DATA SHEET

FIRE PERFORMACE CABLE

Ducab دوكاب

ELECTRIC WAY

CONSTRUCTION OF THE CABLE	
CONDUCTORS	**Current carrying component of the cable.**
Material	Plain, stranded, compacted copper class2 as per IEC: 60228
PRIMARY INSULATION	*Material* -Mica Glass Tape
SECONDARY INSULATION	*Material* -Extruded XLPE
FILLERS	**For providing circular shape to the cable, non-hygroscopic compatible fillers (wherever necessary) are included between laid up cores.**
BEDDING	**Extruded bedding serves as a bedding for the armour and as a protection for the laid-up cores.**
Material	LSZH
ARMOUR	**Armour provides mechanical protection to the cable. It also serves as an Earth Continuity Conductor (ECC). One layer of round wire is applied helically over the bedding.**
Material	1. Galvanised round steel wire (GSWA) - FOR MULTICORE CABLE
	2. Aluminium round wire armour (AWA) - FOR SINGLE CORE.
OVERSHEATH - FINISH	Robust LSZH sheath with Black colour as standard, other colours upon request

CHARACTERISTICS	
Voltage Rating	Uo/U= 0.6/1kV
Temperature Rating	Fixed: -25°C to +90°C
Minimum Bending Radius	1.5mm2 to 16mm2 - Fixed: 6 x overall diameter
	25mm2 and above - Fixed: 8 x overall diameter

STANDARDS	
BS 6387	C-W-Z test for small sizes
IEC 60228/BS6360	for copper conductor
BS 7629 & BS 5839-1	for Fire performance screened cable
BS 7846	For Multi-core armoured power & control cable
IEC 60331	for Fire resistance test at increased temperature of 950 deg.C
IEC 61034 & BS EN 50268	for Low smoke emission
IEC 60754 & BS EN 50267	For Acid gas emission

CORE IDENTIFICATION	
1 core	Red, Black
2 core	Red, Black
3 core	Red, Yellow, Blue.
4 core	Red, Yellow, Blue, Black.
5 core	Red, Yellow, Blue, Black, Yellow/ Green

APPLICATION

Fire Performance Cables are designed to survive and operate during fire conditions.
They are used where Property and Life systems must be maintained in the event of a REAL FIRE. The typical applications are:

- Areas where large number of people will remain in occupation for a period of time, and safe evacuation of mass public is critical in the event of fire, i.e schools, shopping malls, mass transit systems metro stations etc..
- Services where circuit integrity is vital under fire conditions eg. special equipment in hospitals, airports, etc..
- Essential critical safety circuit, fire detection, fire alarm, voice alarm and emergency lighting.
- Power supply to equipment used in fire-fighting sprinkler pumps and fire dampers.
- In large and complex buildings where fire strategy involves evacuation of occupants in a controlled phased manner.

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	ITEM	No.	1	2	3	4	5	6	7	8
Sr #	1 k V, Cu (Cl2)/MG/XLPE/LSZH/SWA/LSZH	UNIT	3 x 1.5	3 x 2.5	3 x 4	3 x 6	3 x 10	3x16	3x25	3x35
1	Product Standard		BS 7846 - F2							
2	Performace Standard (Flame / Fire - Test)		BS 6387 C-W-Z							
3	Rated voltage (Uo/U) (Um)	kV	0.6/1 (1.2)							
4	**Circular Stranded Copper Class : 2 Conductor**									
	Number of Core(s)	Nos	3	3	3	3	3	3	3	3
	Nominal cross sectional area	mm^2	1.5	2.5	4	6	10	16	25	35
	Approx. Diameter of Conductor	mm	1.44	1.85	2.38	2.92	3.72	4.7	6.15	7.25
5	**Insulation - MGT + XLPE**									
	Color (s)		Red,Yellow,Blue							
	Nominal Thickness	mm	0.6	0.7	0.7	0.7	0.7	0.7	0.9	0.9
	Approx. Diameter over Insulation	mm	3.2	3.8	4.4	4.9	5.7	6.7	8.8	9.9
6	**3 Core Laid up**									
	Approx. Diameter over Laid Up	mm	7	8.3	9.4	10.6	12.3	14.4	18.9	21.3
7	**Extruded Bedding - LSZH**									
	Nominal Thickness	mm	0.8	0.8	0.8	0.8	0.8	0.8	1	1
	Approx. Diameter over bedding	mm	9	10.3	11.5	12.6	14.4	16.5	21	23.4
8	**Armor - Type: Steel Wire**									
	Nominal Diameter of wire	mm	0.9	0.9	0.9	0.9	1.25	1.25	1.6	1.6
	Approx. Diameter over armour	mm	10.8	12.1	13.2	14.4	16.8	19	24.1	26.5
9	**Extruded Outer Sheath - LSZH (Black)**									
	Nominal Thickness	mm	1.3	1.4	1.4	1.4	1.5	1.6	1.7	1.8
	Approx. Diameter over outer sheath	mm	12.8	14.2	15.3	16.5	19.1	21.4	26.7	29.3
	Approx. Weight of complete cable	kg / km	334	410	497	595	882	1075	1668	2050
	Max. DC Resistance of Conductor at 20°C	W/km	12.1	7.41	4.61	3.08	1.83	1.15	0.727	0.524
	Approx. AC Resistance of Conductor at Maximum Operating Temperature	W/km	15.4287	9.4485	5.8782	3.9274	2.3335	1.4666	0.9273	0.6686
	Approx. Capacitance	mF / km	0.33	0.37	0.44	0.5	0.61	0.4	0.41	0.46
	Approx. Inductance	mH / km	0.33	0.32	0.31	0.3	0.29	0.26	0.25	0.25
	Approx. Inductive Reactance	W/km	0.1	0.098	0.092	0.088	0.083	0.081	0.079	0.077
	Approx. Impedance	W/km	15.4	9.45	5.88	3.93	2.33	1.47	0.93	0.67
	Approx. Voltage Drop	mV/Amp/mt	27	16	10	6.8	4	2.5	1.65	1.15
10	**CURRENT CARRYING CAPACITY** based on the conditions specified									
	Installation Type (Single Circuit)	independently	Cables installed							
	Soil Thermal Resistivity	°C.m/W	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Ground temperature	˚C	15	15	15	15	15	15	15	15
	Ambient air temperature	˚C	30	30	30	30	30	30	30	30
	Burial depth	mm	500	500	500	500	500	500	500	500
	Laid in ground	Amps	32	42	55	69	92	115	150	180

	Laid in Duct	Amps	26	34	45	56	75	94	125	150
	In air	Amps	25	33	44	56	78	99	131	162
	Maximum conductor temperature for continuous operation / Short Circuit Operation	˚C	90/250	90/250	90/250	90/250	90/250	90/250	90/250	90/250
11	**Short Circuit Current carrying capacity for 1 second, cable loaded as above**									
	Conductor	kA/ 1 sec	0.2	0.4	0.6	0.9	1.4	2.3	3.6	5
12	**Installation Parameters**									
	Maximum pulling force (For Conductor)	kgf	27	45	72	108	180	288	450	630
	Minimum Bending Radius	mm	156	180	192	204	240	264	324	360

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	ITEM	No.	1	2	3	4	5	6
Sr #	1 k V, Cu (Cl2)/MG/XLP E/LSZH/SWA/LSZH	UNIT	4X1.5	4X2.5	4X4	4X6	4X10	4X16
1	Product Standard		BS 7846 - F2					
2	Performace Standard (Flame / Fire - Test)		BS 6387 C-W-Z					
3	Rated voltage (Uo/U) (Um)	kV	0.6/1 (1.2)					
4	**Circular Stranded Copper Class : 2 Conductor**							
	Number of Core(s)	Nos	4	4	4	4	4	4
	Nominal cross sectional area	mm^2	1.5	2.5	4	6	10	16
	Approx. Diameter of Conductor	mm	1.44	1.85	2.38	2.92	3.72	4.7
5	**Insulation - MGT + XLPE**							
	Color (s)		Red,Yellow,Blue,Black,					
	Nominal Thickness	mm	0.6	0.7	0.7	0.7	0.7	0.7
	Approx. Diameter over Insulation	mm	3.2	3.8	4.4	4.9	5.7	6.7
6	**Core Laid up**							
	Approx. Diameter over Laid Up	mm	7.8	9.3	10.6	11.9	13.8	16.2
7	**Extruded Bedding - LSZH**							
	Nominal Thickness	mm	0.8	0.8	0.8	0.8	0.8	0.8
	Approx. Diameter over bedding	mm	9.9	11.3	12.6	13.9	15.9	18.3
8	**Armor - Type: Steel Wire**							
	Nominal Diameter of wire	mm	0.9	0.9	0.9	1.25	1.25	1.25
	Approx. Diameter over armour	mm	11.6	13.1	14.4	16.3	18.3	20.7
9	**Extruded Outer Sheath - LSZH (Black)**							
	Nominal Thickness	mm	1.3	1.4	1.4	1.5	1.5	1.6
	Approx. Diameter over outer sheath	mm	13.6	15.2	16.5	18.6	20.6	23.2
	Approx. Weight of complete cable	kg / km	377	471	573	803	1039	1279
	Max. DC Resistance of Conductor at 20°C	W/km	12.1	7.41	4.61	3.08	1.83	1.15
	Approx. AC Resistance of Conductor at Maximum Operating Temperature	W/km	15.429	9.4485	5.8782	3.9274	2.3335	1.4666
	Approx. Capacitance	mF / km	0.33	0.37	0.44	0.5	0.61	0.4
	Approx. Inductance	mH / km	0.33	0.32	0.31	0.3	0.29	0.26
	Approx. Inductive Reactance	W/km	0.1	0.098	0.092	0.088	0.083	0.081
	Approx. Impedance	W/km	15.4	9.45	5.88	3.93	2.33	1.47
	Approx. Voltage Drop	mV/Amp/mt	27	16	10	6.8	4	2.5
10	**CURRENT CARRYING CAPACITY** based on the conditions specified							
	Installation Type (Single Circuit)	independently	Cables installed					
	Soil Thermal Resistivity	°C.m/W	1.2	1.2	1.2	1.2	1.2	1.2
	Ground temperature	˚C	15	15	15	15	15	15
	Ambient air temperature	˚C	30	30	30	30	30	30
	Burial depth	mm	500	500	500	500	500	500
	Laid in ground	Amps	32	42	55	69	92	115
	Laid in Duct	Amps	26	34	45	56	75	94
	In air	Amps	25	33	44	56	78	99
	Maximum conductor temperature for continuous operation / Short Circuit Operation	˚C	90/250	90/250	90/250	90/250	90/250	90/250

11	**Short Circuit Current carrying capacity for 1 second, cable loaded as above**							
	Conductor	kA/ 1 sec	0.2	0.4	0.6	0.9	1.4	2.3
12	**Installation Parameters**							
	Maximum pulling force (For Conductor)	kgf	36	60	96	144	240	384
	Minimum Bending Radius	mm	168	192	204	228	252	288

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	ITEM	No.	7	8	9	10	11
Sr #	1 k V, Cu (Cl2)/MG/XLP E/LSZH/SWA/LSZH	UNIT	4X25	4X35	4X50	4X70	4X95
1	Product Standard		BS 7846 - F2				
2	Performace Standard (Flame / Fire - Test)		BS 6387 C-W-Z				
3	Rated voltage (Uo/U) (Um)	kV	0.6/1 (1.2)				
4	**Circular Stranded Copper Class : 2 Conductor**						
	Number of Core(s)	Nos	4	4	4	4	4
	Nominal cross sectional area	mm^2	25	35	50	70	95
	Approx. Diameter of Conductor	mm	6.15	7.25	Sectoral	Sectoral	Sectoral
5	**Insulation - MGT + XLPE**						
	Color (s)		Red,Yellow,Blue,Black,				
	Nominal Thickness	mm	0.9	0.9	1	1.1	1.1
	Approx. Diameter over Insulation	mm	8.8	9.9	Sectoral	Sectoral	Sectoral
6	**3 Core Laid up**						
	Approx. Diameter over Laid Up	mm	21.2	23.8	24.4	28.5	32.4
7	**Extruded Bedding - LSZH**						
	Nominal Thickness	mm	1	1	1	1.2	1.2
	Approx. Diameter over bedding	mm	23.3	25.9	26.5	30.6	34.6
8	**Armor - Type: Steel Wire**						
	Nominal Diameter of wire	mm	1.6	1.6	1.6	2	2
	Approx. Diameter over armour	mm	26.4	29	29.6	34.5	38.4
9	**Extruded Outer Sheath - LSZH (Black)**						
	Nominal Thickness	mm	1.7	1.8	1.9	2.1	2.2
	Approx. Diameter over outer sheath	mm	29	31.9	32.6	37.9	42
	Approx. Weight of complete cable	kg / km	1974	2453	2956	4179	5342
	Max. DC Resistance of Conductor at 20°C	W/km	0.727	0.524	0.387	0.268	0.193
	Approx. AC Resistance of Conductor at Maximum Operating Temperature	W/km	0.9273	0.6686	0.4941	0.3426	0.2474
	Approx. Capacitance	mF / km	0.41	0.46	0.48	0.51	0.59
	Approx. Inductance	mH / km	0.25	0.25	0.24	0.24	0.23
	Approx. Inductive Reactance	W/km	0.079	0.077	0.076	0.075	0.073
	Approx. Impedance	W/km	0.93	0.67	0.5	0.35	0.26
	Approx. Voltage Drop	mV/Amp/mt	1.65	1.15	0.87	0.6	0.45
10	**CURRENT CARRYING CAPACITY** based on the conditions specified						
	Installation Type (Single Circuit)	independently	Cables installed				
	Soil Thermal Resistivity	°C.m/W	1.2	1.2	1.2	1.2	1.2
	Ground temperature	˚C	15	15	15	15	15
	Ambient air temperature	˚C	30	30	30	30	30
	Burial depth	mm	500	500	500	500	500
	Laid in ground	Amps	150	180	215	265	315
	Laid in Duct	Amps	125	150	175	215	260
	In air	Amps	131	162	197	251	304
	Maximum conductor temperature for continuous operation / Short Circuit Operation	˚C	90/250	90/250	90/250	90/250	90/250

11	**Short Circuit Current carrying capacity for 1 second, cable loaded as above**						
	Conductor	kA/ 1 sec	3.6	5	7.2	10	13.6
12	**Installation Parameters**						
	Maximum pulling force (For Conductor)	kgf	600	840	1200	1680	2000
	Minimum Bending Radius	mm	360	384	396	456	516

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ELECTRIC WAY

	ITEM	No.	12	13	14	15	16	17
Sr #	1 k V, Cu (Cl2)/MG/XLP E/LSZH/SWA/LSZH	UNIT	4X120	4X150	4X185	4X240	4X300	4X400
1	Product Standard		BS 7846 - F2					
2	Performace Standard (Flame / Fire - Test)		BS 6387 C-W-Z					
3	Rated voltage (Uo/U) (Um)	kV	0.6/1 (1.2)					
4	**Circular Stranded Copper Class : 2 Conductor**							
	Number of Core(s)	Nos	4	4	4	4	4	4
	Nominal cross sectional area	mm^2	120	150	185	240	300	400
	Approx. Diameter of Conductor	mm	Sectoral	Sectoral	Sectoral	Sectoral	Sectoral	Sectoral
5	**Insulation - MGT + XLPE**							
	Color (s)		Red,Yellow,Blue,Black,					
	Nominal Thickness	mm	1.2	1.4	1.6	1.7	1.8	2
	Approx. Diameter over Insulation	mm	Sectoral	Sectoral	Sectoral	Sectoral	Sectoral	Sectoral
6	**3 Core Laid up**							
	Approx. Diameter over Laid Up	mm	35.8	40.6	45	50	55.6	63.6
7	**Extruded Bedding - LSZH**							
	Nominal Thickness	mm	1.4	1.4	1.4	1.6	1.6	1.8
	Approx. Diameter over bedding	mm	38.1	42.9	47.3	52.6	58.3	66.7
8	**Armor - Type: Steel Wire**							
	Nominal Diameter of wire	mm	2.5	2.5	2.5	2.5	2.5	3.15
	Approx. Diameter over armour	mm	42.9	47.8	52.2	57.5	63.2	72.8
9	**Extruded Outer Sheath - LSZH (Black)**							
	Nominal Thickness	mm	2.3	2.4	2.6	2.7	2.9	3.2
	Approx. Diameter over outer sheath	mm	46.7	51.7	56.5	62	68	78.2
	Approx. Weight of complete cable	kg / km	6817	8188	9894	12408	15018	19627
	Max. DC Resistance of Conductor at 20°C	W/km	0.153	0.124	0.0991	0.0754	0.0601	0.047
	Approx. AC Resistance of Conductor at Maximum Operating Temperature	W/km	0.1967	0.1601	0.1289	0.0994	0.0807	0.065
	Approx. Capacitance	mF / km	0.61	0.59	0.58	0.62	0.66	0.78
	Approx. Inductance	mH / km	0.23	0.23	0.23	0.23	0.23	0.23
	Approx. Inductive Reactance	W/km	0.072	0.073	0.073	0.072	0.072	0.072
	Approx. Impedance	W/km	0.21	0.18	0.15	0.12	0.11	0.097
	Approx. Voltage Drop	mV/Amp/mt	0.37	0.3	0.26	0.21	0.19	0.17
10	**CURRENT CARRYING CAPACITY** based on the conditions specified							
	Installation Type (Single Circuit)	independently	Cables installed					
	Soil Thermal Resistivity	°C.m/W	1.2	1.2	1.2	1.2	1.2	1.2
	Ground temperature	˚C	15	15	15	15	15	15
	Ambient air temperature	˚C	30	30	30	30	30	30
	Burial depth	mm	500	500	500	500	500	500
	Laid in ground	Amps	360	405	460	530	590	667
	Laid in Duct	Amps	300	335	380	440	495	570
	In air	Amps	353	406	463	546	628	728
	Maximum conductor temperature for continuous operation / Short Circuit Operation	˚C	90/250	90/250	90/250	90/250	90/250	90/250

11	**Short Circuit Current carrying capacity for 1 second, cable loaded as above**							
	Conductor	kA/ 1 sec	17.2	21.5	26.5	34.3	42.9	57.2
12	**Installation Parameters**							
	Maximum pulling force (For Conductor)	kgf	2000	2000	2000	2000	2000	2000
	Minimum Bending Radius	mm	564	624	684	744	828	948