0.145	0.20	0.25	0.19	0.24	0.30
630	0.068	0.105	0.165	0.195	0.150	0.22	0.27	0.091	0.145	0.17	0.135	0.195	0.23	0.175	0.22	0.28
800	0.053	0.095	0.160	0.185	0.145	0.21	0.25	0.082	0.140	0.160	0.125	0.180	0.22	0.170	0.195	0.26
1000	0.042	0.091	0.155	0.180	0.140	0.19	0.24	0.079	0.135	0.155	0.125	0.165	0.21	0.165	0.170	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
BS EN 50265-2-1

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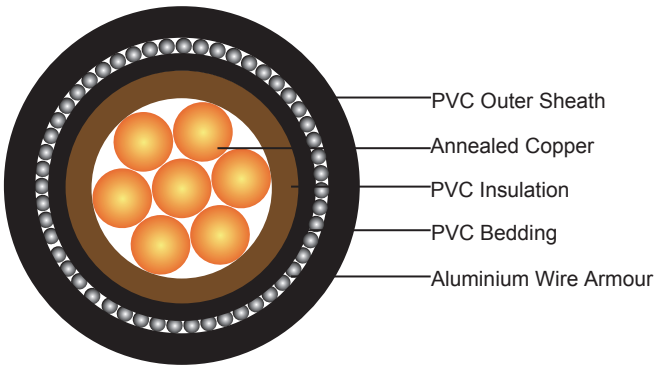
600/1000V PVC Insulated, PVC Sheathed,

Armoured Power Cables to IEC 60502 (Single Core)

FGD300 1VVMAV-R (CU/PVC/PVC/AWA/PVC 600/1000V Class 2)
VDE Code: NYRY



APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.
Insulation: PVC/A according to IEC 60502-1.
Inner Covering: Extruded PVC or polymeric compound.
Armouring: Aluminium wire
Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour: Brown or blue, Other colours can be offered upon request.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C(≤300 mm²); 140°C(>300 mm²)

Minimum bending radius:

Circular copper conductors: 6 x Overall Diameter

Shaped copper conductors: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD300 1VVMAV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
1x4.0	2	1.0	1.0	0.8	1.8	11.5	213
1x6.0	2	1.0	1.0	0.8	1.8	12.0	247
1x10	2	1.0	1.0	0.8	1.8	12.8	310
1x16	2	1.0	1.0	0.8	1.8	13.7	394
1x25	2	1.2	1.0	0.8	1.8	15.2	534
1x35	2	1.2	1.0	1.25	1.8	17.2	713
1x50	2	1.4	1.0	1.25	1.8	18.9	893
1x70	2	1.4	1.0	1.25	1.8	20.3	1158
1x95	2	1.6	1.0	1.6	1.8	23.0	1558
1x120	2	1.6	1.0	1.6	1.8	24.4	1863
1x150	2	1.8	1.0	1.6	1.8	26.2	2214
1x185	2	2.0	1.0	1.6	1.9	28.2	2697
1x240	2	2.2	1.0	1.6	1.9	31.0	3402
1x300	2	2.4	1.0	2.0	2.1	34.4	4282
1x400	2	2.6	1.2	2.0	2.2	38.6	5360
1x500	2	2.8	1.2	2.0	2.3	41.8	6583
1x630	2	2.8	1.2	2.5	2.4	46.2	8401
1x800	2	2.8	1.4	2.5	2.6	50.5	10515
1x1000	2	3.0	1.4	2.5	2.7	55.0	12968

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

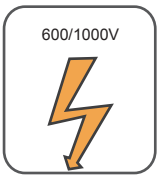
Current-Carrying Capacities (Amp) BS 7671: 2008 table 4D3A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray, horizontal or vertical)								
	Touching		Touching			Spaced by on cable diameter					
	2 cables, single-phase a.c. or d.c. flat	3 or 4 cables, three-phase a.c. flat	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables three-phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.	
						Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	193	179	205	189	181	229	216	229	217	230	212
70	245	225	259	238	231	294	279	287	272	286	263
95	296	269	313	285	280	357	340	349	332	338	313
120	342	309	360	327	324	415	396	401	383	385	357
150	393	352	413	373	373	479	458	449	429	436	405
185	447	399	469	422	425	548	525	511	489	490	456
240	525	465	550	492	501	648	622	593	568	566	528
300	594	515	624	547	567	748	719	668	640	616	578
400	687	575	723	618	657	885	851	737	707	674	632
500	763	622	805	673	731	1035	997	810	777	721	676
630	843	669	891	728	809	1218	1174	893	856	771	723
800	919	710	976	777	886	1441	1390	943	905	824	772
1000	975	737	1041	808	945	1685	1627	1008	967	872	816

Voltage Drop (Per Amp Per Meter) BS 7671: 2008 table 4D3B

Nominal Cross Section Area	2 cables d.c.	Ref. Methods C&F(clipped direct, on trays or in free air)														
		2 cables, single-phase a.c.						3 or 4 cables, three-phase a.c.								
		Touching			Spaced*			Trefoil and touching			Flat and touching			Flat and spaced*		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.93	0.93	0.22	0.95	0.92	0.30	0.97	0.80	0.19	0.82	0.79	0.26	0.84	0.79	0.34	0.86
70	0.63	0.64	0.21	0.68	0.66	0.29	0.72	0.55	0.18	0.58	0.57	0.25	0.62	0.59	0.32	0.68
95	0.46	0.48	0.20	0.52	0.51	0.28	0.58	0.42	0.175	0.45	0.44	0.25	0.50	0.47	0.31	0.57
120	0.36	0.39	0.195	0.43	0.42	0.28	0.50	0.33	0.170	0.37	0.36	0.24	0.43	0.40	0.30	0.50
150	0.29	0.31	0.190	0.37	0.34	0.27	0.44	0.27	0.165	0.32	0.30	0.24	0.38	0.34	0.30	0.45
185	0.23	0.26	0.190	0.32	0.29	0.27	0.39	0.22	0.160	0.27	0.25	0.23	0.34	0.29	0.29	0.41
240	0.18	0.20	0.180	0.27	0.23	0.26	0.35	0.175	0.160	0.23	0.20	0.23	0.30	0.24	0.28	0.37
300	0.145	0.160	0.180	0.24	0.19	0.26	0.32	0.140	0.155	0.21	0.165	0.22	0.28	0.20	0.28	0.34
400	0.105	0.140	0.175	0.22	0.18	0.24	0.30	0.12	0.130	0.195	0.160	0.21	0.26	0.21	0.25	0.32
500	0.086	0.120	0.170	0.21	0.165	0.23	0.29	0.105	0.145	0.18	0.145	0.20	0.25	0.19	0.24	0.30
630	0.068	0.105	0.165	0.195	0.150	0.22	0.27	0.091	0.145	0.17	0.135	0.195	0.23	0.175	0.22	0.28
800	0.053	0.095	0.160	0.185	0.145	0.21	0.25	0.082	0.140	0.160	0.125	0.180	0.22	0.170	0.195	0.26
1000	0.042	0.091	0.155	0.180	0.140	0.19	0.24	0.079	0.135	0.155	0.125	0.165	0.21	0.165	0.170	0.24

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

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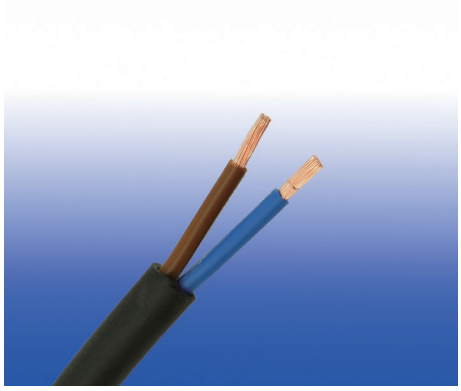
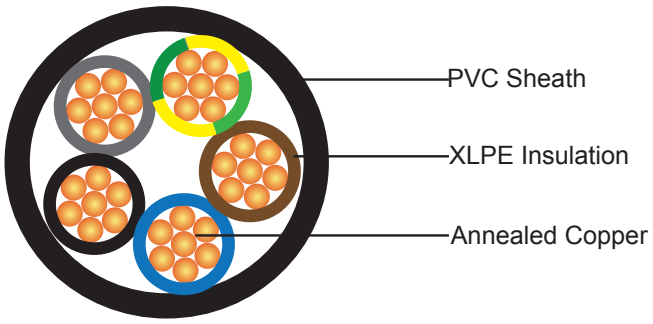
600/1000V XLPE Insulated, PVC Sheathed,

Unarmoured Power Cables to BS 7889 (2-5 Cores)

FGD400 1RV-R (CU/XLPE/PVC 600/1000V Class 2)





APPLICATION

The cables are mainly use in fixed installations in industrial areas, buildings and similar applications but not for burial in the ground, either directly or in ducts.

STANDARDS

Basic design to BS 7889:2012

Approvals:

TUV Certification (Z1 17 08 98200 008)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.

Insulation: XLPE type GP8 according to BS 7655-1.3.

Filling: If necessary, the formation of a compact and reasonably circular cable shall be achieved by one of the following methods.

a) The application of synthetic fillers or binder tape(s).

b) The optional inner covering.

c) The sheath provided it effectively fills the interstices.

d) Any combination of the above.

Inner Covering Option: The optional inner covering, where used, shall consist of an extruded layer of synthetic polymeric material. It shall surround the single core and the laid-up two, three, four or five cores, giving the assembly a practically circular shape.

Outer Sheath: PVC Type 9 according to BS 7655-4.2.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey. Alternatively, green-and-yellow, blue, brown

Four-core: Blue, brown, black, grey. Alternatively, green-and-yellow, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Note: Depending on their intended use, the cables might be subject to the core colour requirements specified in BS 7671 or other standards, or in statutory requirements.

Sheath Colour: Black, other colours can be offered upon request

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (XLPE): 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius:

Circular copper conductor (OD ≤ 25mm): 4 x Overall Diameter

Circular copper conductor (OD > 25mm): 6 x Overall Diameter

Shaped copper conductor: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
2 Cores					
2x1.5[a]	2	0.7	1.8	9.2	108
2x2.5[a]	2	0.7	1.8	10.4	142
2x4.0[a]	2	0.7	1.8	11.5	186
2x6.0[a]	2	0.7	1.8	12.6	239
2x10[a]	2	0.7	1.8	14.5	344
2x16[a]	2	0.7	1.8	16.6	488
2x25[a]	2	0.9	1.8	20.0	727
2x35[a]	2	0.9	1.8	22.3	954
2x50[a]	2	1.0	1.8	25.4	1251
2x70[a]	2	1.1	1.8	29.4	1739

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Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
2x95[a]	2	1.1	1.9	33.4	2345
2x120[a]	2	1.2	2.0	37.2	2933
2x25[b]	2	0.9	1.8	16.4	501
2x35[b]	2	0.9	1.8	18.0	646
2x50[b]	2	1.0	1.8	22.6	1134
2x70[b]	2	1.1	1.8	25.8	1542
2x95[b]	2	1.1	1.9	28.7	1998
2x120[b]	2	1.2	2.0	32.0	2528
3 Cores					
3x1.5[a]	2	0.7	1.8	9.6	132
3x2.5[a]	2	0.7	1.8	10.9	179
3x4.0[a]	2	0.7	1.8	12.1	240
3x6.0[a]	2	0.7	1.8	13.3	316
3x10[a]	2	0.7	1.8	15.3	466
3x16[a]	2	0.7	1.8	17.6	674
3x25[a]	2	0.9	1.8	21.3	1019
3x35[a]	2	0.9	1.8	23.8	1350
3x50[a]	2	1.0	1.8	27.1	1784
3x70[a]	2	1.1	1.9	31.6	2516
3x95[a]	2	1.1	2.0	35.9	3405
3x120[a]	2	1.2	2.1	40.0	4267
3x25[b]	2	0.9	1.8	17.4	694
3x35[b]	2	0.9	1.8	19.1	906
3x50[b]	2	1.0	1.8	24.1	1620
3x70[b]	2	1.1	1.9	27.7	2233
3x95[b]	2	1.1	2.0	30.8	2902
3x120[b]	2	1.2	2.1	34.4	3679
4 Cores					
4x1.5[a]	2	0.7	1.8	10.3	159
4x2.5[a]	2	0.7	1.8	11.8	219
4x4.0[a]	2	0.7	1.8	13.1	298
4x6.0[a]	2	0.7	1.8	14.5	397
4x10[a]	2	0.7	1.8	16.8	593
4x16[a]	2	0.7	1.8	19.3	866
4x25[a]	2	0.9	1.8	23.4	1319
4x35[a]	2	0.9	1.8	26.2	1756
4x50[a]	2	1.0	1.8	29.9	2327
4x70[a]	2	1.1	2.0	35.1	3310
4x95[a]	2	1.1	2.1	39.9	4485
4x120[a]	2	1.2	2.3	44.7	5646
4x25[b]	2	0.9	1.8	19.0	893
4x35[b]	2	0.9	1.8	21.0	1172
4x50[b]	2	1.0	1.8	26.5	2114
4x70[b]	2	1.1	2.0	30.8	2938

Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
4x95[b]	2	1.1	2.1	34.3	3822
4x120[b]	2	1.2	2.3	38.4	4869
5 Cores					
5x1.5[a]	2	0.7	1.8	11.1	187
5x2.5[a]	2	0.7	1.8	12.8	260
5x4.0[a]	2	0.7	1.8	14.3	357
5x6.0[a]	2	0.7	1.8	15.8	479
5x10[a]	2	0.7	1.8	18.3	721
5x16[a]	2	0.7	1.8	21.2	1059
5x25[a]	2	0.9	1.8	25.8	1620
5x35[a]	2	0.9	1.8	28.9	2164
5x50[a]	2	1.0	1.9	33.2	2890
5x70[a]	2	1.1	2.1	39.0	4111
5x95[a]	2	1.1	2.2	44.4	5573
5x120[a]	2	1.2	2.4	49.6	7014

[a]: Circular or compacted circular stranded conductor (Class 2).
[b]: Shaped stranded conductor (Class 2).
Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method E (free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4.0	33	30	40	35	45	40	49	42
6.0	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127

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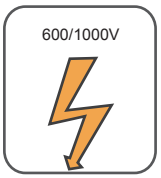
Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method E (free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

Nominal Cross Section Area	Two-core cable d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4.0	12	12			10		
6.0	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

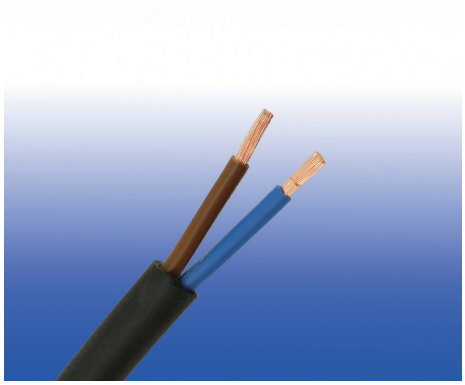
Standard

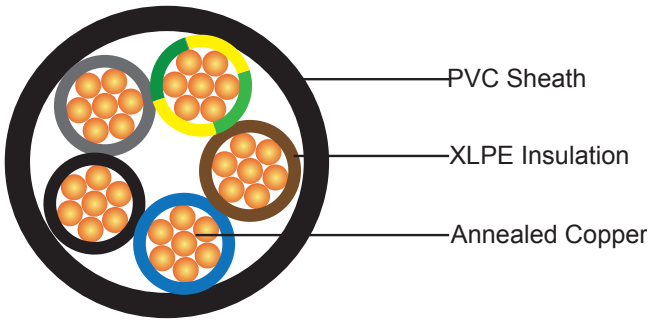
Flame Retardancy
BS EN 60332-1-2

600/1000V XLPE Insulated, PVC Sheathed,

Unarmoured Power Cables to IEC 60502 (2-5 Cores & Multicore)

FGD400 1RV-R (CU/XLPE/PVC 600/1000V Class 2)
VDE Code: N2XY





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design adapted to IEC 60502-1

Approvals:

TUV Certification (Z1 17 01 98200 004)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.
Insulation: XLPE according to IEC 60502-1.
Inner Covering Option: Extruded PVC or polymeric compound.
Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3,

UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey. Alternatively, green-and-yellow, blue, brown

Four-core: Blue, brown, black, grey. Alternatively, green-and-yellow, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Note: Depending on their intended use, the cables might be subject to the core colour requirements specified in BS 7671 or other standards, or in statutory requirements.

Sheath Colour: Black, other colours can be offered upon request

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 80°C (For ST_1 Sheath); 90°C (For ST_2 Sheath)

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 12 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	mm
2 Cores					
2x1.5	2	0.7	1.8	9.2	109
2x2.5	2	0.7	1.8	10.0	138
2x4.0	2	0.7	1.8	11.0	182
2x6.0	2	0.7	1.8	12.0	234
2x10	2	0.7	1.8	13.6	333
2x16	2	0.7	1.8	15.4	468
2x25	2	0.9	1.8	18.4	686
2x35	2	0.9	1.8	20.6	926
2x50	2	1.0	1.8	23.6	1269
2x70	2	1.1	1.8	26.8	1699
2x95	2	1.1	1.9	30.2	2269
2x120	2	1.2	2.0	33.7	2853
2x150	2	1.4	2.2	37.5	3539
2x185	2	1.6	2.3	41.6	4329
2x240	2	1.7	2.5	46.7	5607
2x300	2	1.8	2.6	51.4	6892
2x400	2	2.0	2.9	58.9	9202
3 Cores					

Conductor		FGD400 1RV-R				
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness		Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm		mm	mm	mm
3x1.5	2	0.7		1.8	9.6	133
3x2.5	2	0.7		1.8	10.5	174
3x4.0	2	0.7		1.8	11.6	236
3x6.0	2	0.7		1.8	12.6	310
3x10	2	0.7		1.8	14.4	452
3x16	2	0.7		1.8	16.3	648
3x25	2	0.9		1.8	19.5	963
3x35	2	0.9		1.8	21.9	1315
3x50	2	1.0		1.8	25.1	1818
3x70	2	1.1		1.9	28.7	2451
3x95	2	1.1		2.0	32.4	3287
3x120	2	1.2		2.1	36.1	4142
3x150	2	1.4		2.3	40.3	5140
3x185	2	1.6		2.4	44.6	6298
3x240	2	1.7		2.6	50.2	8170
3x300	2	1.8		2.7	55.2	10063
3x400	2	2.0		3.0	63.3	13451
3 Cores+1 Earth Conductor						
		power conductor	earth conductor			
3x16/10	2	0.7	0.7	1.8	17.5	793
3x25/16	2	0.9	0.7	1.8	21.2	1070
3x35/16	2	0.9	0.7	1.8	23.8	1349
3x50/25	2	1.0	0.9	1.8	27.5	1890
3x70/35	2	1.1	0.9	2.0	31.7	2660
3x95/50	2	1.1	1.0	2.1	35.8	3650
3x120/70	2	1.2	1.1	2.3	39.9	4610
3x150/70	2	1.4	1.1	2.4	44.6	5450
3x185/95	2	1.6	1.1	2.6	49.5	6680
3x240/120	2	1.7	1.2	2.8	55.7	8690
3x300/150	2	1.8	1.4	3.0	61.4	11170
3x400/185	2	1.8	1.6	3.2	70.4	11480
4 Cores						
4x1.5	2	0.7		1.8	10.4	169
4x2.5	2	0.7		1.8	11.3	220
4x4.0	2	0.7		1.8	12.5	297
4x6.0	2	0.7		1.8	13.7	392
4x10	2	0.7		1.8	15.7	585
4x16	2	0.7		1.8	17.8	851
4x25	2	0.9		1.8	21.5	1200
4x35(S)	2	0.9		1.8	24.1	1600
4x50(S)	2	1.0		1.8	27.8	2200
4x70(S)	2	1.1		2.0	32.0	3050
4x95(S)	2	1.1		2.1	36.1	4070
4x120(S)	2	1.2		2.3	40.2	5915

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Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	mm
4x150(S)	2	1.4	2.4	44.9	6350
4x185(S)	2	1.6	2.6	49.8	7890
4x240(S)	2	1.7	2.8	56.0	10400
4x300(S)	2	1.8	3.0	61.7	12810
4x400(S)	2	2.0	3.2	70.7	15869
(S) - Sectoral Stranded Conductors					
5 Cores					
5x1.5	2	0.7	1.8	11.6	205
5x2.5	2	0.7	1.8	12.8	265
5x4.0	2	0.7	1.8	14.3	360
5x6.0	2	0.7	1.8	15.8	478
5x10	2	0.7	1.8	18.3	720
5x16	2	0.7	1.8	21.2	1059
5x25	2	0.9	1.8	25.8	1620
5x35	2	0.9	1.8	28.9	2164
5x50	2	1.0	2.1	33.6	2924
5x70	2	1.1	2.2	39.2	4130
5x95	2	1.1	2.4	44.8	5618
5x120	2	1.2	2.5	49.8	7039
5x150	2	1.4	2.7	55.5	8655
5x185	2	1.6	2.9	62.1	10833
5x240	2	1.7	3.1	70.1	14091
7 Cores					
7x1.5	2	0.7	1.8	12.4	225
7x2.5	2	0.7	1.8	13.8	303
7x4.0	2	0.7	1.8	15.5	422
10 Cores					
10x1.5	2	0.7	1.8	15.6	325
10x2.5	2	0.7	1.8	17.5	426
10x4.0	2	0.7	1.8	19.7	597
12 Cores					
12x1.5	2	0.7	1.8	16.2	370
12x2.5	2	0.7	1.8	18.1	489
12x4.0	2	0.7	1.8	20.3	690
19 Cores					
19x1.5	2	0.7	1.8	19.0	516
19x2.5	2	0.7	1.8	21.3	725
19x4.0	2	0.7	1.8	24.0	1037
27 Cores					
27x1.5	2	0.7	1.8	22.7	712
27x2.5	2	0.7	1.8	25.5	1004
27x4.0	2	0.7	1.8	28.8	1445
37 Cores					

Conductor		FGD400 1RV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	mm
37x1.5	2	0.7	1.8	25.5	941
37x2.5	2	0.7	1.8	28.7	1334
37x4.0	2	0.7	1.8	32.5	1932
48 Cores					
48x1.5	2	0.7	1.8	29.0	1186
48x2.5	2	0.7	1.9	32.9	1706
48x4.0	2	0.7	1.9	37.3	2479

Note: Other conductor sizes & core configurations are available upon request. The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671:2008 table 4E2A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method E (free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4.0	33	30	40	35	45	40	49	42
6.0	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456

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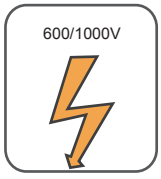
Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method E (free air or on a perforated cable tray etc. horizontal or vertical)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400	-	-	625	536	803	667	865	741

Voltage Drop (Per Amp Per Meter) according to BS 7671:2008 table 4E2B

Nominal Cross Section Area	Two-core cable d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4.0	12	12			10		
6.0	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

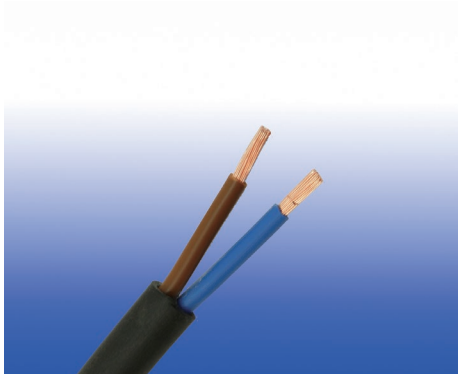
Standard

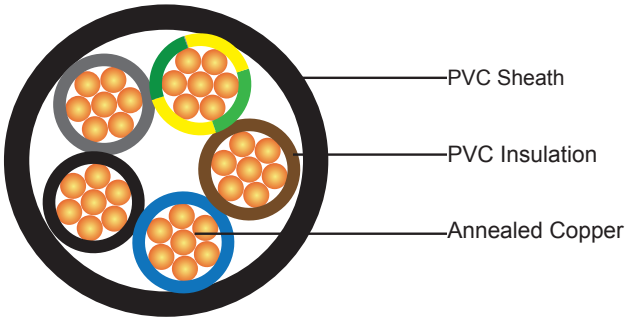
Flame Retardancy
IEC 60332-1

600/1000V PVC Insulated, PVC Sheathed,

Unarmoured Power Cables (2-5 Cores & Multicore)

FGD400 1VV-R (CU/PVC/PVC 600/1000V Class 2)
VDE Code: NYY





APPLICATION

The cables are mainly use in fixed installations in industrial areas, buildings and similar applications but not for burial in the ground, either directly or in ducts.

STANDARDS

Basic design to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.
Insulation: PVC/A according to IEC 60502-1.
Inner Covering Option: Extruded PVC or polymeric compound.
Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey. Alternatively, green-and-yellow, blue, brown

Four-core: Blue, brown, black, grey. Alternatively, green-and-yellow, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Note: Depending on their intended use, the cables might be subject to the core colour requirements specified in BS 7671 or other standards, or in statutory requirements.

Sheath Colour: Black, other colours can be offered upon request

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds):

Conductor cross-section ≤300 mm^2:160°C

Conductor cross-section >300 mm^2:140°C

Minimum bending radius: 12 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1VV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
2 Cores					
2x1.5	2	0.8	1.8	9.6	120
2x2.5	2	0.8	1.8	10.4	151
2x4.0	2	1.0	1.8	12.2	212
2x6.0	2	1.0	1.8	13.2	266
2x10	2	1.0	1.8	14.8	370
2x16	2	1.0	1.8	16.6	510
2x25	2	1.2	1.8	19.6	740
2x35	2	1.2	1.8	21.8	986
2x50	2	1.4	1.8	25.2	1355
2x70	2	1.4	1.9	28.1	1798
2x95	2	1.6	2.0	32.4	2419
2x120	2	1.6	2.1	35.4	3003
2x150	2	1.8	2.2	39.2	3696
2x185	2	2.0	2.4	43.3	4536
2x240	2	2.2	2.5	48.9	5849
2x300	2	2.4	2.7	54.0	7223
2x400	2	2.6	2.9	61.5	9566
3 Cores					
3x1.5	2	0.8	1.8	10.1	149
3x2.5	2	0.8	1.8	10.9	192
3x4.0	2	1.0	1.8	12.9	277
3x6.0	2	1.0	1.8	13.9	354
3x10	2	1.0	1.8	15.7	503
3x16	2	1.0	1.8	17.6	707
3x25	2	1.2	1.8	20.8	1040

Conductor		FGD400 1VV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
3x35	2	1.2	1.8	23.2	1401
3x50	2	1.4	1.8	26.9	1942
3x70	2	1.4	1.9	30.1	2589
3x95	2	1.6	2.1	34.7	3514
3x120	2	1.6	2.2	38	4372
3x150	2	1.8	2.3	42.1	5390
3x185	2	2.0	2.5	46.5	6615
3x240	2	2.2	2.7	52.5	8576
3x300	2	2.4	2.8	58	10564
3x400	2	2.6	3.1	66.1	14049
3 Cores+1 Earth Conductor					
		power conductor	earth conductor		
3x 16/10	2	1.0	1.0	1.8	19.0	764
3x 25/16	2	1.2	1.0	1.8	22.6	1137
3x 35/16	2	1.2	1.0	1.8	25.3	1494
3x 50/25	2	1.4	1.2	1.9	29.6	2120
3x 70/35	2	1.4	1.2	2.0	33.2	2862
3x 95/50	2	1.6	1.4	2.2	38.4	3917
3x120/70	2	1.6	1.4	2.3	42.0	4973
3x150/70	2	1.4	1.2	2.5	46.6	5861
3x185/95	2	1.6	1.4	2.6	51.6	7321
3x240/120	2	1.6	1.4	2.9	58.3	9433
3x300/150	2	1.8	1.6	3.1	64.5	11714
3x400/185	2	2.0	1.6	3.3	73.5	15404
4 Cores					
4x1.5	2	0.8		1.8	10.8	180
4x2.5	2	0.8		1.8	11.8	236
4x4.0	2	1.0		1.8	14	346
4x6.0	2	1.0		1.8	15.2	447
4x10	2	1.0		1.8	17.1	642
4x16	2	1.0		1.8	19.3	910
4x25	2	1.2		1.8	22.9	1347
4x35	2	1.2		1.8	25.6	1824
4x50	2	1.4		1.9	29.9	2553
4x70	2	1.4		2.0	33.5	3409
4x95	2	1.6		2.2	38.7	4628
4x120	2	1.6		2.3	42.3	5763
4x150	2	1.8		2.5	46.9	7132
4x185	2	2.0		2.6	51.9	8723
4x240	2	2.2		2.9	58.6	11344
4x300	2	2.4		3.1	64.8	14012

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Conductor		FGD400 1VV-R			
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	kg/km
4x400	2	2.6	3.3	73.8	18590
Multicore					
5x1.5	2	0.8	1.8	11.7	213
7x1.5	2	0.8	1.8	12.6	270
10x1.5	2	0.8	1.8	15.6	371
12x1.5	2	0.8	1.8	16.1	424
14x1.5	2	0.8	1.8	16.8	480
19x1.5	2	0.8	1.8	18.6	619
21x1.5	2	0.8	1.8	19.5	676
24x1.5	2	0.8	1.8	21.6	769
30x1.5	2	0.8	1.8	22.8	927
40x1.5	2	0.8	1.8	27.7	1196
48x1.5	2	0.8	1.9	28.2	1430
61x1.5	2	0.8	1.9	30.9	1773
5x2.5	2	0.8	1.8	12.8	281
7x2.5	2	0.8	1.8	13.8	363
10x2.5	2	0.8	1.8	17.2	503
12x2.5	2	0.8	1.8	17.7	580
14x2.5	2	0.8	1.8	18.6	660
19x2.5	2	0.8	1.8	20.6	860
21x2.5	2	0.8	1.8	21.6	941
24x2.5	2	0.8	1.8	24	1072
30x2.5	2	0.8	1.8	25.4	1302
40x2.5	2	0.8	2.0	31.1	1720
48x2.5	2	0.8	2.0	31.7	2039
61x2.5	2	0.8	2.1	34.7	2557

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671 table 4D2A

Conductor cross-sectional area	Reference Method A (enclosed in conduit in thermally insulating wall etc)		Reference Method B (enclosed in conduit on a wall or in trunking etc)		Reference Method C (clipped direct)		Reference Method G (in free air) Spaced by one cable diameter	
	1 two-core cables*, single-phase a.c. or d.c.	1 three-core cable* or 1 four-core cable, three -phase a.c.	1 two-core cables*, single-phase a.c. or d.c.	1 three-core cable* or 1 four-core cable, three -phase a.c.	1 two-core cables*, single-phase a.c. or d.c.	1 three-core cable* or 1 four-core cable, three -phase a.c.	1 two-core cables*, single-phase a.c. or d.c.	1 three-core cable* or 1 four-core cable, three -phase a.c.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4.0	25	23	30	27	36	32	40	34
6.0	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	379	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400	-	-	470	402	634	557	715	597

* with or without a protective conductor

Voltage Drop (Per Amp Per Meter) according to BS 7671 table 4D2B

Nominal Cross Section Area	Two-core cable d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	29	29			25		
2.5	18	18			15		
4.0	11	11			9.5		
6.0	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57

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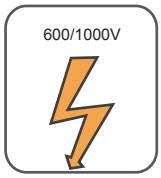
Nominal Cross Section Area	Two-core cable d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

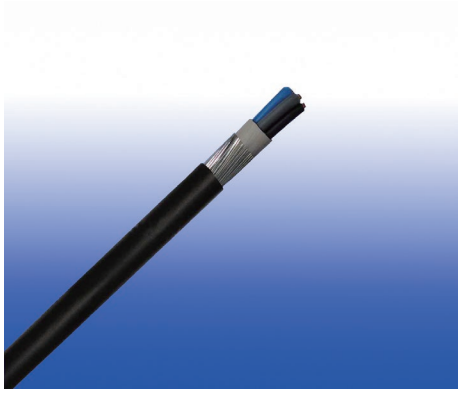
Standard

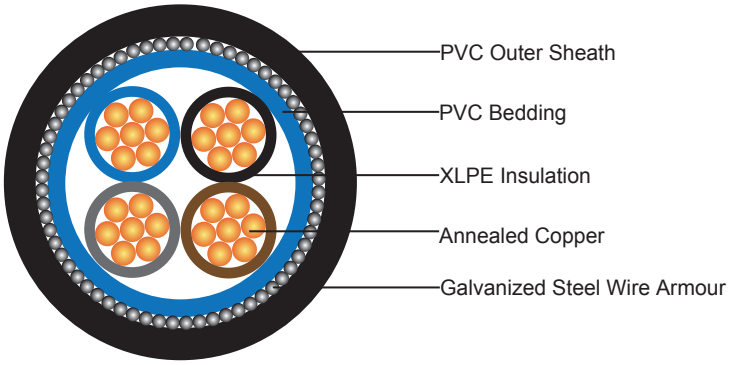
Flame Retardancy
IEC60332-1

600/1000V XLPE Insulated, PVC Sheathed,

Armoured Power Cables to BS 5467 (2-5 Cores)

FGD400 1RVMV-R (CU/XLPE/PVC/SWA/PVC 600/1000V Class 2)
BS Code: 6942X/6943X/6944X/6945X





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design to BS 5467

Approvals:
TUV Certification (Z1 17 01 98200 003)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS EN 60228 class 2.
Insulation: Extruded XLPE GP 8 according to BS 7655-1.3.
Bedding: PVC.
Armouring: Galvanized steel wire
Outer Sheath: PVC Type 9 according to BS 7655-4.2.
Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite

properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey

Four-core: Blue, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (XLPE): 90°C

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
2 Cores							
2x1.5[a]	2	0.6	0.8	0.9	1.3	12.1	320
2x2.5[a]	2	0.7	0.8	0.9	1.4	13.6	365
2x4.0[a]	2	0.7	0.8	0.9	1.4	14.7	440
2x6.0[a]	2	0.7	0.8	0.9	1.4	15.9	470
2x10[a]	2	0.7	0.8	0.9	1.5	18.0	800
2x16[a]	2	0.7	0.8	1.25	1.5	20.4	900
2x25[b]	2	0.9	0.8	1.25	1.6	20.4	1240
2x25[a]	2	0.9	0.8	1.25	1.6	24.1	1240
2x35[b]	2	0.9	1.0	1.6	1.7	23.3	1710
2x35[a]	2	0.9	1.0	1.6	1.7	27.7	1710
2x50[b]	2	1.0	1.0	1.6	1.8	25.8	1800
2x70[b]	2	1.1	1.0	1.6	1.9	29.0	2320
2x95[b]	2	1.1	1.2	2.0	2.0	33.1	3150
2x120[b]	2	1.2	1.2	2.0	2.1	36.1	3880
2x150[b]	2	1.4	1.2	2.0	2.2	39.3	4820
2x185[b]	2	1.6	1.4	2.5	2.4	44.7	5920
2x240[b]	2	1.7	1.4	2.5	2.5	49.0	7300
2x300[b]	2	1.8	1.6	2.5	2.6	53.5	8770
2x400[b]	2	2.0	1.6	2.5	2.8	59.0	10905
3 Cores							
3x1.5[a]	2	0.6	0.8	0.9	1.3	12.6	340
3x2.5[a]	2	0.7	0.8	0.9	1.4	14.1	408
3x4.0[a]	2	0.7	0.8	0.9	1.4	15.3	498

Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
3x6.0[a]	2	0.7	0.8	0.9	1.4	16.6	600
3x10[a]	2	0.7	0.8	1.25	1.5	19.5	915
3x16[a]	2	0.7	0.8	1.25	1.6	21.6	1130
3x25[a]	2	0.9	1.0	1.6	1.7	26.7	1710
3x25[b]	2	0.9	1.0	1.6	1.7	23.6	1710
3x35[a]	2	0.9	1.0	1.6	1.8	29.4	2100
3x35[b]	2	0.9	1.0	1.6	1.8	25.7	2100
3x50[b]	2	1.0	1.0	1.6	1.8	28.5	2450
3x70[b]	2	1.1	1.0	1.6	1.9	32.2	3120
3x95[b]	2	1.1	1.2	2.0	2.1	37.0	4310
3x120[b]	2	1.2	1.2	2.0	2.2	40.4	5160
3x150[b]	2	1.4	1.4	2.5	2.3	45.5	7160
3x185[b]	2	1.6	1.4	2.5	2.4	49.8	8600
3x240[b]	2	1.7	1.4	2.5	2.6	55.1	10755
3x300[b]	2	1.8	1.6	2.5	2.7	60.2	13080
3x400[b]	2	2.0	1.6	2.5	2.9	66.6	15810
4 Cores							
4x1.5[a]	2	0.6	0.8	0.9	1.3	13.3	390
4x2.5[a]	2	0.7	0.8	0.9	1.4	15.0	470
4x4.0[a]	2	0.7	0.8	0.9	1.4	16.4	580
4x6.0[a]	2	0.7	0.8	1.25	1.5	18.7	805
4x10[a]	2	0.7	0.8	1.25	1.5	21.1	1090
4x16[a]	2	0.7	0.8	1.25	1.6	23.4	1320
4x25[a]	2	0.9	1.0	1.6	1.7	28.9	1840
4x25[b]	2	0.9	1.0	1.6	1.7	26.1	1840
4x35[a]	2	0.9	10	1.6	1.8	31.9	2310
4x35[b]	2	0.9	1.0	1.6	1.8	28.6	2310
4x50[b]	2	1.0	1.0	1.6	1.9	32.0	2970
4x70[b]	2	1.1	1.2	2.0	2.1	37.7	4240
4x95[b]	2	1.1	1.2	2.0	2.2	41.7	5400
4x120[b]	2	1.2	1.4	2.5	2.3	47.1	7000
4x150[b]	2	1.4	1.4	2.5	2.4	51.4	8350
4x185[b]	2	1.6	1.4	2.5	2.6	56.6	10130
4x240[b]	2	1.7	1.6	2.5	2.7	63.0	12840
4x300[b]	2	1.8	1.6	2.5	2.9	68.8	15530
4x400[b]	2	2.0	1.8	3.15	3.2	78.1	19950
5 Cores							
5x1.5[a]	2	0.6	0.8	0.9	1.4	14.3	430
5x2.5[a]	2	0.7	0.8	0.9	1.4	16.1	545
5x4.0[a]	2	0.7	0.8	0.9	1.5	17.8	680
5x6.0[a]	2	0.7	0.8	1.25	1.5	20	840

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Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight
No.xmm²		mm	mm	mm	mm	mm	kg/km
5x10[a]	2	0.7	0.8	1.25	1.6	22.9	1105
5x16[a]	2	0.7	1.0	1.6	1.7	26.6	1450
5x25[a]	2	0.9	1.0	1.6	1.8	31.5	2245
5x35[a]	2	0.9	1.0	1.6	1.9	34.8	2840
5x50[a]	2	1.0	1.2	2.0	2.0	40.4	3895
5x70[a]	2	1.1	1.2	2.0	2.2	46.3	5145

[a] Circular or compacted circular stranded conductors (class 2).
[b] Shaped stranded conductor (class 2).
Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

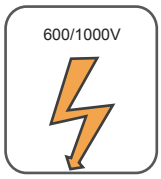
Current-Carrying Capacities (Amp) according to BS7671:2008 table 4E4A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray, horizontal or vertical)		Reference Method D (direct in in groud or in ducting in groud. in or around buildings)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.
1	2	3	4	5	6	7
mm²	A	A	A	A	A	A
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4.0	49	42	52	44	43	36
6.0	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75
25	146	124	152	131	116	96
35	180	154	188	162	139	115
50	219	187	228	197	164	135
70	279	238	291	251	203	167
95	338	289	354	304	239	197
120	392	335	410	353	271	223
150	451	386	472	406	306	251
185	515	441	539	463	343	281
240	607	520	636	546	395	324
300	698	599	732	628	446	365
400	787	673	847	728	-	-

Voltage Drop (Per Amp Per Meter) according to BS7671:2008 table 4E4B

Conductor cross-sectional area	Two-core cables, d.c.	Two-core cable, single-phase a.c.			Three-or four core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4.0	12	12			10		
6.0	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.38	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
BS EN 60332-1-2

Caledonian

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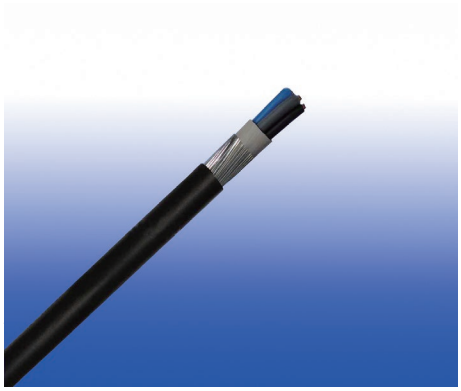
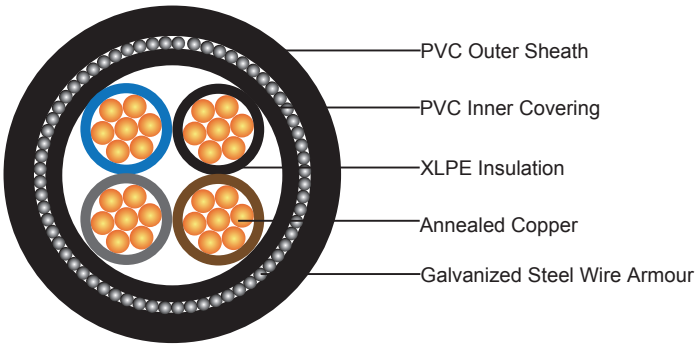
600/1000V XLPE Insulated, PVC Sheathed,

Armoured Power Cables to IEC 60502 (2-5&Multicore)

FGD400 1RVMV-R (CU/XLPE/PVC/SWA/PVC 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings. This product type is TUV approved.

STANDARDS

Basic design adapted to IEC 60502-1

Approvals:

TUV Certification (Z1 17 01 98200 004)

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: XLPE according to IEC 60502-1.

Inner Covering: Extruded PVC or polymeric compound.

Armouring: Galvanized steel wire

Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey

Four-core: Blue, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Other colours can be offered upon request.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation: 80°C (For ST_1 Sheath); 90°C (For ST_2 Sheath)

Maximum short circuit temperature (5 Seconds): 250°C

Minimum bending radius: 12 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm		mm	kg/km
2 Cores							
2x1.5	2	0.7	1.0	0.9	1.8	13.2	325
2x2.5	2	0.7	1.0	0.9	1.8	14.0	372
2x4.0	2	0.7	1.0	0.9	1.8	15.1	438
2x6.0	2	0.7	1.0	1.25	1.8	17.1	645
2x10	2	0.7	1.0	1.25	1.8	19.0	806
2x16	2	0.7	1.0	1.25	1.8	21.1	1015
2x25	2	0.9	1.0	1.6	1.8	25.2	1517
2x35	2	0.9	1.0	1.6	1.8	27.5	1830
2x50	2	1.0	1.0	1.6	1.9	30.8	2259
2x70	2	1.1	1.0	2.0	2.0	35.8	3182
2x95	2	1.1	1.2	2.0	2.1	40.2	4022
2x120	2	1.2	1.2	2.0	2.3	44.2	4810
2x150	2	1.4	1.2	2.5	2.4	49.3	6120
2x185	2	1.6	1.4	2.5	2.6	54.7	7375
2x240	2	1.7	1.4	2.5	2.7	60.5	9037
2x300	2	1.8	1.6	2.5	2.9	66.6	10871
2x400	2	2.0	1.6	2.5	3.1	73.7	13256
3 Cores							
3x1.5	2	0.7	1.0	0.9	1.8	13.6	361

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Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm		mm	kg/km
3x2.5	2	0.7	1.0	0.9	1.8	14.5	420
3x4.0	2	0.7	1.0	0.9	1.8	15.7	505
3x6.0	2	0.7	1.0	1.25	1.8	17.8	742
3x10	2	0.7	1.0	1.25	1.8	19.8	954
3x16	2	0.7	1.0	1.25	1.8	22.1	1231
3x25	2	0.9	1.0	1.6	1.8	26.5	1857
3x35	2	0.9	1.0	1.6	1.8	29.0	2281
3x50	2	1.0	1.0	1.6	1.9	32.5	2856
3x70	2	1.1	1.0	2.0	2.1	38.0	4056
3x95	2	1.1	1.2	2.0	2.2	42.7	5196
3x120	2	1.2	1.2	2.0	2.3	46.8	6247
3x150	2	1.4	1.4	2.5	2.5	52.8	8000
3x185	2	1.6	1.4	2.5	2.7	58.1	9626
3x240	2	1.7	1.4	2.5	2.8	64.3	11939
3x300	2	1.8	1.6	2.5	3.0	70.8	14468
3x400	2	2.0	1.6	3.2	3.3	80.0	18832
3 Cores+1 Earth Conductor							
		power conductor	earth conductor				
3x16/10	2	0.7	0.7	1.0	1.6	1.8	22.7	1446
3x25/16	2	0.9	0.7	1.0	1.6	1.8	26.5	1925
3x35/16	2	0.9	0.7	1.0	1.6	1.9	29.0	2607
3x50/25	2	1.0	0.9	1.0	1.6	2.1	33.0	3413
3x70/35	2	1.1	0.9	1.2	2.0	2.2	38.0	4710
3x95/50	2	1.1	1.0	1.2	2.0	2.3	42.4	6179
3x120/70	2	1.2	1.1	1.2	2.0	2.5	48.0	8195
3x150/70	2	1.4	1.1	1.4	2.5	2.7	52.0	10304
3x185/95	2	1.6	1.1	1.4	2.5	2.8	57.2	13172
3x240/120	2	1.7	1.2	1.6	2.5	3.1	64.0	16711
3x300/150	2	1.8	1.4	1.6	2.5	3.2	69.8	21094
3x400/185	2	2.0	1.6	1.6	3.2	3.6	78.6	27130
4 Cores							
4x1.5	2	0.7	1.0	0.9	1.8	14.4	406
4x2.5	2	0.7	1.0	0.9	1.8	15.4	479
4x4.0	2	0.7	1.0	1.25	1.8	17.6	718
4x6.0	2	0.7	1.0	1.25	1.8	19.0	859
4x10	2	0.7	1.0	1.25	1.8	21.3	1124
4x16	2	0.7	1.0	1.6	1.8	24.5	1628
4x25	2	0.9	1.0	1.6	1.8	28.6	2237
4x35	2	0.9	1.0	1.6	1.9	31.6	2794
4x50	2	1.0	1.0	2.0	2.1	36.5	3813
4x70	2	1.1	1.2	2.0	2.2	41.9	5065
4x95	2	1.1	1.2	2.0	2.3	46.7	6463
4x120	2	1.2	1.4	2.5	2.5	52.9	8401
4x150	2	1.4	1.4	2.5	2.7	58.0	9987
4x185	2	1.6	1.4	2.5	2.8	63.7	12040

Conductor		FGD400 1RVMV-R					
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm		mm	kg/km
4x240	2	1.7	1.6	2.5	3.1	71.5	15186
4x300	2	1.8	1.6	2.5	3.2	78.0	18316
4x400	2	2.0	1.8	3.2	3.6	88.7	23930
5 Cores							
5x1.5	2	0.7	1.0	0.9	1.8	15.5	467
5x2.5	2	0.7	1.0	0.9	1.8	16.6	558
5x4.0	2	0.7	1.0	0.9	1.8	18.1	692
5x6.0	2	0.7	1.0	1.25	1.8	20.3	972
5x10	2	0.7	1.0	1.25	1.8	22.8	1300
5x16	2	0.7	1.0	1.6	1.8	26.4	1899
5x25	2	0.9	1.0	1.6	1.9	31.2	2671
5x35	2	0.9	1.0	1.6	2.0	34.5	3371
Multicore							
7C1.5	2	0.7	1.0	0.9	1.8	16.4	540
8C1.5	2	0.7	1.0	0.9	1.8	18.0	692
10C1.5	2	0.7	1.0	1.25	1.8	20.1	819
12C1.5	2	0.7	1.0	1.25	1.8	20.5	882
19C1.5	2	0.7	1.0	1.25	1.8	23.1	1137
27C1.5	2	0.7	1.0	1.6	1.8	27.2	1618
37C1.5	2	0.7	1.0	1.6	1.8	29.7	1958
48C1.5	2	0.7	1.0	1.6	1.9	33.4	2378
7C2.5	2	0.7	1.0	1.25	1.8	17.6	657
8C2.5	2	0.7	1.0	1.25	1.8	19.4	834
10C2.5	2	0.7	1.0	1.25	1.8	21.7	995
12C2.5	2	0.7	1.0	1.25	1.8	22.3	1082
19C2.5	2	0.7	1.0	1.6	1.8	25.2	1428
27C2.5	2	0.7	1.0	1.6	1.8	29.8	2033
37C2.5	2	0.7	1.0	1.6	1.8	32.7	2499
48C2.5	2	0.7	1.0	2.0	1.9	36.8	3063

Note: Other conductor sizes & core configurations are available upon request. The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 90°C

Ambient Temperature: 30°C

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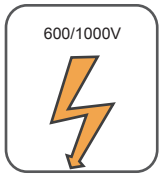
Current-Carrying Capacities (Amp) according to BS7671:2008 table 4E4A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray, horizontal or vertical)		Reference Method D (direct in in groud or in ducting in groud. in or around buildings)	
	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.	1 two-core cable*, single-phase a.c. or d.c.	1 three-or four core cable*, three-phase a.c.
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.5	27	23	29	25	25	21
2.5	36	31	39	33	33	28
4.0	49	42	52	44	43	36
6.0	62	53	66	56	53	44
10	85	73	90	78	71	58
16	110	94	115	99	91	75
25	146	124	152	131	116	96
35	180	154	188	162	139	115
50	219	187	228	197	164	135
70	279	238	291	251	203	167
95	338	289	354	304	239	197
120	392	335	410	353	271	223
150	451	386	472	406	306	251
185	515	441	539	463	343	281
240	607	520	636	546	395	324
300	698	599	732	628	446	365
400	787	673	847	728	-	-

Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4E4B

Conductor cross-sectional area	Two-core cables, d.c.	Two-core cable, single-phase a.c.			Three-or four core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31	31			27		
2.5	19	19			16		
4.0	12	12			10		
6.0	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.38	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

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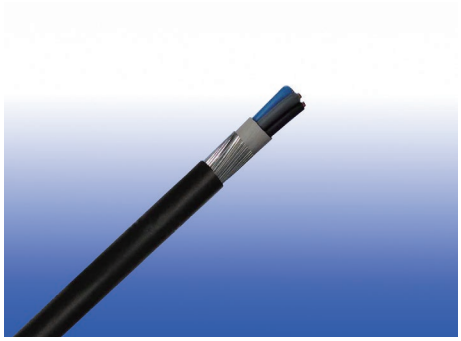
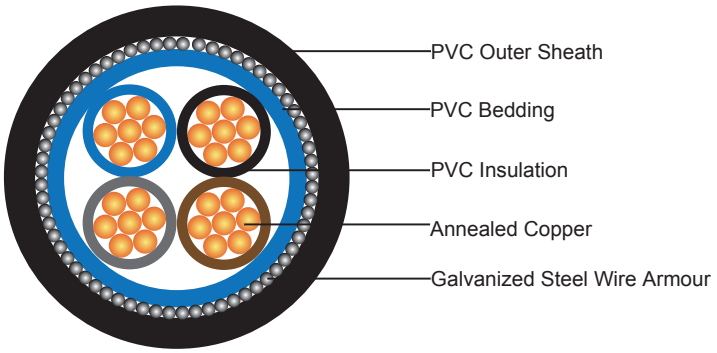
600/1000V PVC Insulated, PVC Sheathed,

Armoured Power Cables to BS 6346 (2-5 Cores)

FGD400 1VVMV-R (CU/PVC/PVC/SWA/PVC 600/1000V Class 2)





APPLICATION

The cables are intended for use in fixed installations in industrial areas, buildings and similar applications.

STANDARDS

Basic design to BS 6346

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	BS EN 50265-2-1

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to BS 6360 class 2.

Insulation: PVC TI 1 according to BS 7655-3.1.

Bedding: Extruded PVC or taped bedding comprising two or more layers of PVC tape or other synthetic tape (for cables having a nominal conductor area of 16mm² and above).

Armouring: Galvanized steel wire.

Outer Sheath: PVC TM 1 according to BS 7655-4.1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey

Four-core: Blue, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Sheath Colour: Black (other colours upon request)

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C

Minimum bending radius:

Circular copper conductors: 6 x Overall Diameter

Shaped copper conductors: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor		FGD400 1VVMV-R						
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter		Approx. Weight
						Extruded Bedding	Taped Bedding	
No.xmm²		mm	mm	mm	mm	mm	mm	kg/km
2 Cores								
2x1.5[a]	2	0.6	0.8	0.9	1.4	12.3	-	278
2x2.5[a]	2	0.7	0.8	0.9	1.4	13.6	-	355
2x4.0[a]	2	0.8	0.8	0.9	1.4	15.1	-	437
2x6.0[a]	2	0.8	0.8	0.9	1.5	16.5	-	524
2x10[a]	2	1.0	0.8	1.25	1.6	20.1	-	835
2x16[a]	2	1.0	0.8	1.25	1.6	21.9	21.9	1045
2x25[b]	2	1.2	1.0	1.6	1.7	23.0	22.6	1535
2x25[a]	2	1.2	1.0	1.6	1.7	26.7	26.3	1608
2x35[b]	2	1.2	1.0	1.6	1.8	24.8	24.4	1839
2x35[a]	2	1.2	1.0	1.6	1.8	29.2	28.8	1941
2x50[b]	2	1.4	1.0	1.6	1.9	27.8	27.4	1364
2x70[b]	2	1.4	1.0	1.6	1.9	30.4	30.0	2328
2x95[b]	2	1.6	1.2	2.0	2.1	35.5	34.7	3759
2x120[b]	2	1.6	1.2	2.0	2.2	38.0	37.2	3217
2x150[b]	2	1.8	1.2	2.0	2.3	41.3	40.5	3732
2x185[b]	2	2.0	1.4	2.5	2.4	46.4	45.2	6669
2x240[b]	2	2.2	1.4	2.5	2.5	51.2	50.0	6432
2x300[b]	2	2.4	1.6	2.5	2.7	56.4	54.8	7680
2x400[b]	2	2.6	1.6	2.5	2.9	61.9	60.3	12535
3 Cores								
3x1.5[a]	2	0.6	0.8	0.9	1.4	12.8	-	311
3x2.5[a]	2	0.7	0.8	0.9	1.4	14.1	-	405
3x4.0[a]	2	0.8	0.8	0.9	1.4	15.8	-	510
3x6.0[a]	2	0.8	0.8	1.25	1.5	18.0	-	727
3x10[a]	2	1.0	0.8	1.25	1.6	21.2	-	998
3x16[a]	2	1.0	0.8	1.25	1.6	23.1	23.1	1291
3x25[b]	2	1.2	1.0	1.6	1.7	25.0	24.6	1879

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Conductor		FGD400 1VVMV-R						
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Bedding Thickness	Nominal Armour Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter		Approx. Weight
						Extruded Bedding	Taped Bedding	
No.xmm²		mm	mm	mm	mm	mm	mm	kg/km
3x25[a]	2	1.2	1.0	1.6	1.7	28.2	27.8	1989
3x35[b]	2	1.2	1.0	1.6	1.8	27.1	26.7	2286
3x35[a]	2	1.2	1.0	1.6	1.8	30.8	30.4	2439
3x50[b]	2	1.4	1.0	1.6	1.9	30.5	30.1	1638
3x70[b]	2	1.4	1.2	2.0	2.0	35.0	34.2	3272
3x95[b]	2	1.6	1.2	2.0	2.1	39.3	38.5	4789
3x120[b]	2	1.6	1.2	2.0	2.2	42.2	41.4	4068
3x150[b]	2	1.8	1.4	2.5	2.4	47.5	46.3	5231
3x185[b]	2	2.0	1.4	2.5	2.5	51.9	50.7	8660
3x240[b]	2	2.2	1.6	2.5	2.6	57.8	56.2	8395
3x300[b]	2	2.4	1.6	2.5	2.8	63.2	61.6	10006
3x400[b]	2	2.6	1.6	2.5	3.0	69.6	68.0	16856
4 Cores								
4x1.5[a]	2	0.6	0.8	0.9	1.4	13.5	-	353
4x2.5[a]	2	0.7	0.8	0.9	1.4	15.0	-	466
4x4.0[a]	2	0.8	0.8	1.25	1.5	17.8	-	708
4x6.0[a]	2	0.8	0.8	1.25	1.5	19.2	-	850
4x10[a]	2	1.0	0.8	1.25	1.6	22.8	-	1186
4x16[a]	2	1.0	1.0	1.6	1.7	26.3	25.9	1751
4x25[b]	2	1.2	1.0	1.6	1.8	27.8	27.4	2254
4x25[a]	2	1.2	1.0	1.6	1.8	30.7	30.3	2401
4x35[b]	2	1.2	1.0	1.6	1.9	30.3	29.9	2769
4x35[a]	2	1.2	1.0	1.6	1.9	33.7	33.3	2972
4x50[b]	2	1.4	1.2	2.0	2.0	35.4	34.6	2198
4x70[b]	2	1.4	1.2	2.0	2.1	39.2	38.4	3961
4x95[b]	2	1.6	1.2	2.0	2.2	44.3	43.5	5891
4x120[b]	2	1.6	1.4	2.5	2.4	49.3	48.1	5437
4x150[b]	2	1.8	1.4	2.5	2.5	53.6	52.4	6357
4x185[b]	2	2.0	1.6	2.5	2.6	59.0	57.4	10827
4x240[b]	2	2.2	1.6	2.5	2.8	65.7	64.1	10363
4x300[b]	2	2.4	1.6	2.5	3.0	72.0	70.4	12420
4x400[b]	2	2.6	1.8	3.15	3.3	81.3	79.3	22477
5 Cores								
5x1.5[a]	2	0.6	0.8	0.9	1.4	14.3	-	396
5x2.5[a]	2	0.7	0.8	0.9	1.5	16.3	-	538
5x4.0[a]	2	0.8	0.8	1.25	1.5	19.0	-	807
5x6.0[a]	2	0.8	0.8	1.25	1.6	20.9	-	987
5x10[a]	2	1.0	1.0	1.6	1.7	25.8	-	1581
5x16[a]	2	1.0	1.0	1.6	1.7	28.4	28.0	2039
5x25[a]	2	1.2	1.0	1.6	1.9	33.5	33.1	2840
5x35[a]	2	1.2	1.0	1.6	1.9	36.6	36.2	3518
5x50[a]	2	1.4	1.2	2.0	2.1	43.0	42.2	4881
5x70[a]	2	1.4	1.2	2.0	2.2	48.1	47.3	6325

[a] Circular or compacted circular stranded conductor (class 2)
[b] Shaped stranded conductor (class 2)

Note: The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

Current-Carrying Capacities (Amp) according to BS 7671: 2008 table 4D4A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray, horizontal or vertical)		Reference Method D (direct in ground or in ducting in ground. in or around buildings)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.5	21	18	22	19	22	18
2.5	28	25	31	26	29	24
4.0	38	33	41	35	37	30
6.0	49	42	53	45	46	38
10	67	58	72	62	60	50
16	89	77	97	83	78	64
25	118	102	128	110	99	82
35	145	125	157	135	119	98
50	175	151	190	163	140	116
70	222	192	241	207	173	143
95	269	231	291	251	204	169
120	310	267	336	290	231	192
150	356	306	386	332	261	217
185	405	348	439	378	292	243
240	476	409	516	445	336	280
300	547	469	592	510	379	316
400	621	540	683	590	-	-

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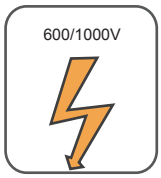
Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4D4B

Nominal Cross Section Area	Two-core cables d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	29	29			25		
2.5	18	18			15		
4.0	11	11			9.5		
6.0	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

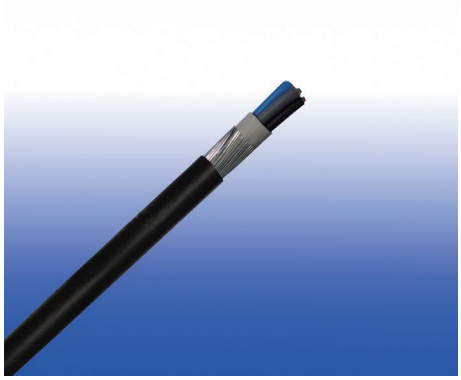
Standard

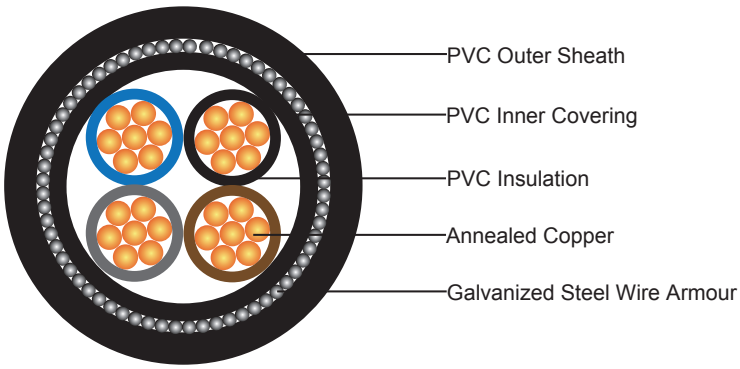
Flame Retardancy
BS EN 50265-2-1

600/1000V PVC Insulated, PVC Sheathed,

Armoured Power Cables to IEC 60502 (2-4 Cores)

FGD400 1VVMV-R (CU/PVC/PVC/SWA/PVC 600/1000V Class 2)





APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

STANDARDS

Basic design adapted to IEC 60502-1

FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	IEC 60332-1-2

VOLTAGE RATING

600/1000V

CABLE CONSTRUCTION

Conductor: Annealed copper wire, stranded according to IEC 60228 class 2.

Insulation: PVC/A according to IEC 60502-1.

Inner Covering: Extruded PVC or polymeric compound.

Armouring: Galvanized steel wire

Outer Sheath: Extruded PVC Type ST_1/ST_2 according to IEC 60502-1.

Outer Sheath Option: UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option. Compliance to fire performance standard (IEC 60332-1, IEC 60332-3, UL 1581, UL 1666 etc) depends on the oxygen index of the PVC compound and the overall cable design. LSPVC can also be provided upon request.

COLOUR CODE

Insulation Colour:

Two-core: Brown, blue

Three-core: Brown, black, grey

Four-core: Blue, brown, black, grey

Five-core: Green-and-yellow, blue, brown, black, grey

Other colours can be offered upon request.

Sheath Colour: Black, other colours can be offered upon request.

PHYSICAL AND THERMAL PROPERTIES

Maximum temperature range during operation (PVC): 70°C

Maximum short circuit temperature (5 Seconds): 160°C(≤300 mm²); 140°C(>300 mm²)

Minimum bending radius:

Circular copper conductors: 6 x Overall Diameter

Shaped copper conductors: 8 x Overall Diameter

CONSTRUCTION PARAMETERS

Conductor			FGD400 1VVMV-R				
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness	Nominal Inner Covering Thickness	Armour Wire Diameter	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm	mm	mm	mm	mm	kg/km
2 Cores							
2x2.5	2	0.8	1.0	0.8	1.8	14.0	380
2x4.0	2	1.0	1.0	1.25	1.8	16.7	604
2x6.0	2	1.0	1.0	1.25	1.8	17.7	689
2x10	2	1.0	1.0	1.25	1.8	19.3	841
2x16	2	1.0	1.0	1.25	1.8	21.1	1037
2x25	2	1.2	1.0	1.6	1.8	24.8	1513
2x35	2	1.2	1.0	1.6	1.8	27.0	1843
2x50	2	1.4	1.0	1.6	1.9	30.7	2356
2x70	2	1.4	1.0	2.0	2.1	34.5	3179
2x95	2	1.6	1.2	2.0	2.2	39.2	4042
2x120	2	1.6	1.2	2.0	2.3	42.2	4764
2x150	2	1.8	1.2	2.5	2.5	47.2	6095
2x185	2	2.0	1.4	2.5	2.6	51.6	7207
2x240	2	2.2	1.4	2.5	2.8	57.2	8861
2x300	2	2.4	1.6	2.5	3.0	62.8	10608
2x400	2	2.6	1.6	2.5	3.2	70.3	13385
3 Cores							
3x2.5	2	0.8	1.0	0.8	1.8	14.5	432
3x4.0	2	1.0	1.0	1.25	1.8	17.4	689
3x6.0	2	1.0	1.0	1.25	1.8	18.4	800
3x10	2	1.0	1.0	1.25	1.8	20.2	1001
3x16	2	1.0	1.0	1.6	1.8	22.8	1405
3x25	2	1.2	1.0	1.6	1.8	26.0	1860
3x35	2	1.2	1.0	1.6	1.9	28.5	2325
3x50	2	1.4	1.0	2.0	2.0	33.3	3266

Conductor				FGD400 1VVMV-R				
No. of Cores x Cross Section	Class of Conductor	Nominal Insulation Thickness		Nominal Inner Covering Thickness	Armour Wire Diameter	Nominal Sheath Thickness	Nominal Overall Diameter	Approx. Weight
No.xmm^2		mm		mm	mm	mm	mm	kg/km
3x70	2	1.4		1.2	2.0	2.1	37.0	4108
3x95	2	1.6		1.2	2.0	2.3	41.6	5245
3x120	2	1.6		1.2	2.5	2.4	45.9	6677
3x150	2	1.8		1.4	2.5	2.6	50.4	8016
3x185	2	2.0		1.4	2.5	2.7	54.8	9466
3x240	2	2.2		1.5	2.5	2.9	61.2	11805
3x300	2	2.4		1.6	2.5	3.1	66.8	14181
3x400	2	2.8		1.6	3.15	3.4	76.7	19235
3x500	2	2.8		1.8	3.15	3.7	83.6	23011
3 Cores+1 Earth Conductor								
3x10/6	2	1.0	1.0	1.0	1.25	1.8	21.9	1140
3x16/10	2	1.0	1.0	1.0	1.6	1.8	24.2	1633
3x25/16	2	1.2	1.0	1.0	1.6	1.8	27.9	2145
3x35/16	2	1.2	1.0	1.0	1.6	1.9	30.8	2659
3x50/25	2	1.4	1.2	1.0	2.0	2.0	36.4	3739
3x70/35	2	1.4	1.2	1.2	2.0	2.1	40.1	4720
3x95/50	2	1.6	1.4	1.2	2.5	2.3	46.3	6398
3x120/70	2	1.6	1.4	1.4	2.5	2.4	50.3	7746
3x150/70	2	1.8	1.4	1.4	2.5	2.6	55.0	9128
3x185/95	2	2.0	1.6	1.4	2.5	2.7	60.3	10916
3x240/120	2	2.2	1.6	1.6	2.5	2.9	67.0	13713
3x300/150	2	2.4	1.8	1.6	3.15	3.1	74.6	17403
3x400/185	2	2.6	2.0	1.8	3.15	3.4	84.1	20704
3x500/240	2	2.8	2.2	2.0	3.15	3.7	91.8	25817
4 Cores								
4x4.0	2	1.0		1.0	1.25	1.8	18.5	792
4x6.0	2	1.0		1.0	1.25	1.8	19.7	931
4x10	2	1.0		1.0	1.25	1.8	22.3	1185
4x16	2	1.0		1.0	1.6	1.8	24.5	1672
4x25	2	1.2		1.0	1.6	1.9	28.2	2260
4x35	2	1.2		1.0	1.6	2.0	31.1	2854
4x50	2	1.4		1.0	2.0	2.1	36.7	4013
4x70	2	1.4		1.2	2.0	2.3	40.4	5104
4x95	2	1.6		1.2	2.5	2.5	46.6	6996
4x120	2	1.6		1.4	2.5	2.6	50.6	8400
4x150	2	1.8		1.4	2.5	2.7	55.3	10008
4x185	2	2.0		1.4	2.5	2.9	60.6	11906
4x240	2	2.2		1.6	2.5	3.1	67.3	14963
4x300	2	2.4		1.6	3.15	3.4	74.9	18944
4x400	2	2.6		1.8	3.15	3.7	84.4	24304
4x500	2	2.8		2.0	3.15	3.9	92.1	29351

Note: Other conductor sizes & core confi gurations are available upon request. The parameters listed above are nominal values as per cable standards. Actual values may vary due to material and manufacturing process variations. For precise specifications or customized requirements, please contact us for further information.

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ELECTRICAL PROPERTIES

Conductor Operating Temperature: 70°C

Ambient Temperature: 30°C

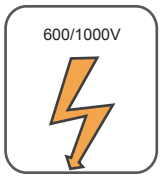
Current-Carrying Capacities (Amp) according to BS 7671: 2008 table 4D4A

Conductor cross-sectional area	Reference Method C (clipped direct)		Reference Method E (in free air or on a perforated cable tray, horizontal or vertical)		Reference Method D (direct in ground or in ducting in ground. in or around buildings)	
	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three- or four-core cable, three-phase a.c.
1	2	3	4	5	6	7
mm^2	A	A	A	A	A	A
1.5	21	18	22	19	22	18
2.5	28	25	31	26	29	24
4.0	38	33	41	35	37	30
6.0	49	42	53	45	46	38
10	67	58	72	62	60	50
16	89	77	97	83	78	64
25	118	102	128	110	99	82
35	145	125	157	135	119	98
50	175	151	190	163	140	116
70	222	192	241	207	173	143
95	269	231	291	251	204	169
120	310	267	336	290	231	192
150	356	306	386	332	261	217
185	405	348	439	378	292	243
240	476	409	516	445	336	280
300	547	469	592	510	379	316
400	621	540	683	590	-	-

Voltage Drop (Per Amp Per Meter) according to BS 7671: 2008 table 4D4B

Nominal Cross Section Area	Two-core cables d.c.	Two-core cable, single-phase a.c.			Three- or four-core cable, three-phase a.c.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	29	29			25		
2.5	18	18			15		
4.0	11	11			9.5		
6.0	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	0.165	1.25	1.10	0.145	1.10
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

Note: *Spacings larger than one cable diameter will result in a large voltage drop.
r = conductor resistance at operating temperature
x = reactance
z = impedance



Rated Voltage

Standard

Flame Retardancy
IEC 60332-1

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TYPE CODES FOR FLAME RETARDANT POWER & CONTROL CABLES

FGD A-B-C-D-E-F-G-H

H Conductor
U: Solid to IEC 60228 class 1
R: Stranded to IEC 60228 class 2
K: Flexible conductor of a cable for fixed installations (Class 5)
F: Flexible conductor of a flexible cable or cord (Class 5)

G Outer Sheath
V: Thermoplastic PVC 70°C
V2: Thermoplastic PVC 90°C

F Armour
M: Steel wire armour
MA: Aluminium wire armour
F: Steel tape armour
FA: Aluminium tape armour

E Inner Sheath
V: Thermoplastic PVC
V2: Thermoplastic PVC 90°C

D Screen
O: Overall aluminium screen
C: Overall copper braiding

C Insulation
R: XLPE
V: PVC

B Voltage
05: 300/500V
07: 450/750V
1: 600/1000V

A Type
100: Single core unsheathed
200: 300/500V & 450/750V multicore/multipair
300: Single core sheathed
400: 600/1000V multicore

Technical Information for Fire Properties

FLAME RETARDANCE IN ACCORDANCE WITH DIFFERENT STANDARDS

The following standards specify a method for flame propagation test for single core cables. The single cable sample undergoes the flame action of a bunsen burner. The test only lasts few minutes.

The IEC 60332-1 standards are taken over as EN standards and transferred to national standards Example: IEC 60332-1 becomes EN 60332-1 and introduced in Germany as DIN EN 60332-1.

Flame retardance in accordance with EN 60332:2004

EN 60332:2004 Tests on electrical and optical cables under fire conditions. The standard applies to single insulated wires (cables) and requires a vertical flame test with a maximum flame climb of 450mm. The test lasts between 1 and8 minutes, depending on the cable diameter.

EN 60332-1-1:2004 / BS EN 60332-1-1:2004 / IEC 60332 -1-1:2004 / DIN EN 60332-1-1:2004 / VDE 0482-1-1:2005 -06 Test on electrical and optical cables under fire conditions. Test for a vertical flame propagation fo a single insulated wire or cables.

EN 60332-1-2:2004 / BS EN 60332-1-2:2004 / IEC 60332-1-2:2004 / DIN EN 60332-1-2:2004 / VDE 0482-1-2:2005-06 / CEI 60332-1-2(CEI 20-35/1-2) Tests on electrical and optical fiber cables under fire conditions. Test for a verticalflame propagation for a single insulated wire or cable – Procedure for 1kW premixed flame.

This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 1-1 specifies the test apparatus and Part 1-2 specifies the test procedure.

The cable sample is deemed to pass the test if the distance between the lower edge of the top support and the onset of charring is greater than 50mm. In addition, a failure shall be recorded if burning extends downward to a point greater than 540mm from the lower edge of the top support.

EN 60332-1-2:2004 specifies the use of 1kW premix flame and is for general use, except that the procedure may not be suitable for the testing of small insulated conductors or cables of less than 0.5mm sq cross section because the conductor melts before the test is completed, or for the testing of small optic fiber cables

because the fiber will be broken before the test is completed. In this case, the procedure given by EN 60332-2-1/2 is recommended.

EN 60332-2-1:2004 / BS EN 60332-2-1:2004 / IEC 60332-2-1:2004 / DIN EN 60332-2-1:2004 / VDE 0482-2-1:2005-06 Tests on electrical and optical cables under fire conditions. Test for a vertical flame propagation for a single small insulated wire or cable.

EN 60332-2-2:2004 / BS EN 60332-2-2:2004 / IEC60332-2-2:2004 / DIN EN 60332-2-2:2004 / VDE 0482-2-2:2005-06 / CEI 60332-2-2 (CEI 20-35/2-2) Test on electric and optical fiber cables under fire conditions. Tests for vertical flame propagation for a single small insulated wire or cable. Procedure for diffusion flame.
This test applies to small dimensions cables.
This standard specifies a method of test for resistance to vertical flame propagation for a single insulated wire or cable. Part 2-1 specifies the test apparatus and Part 2-2 specifies the test procedure.

Flame retardance in accordance with NF C32-070-2.1(C2)

NF C32-070:2001 Insulated conductors and cables for installation - Classification tests on conductors and cables with regard to fire behavior.
NF C32-070 2.1 Procedure for 1 kW pre-mixed flame.

The NF F 32070 2.1 (Category C2) and IEC 60332-1-2 are very similar. The sole difference is the time during which the flame is applied.

Flame retardance in accordance with EN 50265-1:1999 (replaced by EN 60332)

EN 50265-1:1999 / BS EN 50265-1:1999 / DIN EN 50265-1:1999 / VDE 0482-265-1:1999-04– Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Apparatus (Replaced by EN 60332-1-1:2004 and EN 60332-2-1:2004).

EN 50265-2-1:1999 / BS EN 50265-2-1:1999 / DIN EN 50265-2-1:1999 / VDE 0482-265-2-1:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-1: Procedure 1kW pre-mixed flame (Replaced by EN 60332-1-2:2004).

EN 50265-2-2:1999 / BS EN 50265-2-2:1999 / DIN EN 50265-2-2:1999 / VDE 0482-265-2-2:1999-04 – Common test methods for cables under fire conditions. Test for resistance to a vertical flame propagation for a single insulated conductor or cable. Part 2-2: Procedure Diffusion flame (Replaced by EN 60332-2-2:2004).

Flame retardance in accordance with BS 4066 Part 1 & 2 (replaced by EN 60332)

BS 4066-2:1980 (superseded) – Tests on electic cables under fire conditions. Method of test on a single vertical insulated wire or cable.

This standard is no longer in force and is replaced by BS EN 50265-2-1 which was also superseded by BS EN 60332-1:2009.

Flame retardance in accordance with NBN C 30-004 (cat. F1)

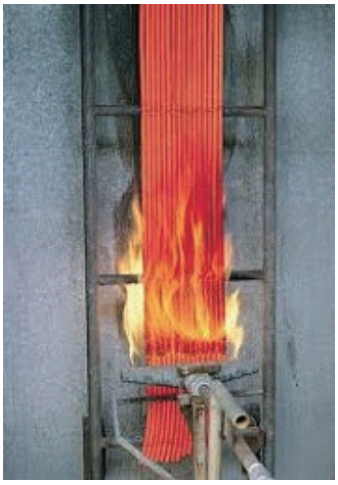
NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a single wire or cable. The cable specimen is deemed to have passed the test and categorized as F1 if after burning has ceased, the charred or affected portion does not reach within 50mm of the lower edge of the top clamp which is equivalent to 425mm above the point of flame application.

Flame retardance in accordance with IEEE 383

In the IEEE 383 test, cables are supported by a one foot wide vertical rack eight feet high. The cables are positioned in the centre six inches of the rack, spaced one-half diameter apart. The rack is centered in an eight foot enclosure. A ten inch ribbon burner ignites the cable with a 21 kW (70000 BTU). The burner is positioned 2 feet above the floor and 9 to 12 inches of cables are exposed to direct flames for 20 minutes. Cables on which flame extends above the top of the 8 foot rack fail the test.

REDUCED FIRE PROPAGATION IN ACCORDANCE WITH DIFFERENT STANDARDS

These standards specify a method for fire propagation test for vertically mounted bunched cables. These tests simulate the chimney effect in vertical installation of bunch of cables. A certain number of cable sections with a length of 3.5 m is fastened to a vertical ladder in an adapted chamber. The amount of combustible materials for cables and duration of flame application depends on the category the cable has to meet.



Resistance of the wires bundle arranged vertically to the spread of the flame should be such that after a certain time and stopping the source of ignition, flame is extinguished by itself and the length of charred fragments will not exceed 2.5 m in height measured above the lower edge of the burner.

Reduced fire propagation in accordance with IEC 60332-3

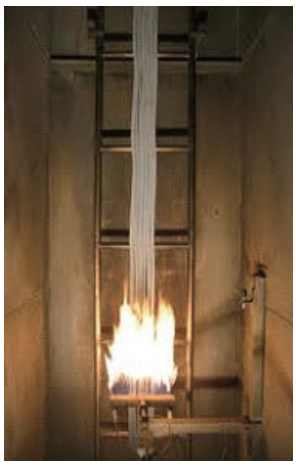
This test is the most common one to verify the behaviour of a cables for the fire propagation. The cables are installed on a bunch of vertical ladder inside a metal cabinet and undergo the action of a ribbon flame at 750°C.The standard is subdivided in several parts that differ one from the other for the quantity of cable to be installed, the installation mode and the flame application time.

EN 60332-3-10:2009 / BS EN 60332-3-10:2009 / IEC 60332-3-10 ed1.1 / DIN EN 60332-3-10:2009 / VDE 0482-332-3-10:2010-08 – Common test methods for cables under fire conditions. Tests on electric and optical fiber cables under fire conditions - Part 3-10: Test for vertical flame spread of vertically mounted bunched wires or cables.

EN 60332-3-21:2009 / BS EN 60332-3-21:2009 / IEC 60332-3-21 ed1.1 / DIN EN 60332-3-21 / VDE 0482-332-3-21:2010-08 / CEI EN 60332-3-21:2009 (CEI 20-22/3-1)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-21: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A . F/R

-Installation In one layer (front).
-Installation In two layers (front and rear)
-The quantity of the Installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-22:2009 / BS EN 60332-3-22:2009 / IEC 60332-3-22 ed1.1 / DIN EN 60332-3-22:2009 /VDE 0482-332-3-22:2010-08 / CEI EN 60332-3-22:2009 (CEI 20-22/3-2)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cable - Category A



-Installation In one layer (front).
-The quantity of the installed cable is equal to 7 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-23:2009 / BS EN 60332-3-23:2009 / IEC 60332-3-23 ed1.1 / DIN EN 60332-3-23:2009 / VDE 0482-332-3-23:2010-08 / CEI EN 60332-3-23:2009 (CEI 20-22/3-3)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-23: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category B

-Installation In one layer (front).
-The quantity of the installed cable is equal to 3.5 litres/m of combustible materials for cables
-The time of application of the flame is 40 minutes

EN 60332-3-24:2009 / BS EN 60332-3-24:2009 / IEC 60332-3-24 ed1.1 / DIN EN 60332-3-24:2009 / VDE 0482-332-3-24:2010-08 / CEI EN 60332-3-24:2009 (CEI 20-22/3-4) – Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C

-Installation In one layer (front).
-The quantity of the installed cable is equal to 1.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes

EN 60332-3-25:2009 / BS EN 60332-3-25:2009 / IEC 60332-3-25 ed1.1 / DIN EN 60332-3-25: 2009 / VDE 0482-332-3-25:2010-08 / CEI EN 60332-3-25:2009 (CEI 20-22/3-5)– Procedures. Tests on electric and optical fiber cables under fire conditions - Part 3-25: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category D
-Installation In one layer (front).
-The quantity of the installed cable is equal to 0.5 litres/m of combustible materials for cables
-The time of application of the flame is 20 minutes.

Summary of test condition:

IEC	60332-3-21	60332-3-22			60332-3-23		60332-3-24		60332-3-25	
BS EN 50266	50266-2-1	50266-2-2			50266-2-3		50266-2-4		50266-2-5	
CEI	20-22/3-1	20-22/3-2			20-22/3-3		20-22/3-4		20-22/3-5	
Category	AF/R	A			B		C		D	
Conductor cross-sectionsmm^2	＞35	＞35	≤35		＞35	≤35	＞35	≤35	＞35	≤35
NMV(litres per metre of cable)	7	7			3.5		1.5		0.5	
Minimum length of test pieces(m)	3.5	3.5			3.5		3.5		3.5	
Standard ladder (500 mm wide): • number of layers • maximum width of test sample	1front+1rear 300mm	≥1front 300mm	1front 300mm	- -	≥1front 300mm	1front 300mm	≥1front 300mm	1front 300mm	≥1front 300mm	

Wide ladder (800 mm wide): • number of layers • maximum width of test sample	- -	- -	- -	1front 600mm	-	-	-	-	-
Positioning of test pieces	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)		Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching	Spaced 0.5×Diameter cable (Max.20mm)	Touching
Number of burners	1	1	1	2	1		1		1
Ladder mounting	Front and rear	Front, Wider ladder for larger cables			Front		Front		Front
Flame application time(min)	40	40	40		40		40		40
Test conditions	Wind speed: <8 m/s; Ternperature: 5°C - +40°C								
Extent of the charred portion	≤2.5m above the bottom edge of the burner, neither at the front nor at the rear of the ladder.								

Reduced fire propagation in accordance with NF C32-070-2.2(C1)

NF C32-070 :2001 Insulated conductors and cables for installation.

-Classification tests on conductors and cables with regard to fire behavior.

A 1600mm vertically installed bundled of cable is exposed to the effects of a radiating oven (approx 830°C) and forced ventilation. Pilot flames arranged above the oven burn off the emitted gases. The test duration is 30 minutes, with the ventilation stopped for every 10 minutes during the flame application period. The cable sample is classified under Category C1 according to NF F 32070-2.2 if the carbonised part of the cable sample does not extend more than 0.8m above the upper base of the oven.

Depending on the damaged length, they can be further classified into 4 classes A, B, C and D according to NF F 16-101 as follows:

Category	Test Result
A	No damaged length from top of the oven in upper position.
B	Damaged length from top of oven in upper position not extending more than 50mm.
C	Damaged length from top of oven in upper position not extending more than 300mm
D	Damaged length from top of oven in upper position not extending above the top of the chimney

Reduced fire propagation in accordance to EN 50266-1, EN 50266-2-2, EN 50266-2-3, EN 50266-2-4.

EN 50266-1:2001 / BS EN 50266-1:2001 / DIN EN 50266-1:2001 / VDE 0482-266-1:2001-09– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 1: Apparatus (Replaced by EN 60332-3-10:2009)

EN 50266-2-1:2001 / BS EN 50266-2-1:2001 / DIN EN 50266-2-1:2001 / VDE 0482-266-2-1:2001-09 / CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-1 : Procedures. Category A F/R (Replaced by EN 60332-3-21:2009)

EN 50266-2-2:2001 / BS EN 50266-2-2:2001 / DIN EN 50266-2-2:2001 / VDE 0482-266-2-2:2001-09 / CEI EN 50266-2-2– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-2: Procedures. Category A (Replaced by EN 60332-3-22:2009)

EN 50266-2-3:2001 / BS EN 50266-2-3:2001 / DIN EN 50266-2-3:2001 / VDE 0482-266-2-3:2001-09 / CEI EN 50266-2-1– Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-3: Procedures. Category B (Replaced by EN 60332-3-23:2009)

EN 50266-2-4:2001 / BS EN 50266-2-4:2001 / DIN EN 50266-2-4:2001 / VDE 0482-266-2-4:2001-09 / CEI EN 50266-2-4:2001 – Common test methods for cables under fire conditions. Test for vertical flame spread of vertically mounted bunched wires or cables - Part 2-4: Procedures. Category C (Replaced by EN 60332-3-24:2009).

Reduced fire propagation in accordance with BS 4066-3

BS 4066-3:1994 (superseded) – Tests on electic cables under fire conditions. Tests on bunched wires or cables.

This standard is no longer in force and is replaced by the BS EN 50266-1:2001

Reduced fire propagation in accordance with NBN C 32-004 (F2)

NBN C 32-004 specifies a method of test for measuring the vertical flame propagation characteristics of a bunch of cables. The cable specimen is deemed to have passed the test and categorized as F2 if after burning has ceased, the extent of charred or affected portion does not reach a height exceeding 2.5m above the bottom edge of the burner.

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