Ducab دوكاب

Ducab Smokemaster
Low Smoke Zero Halogen (LSZH)

حلول متقدمة للكابلات من خلال التقنية والابداع

Advanced Cable Solutions Through Technology and Innovation

BICC

Introduction

Alongside the progress in fire safety engineering in building design, comes the requirement for electrical installations to provide increasingly greater fire protection for buildings and a safer environment for the people who use them. Ducab has made a major contribution to meeting these requirements, with the development of a range of **Ducab Smokemaster** Low Smoke Zero Halogen armoured power and wiring cables.

Ducab Smokemaster

For installation guidelines please refer to our Cable & Drum Handling Guideline handbook.

This brochure provides product information and technical data for the **Ducab Smokemaster** range of Cables

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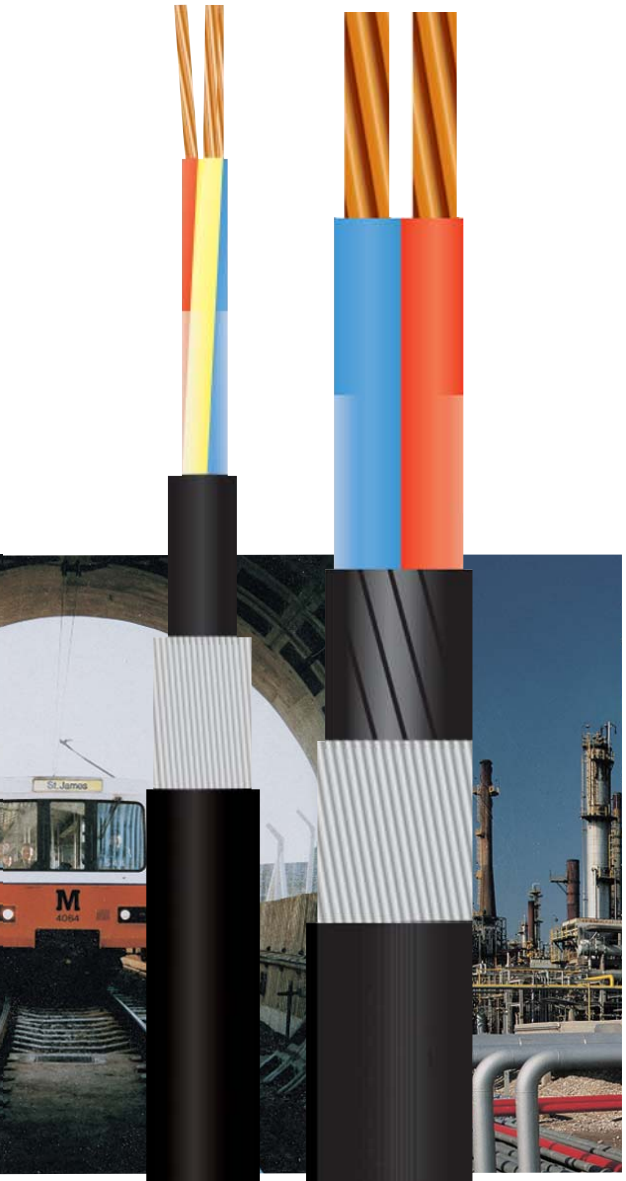

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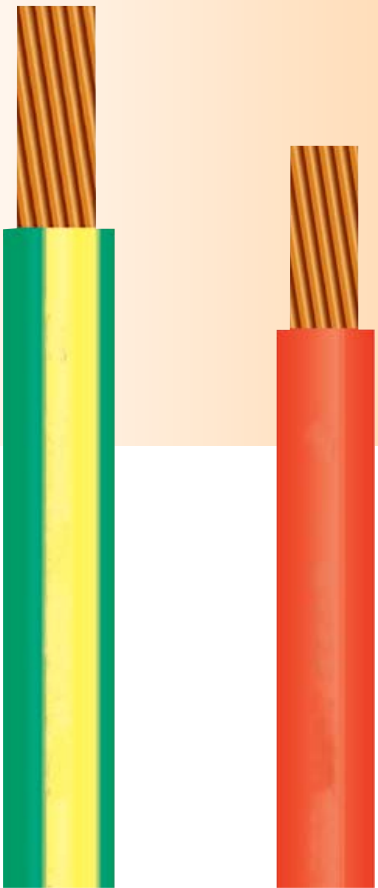
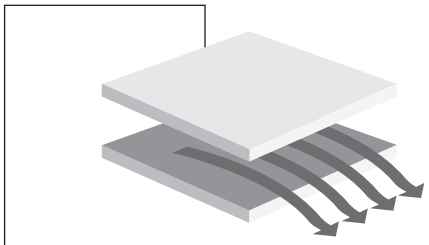


... Helping you see more clearly

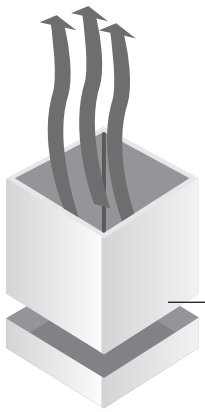
Low Smoke Zero Halogen Cables – Why?

All buildings and structures are at risk from fire and so are the people who use them.

The threat which a fire poses isn't confined to the flames and the heat. Smoke, fumes and acid gases produced from the many items within a building's structure, fabric and fittings can spread quickly during a fire.



The structural services of the building, including the underfloor voids and vertical riser ducts which accommodate cables, can aid the spread of fire and the spread of the smoke and fumes which the fire produces.



These essential structural features form natural draught corridors which spread the problem of smoke and fumes to areas of the building which may not be affected by the fire itself – putting people at risk.

Installing **Ducab Smokemaster** cables can reduce the threat to life by extending the escape and rescue time available.

Smoke diminishes the time available by reducing visibility, hindering mobility and causing bodily harm.

Corrosive acids are formed when the gases released by fire come into contact with moisture. The moisture could be in the air, or could be generated by automatic sprinkler systems. Acid gases are poisonous irritants to people inhaling them. They also attack the electronic circuitry of sophisticated equipment used in modern offices causing costly damage. **Ducab Smokemaster** does not produce acid gas.

Ducab Smokemaster cables provide improved fire protection and reduce the risk to building occupants. They are slow to ignite, burn slowly and most importantly, give out negligible amounts of smoke and fumes during a fire.

Much more time is available to enable the orderly evacuation of people from buildings when a fire is discovered. Besides the time needed for people to evacuate a building, extra time is essential to the emergency services personnel who have to enter the building to control and extinguish the fire and assist those needing help.

Ducab Smokemaster cables resist ignition

- extending the time before cables start to burn in a fire, providing more time to escape.

Ducab Smokemaster cables reduce fire propagation

- by bing slow to burn, reducing the immediate threat and extending escape time.

Ducab Smokemaster cables reduce smoke to a minimum

- reducing disorientation, confusion and panic. With little smoke, people can see the EXIT routes clearly and have more time to follow them to safety. Emergency services have more time to operate effectively.

Ducab Smokemaster cables do not contain halogens

- hydrochloric acid is not formed during a fire. There is no threat of inhalation of this highly irritant chemical and no damage to sensitive or costly equipment.

Ducab Smokemaster cables

- **improve safety and human survival in a fire**
- **allow people to see and breathe safely for longer**
- **increase time for people to escape**
- **improve visibility and safety for emergency services**
- **reduce fire damage of buildings and electronic equipment**
- **are designed to improve public and environmental safety**

Specially conducted fire tests have confirmed the performance advantage of Ducab Smokemaster

Fire Test after 6 minutes

Exit and escape lights obscured by dense smoke, hindering escape.

Exit and escape lights allowing safer evacuation.

PVC Cable

Ducab Smokemaster cable

Typical Applications

Places which are regularly densely populated

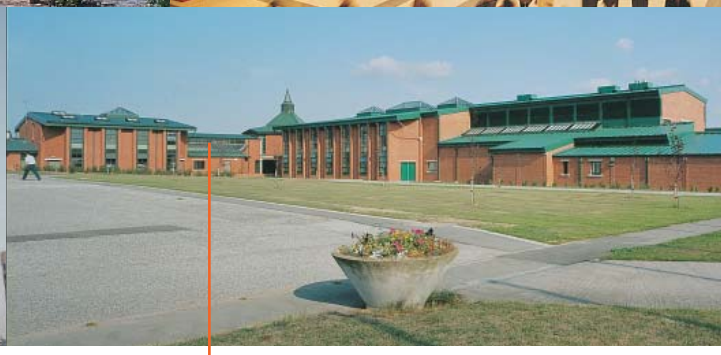
- Hotels
- Commercial Offices
- Multi-Storey Dwellings
- Public Buildings

Housing people with limited mobility

- Hospitals
- Clinics
- Care Homes
- Retirement Homes

Where people are unfamiliar with a building's layout

- Shopping Malls
- Cinemas and Theatres
- Airports



Involving valuable equipment

- Computer Suites
- Defence Installations
- Research Laboratories
- Telecommunications Centres

Involving high security

- Defence installations
- Prisons
- Research Establishments
- Computer Centres

Ducab Smokemaster

Performance Standards

All Ducab Smokemaster products are manufactured to comply with the following fire safety standards:

Flame Propagation

Ducab Smokemaster armoured cables are flame retardant and comply with BS EN 50266/IEC 60332-3.

Ducab Smokemaster wiring cables comply with BS EN 60332 and IEC 60332-1.

Acid Gas Emissions

IEC 60754 Part 1 & Part 2 define the tests for detecting hagen acid gas emissions from burning materials taken from cables.
Ducab Smokemaster cables comply with these halogen free emission standards when exposed to fire.

Smoke Emission

Ducab Smokemaster cables comply with the smoke emission requirements of IEC 61034.

Emirates Towers Dubai
One of the safest buildings in Dubai thanks to **Ducab Smokemaster** cables

Specification Guidelines

Design Considerations

Multi-storey Buildings

A typical multi-storey public building will include many different rooms and facilities including bedrooms, kitchens, communal living and dining areas.

Some floors may be densely populated. There may be visitors who will not be familiar with a building's layout,and there may be people with limited mobility.

Heavily populated with people

A number of circuits are required for lighting and power supply. **Ducab Smokemaster** cables can be specified for all these applications, so that people in all parts of the building have longer to evacuate in the event of a fire.

Frequent visitors to the building

Ducab Smokemaster

Ducab Smokemaster Armoured Cables to BS 6724

- Complies with acid gas emission requirements of IEC 60754 Part 1 & Part 2 and also complies with Category C of IEC 60332 - 3.
- Ducab Smokemaster Armoured Cables are suitable for a wide range of applications including where sections of the cable are underground.
- Low Smoke Zero Halogen properties, no halogen acid gas emissions and reduced ignition and fire propagation properties.
- The cable construction combines XLPE conductor in sulation with Ducab Smokemaster LSZH beding and outer sheath.
- 90˚C conductor operating temperature provides the opportunity to reduce conductor sizes.
- Approved by Lloyds Register (UK)

Ducab Smokemaster Wiring Cables to BS 7211

- Ducab Smokemaster insulation allows continuous conductor operating temperatures up to 90˚C.
- Maximum conductor temperature allowed under short circuit conditions is 250˚C.
- Higher operating and short circuit temperatures provide opportunity to reduce conductor sizes.
- All cables have clear identification and marking
- Independent product testing to BS 7211 by Warrington Fire Research
- BASEC Approved (1.5 to 630 sq mm sizes)

Quality Management at Ducab

Ducab: Where Quality is a Way of Life

The definition of quality in Ducab goes far beyond the conformance of product to specified requirements. Ducab is committed to providing the customer with total quality excellence of product and service that fully meets expectations and is superior in value to that which can be obtained elsewhere.

Since its inception, Ducab has an unrivaled reputation for quality in the region. For many years the company has worked to raise quality awareness in Dubai and throughout the Gulf. The company's Quality Management System was certified to ISO 90001 in 1994 and upgraded in 2002 to the new, more stringent ISO 9001:2000 standard certified by BASEC, a reputed UKAS accredited certification body specializing in the cable industry. Ducab was the first cable company in the Middle East to achieve this distinction.

Ducab is also the first manufacturing company in the Middle East to obtain the ISO 14001 enviornmental certification, and certified by BASEC.

Ducab's excellence in quality was recognized when the company was awarded the Dubai Qulaity Award, in the very first year of its inception, in 1994. Ducab has also won the DQA-Gold award again in 1998 and 2004.

TESTING FACILITIES

Ducab is the only cable manufacturer in the Middle East to have invested in fire testing facilities for fire performance cables and also uses external, independent test houses including Warrington Fire Research in the United Kingdom to test product, to ensure conformance to the relevant standards.

Ducab has invested in the state-of-the-art technology for the testing of cables in fire and has a purpose-built testing facility which includes a 3 metre cube test of smoke density to IEC 61034 – 1 & 2, and a vertical ladder fire test chamber to IEC 60332 –3.

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Technical Data
Ducab Smokemaster Wiring Cables to BS 7211

Construction
Stranded plain annealed copper single core conductors insulated with crosslinked **Ducab Smokemaster** Compound. Voltage Grade: 450/750V.

Identification
Ducab Smokemaster Wiring Cables are identified with the legend – BICC **Ducab Smokemaster LSZH** BS 7211 Z – and are available as standard in Red, Black, Yellow, Blue and Green/Yellow colours. Other colours can be manufactured to order.

Installation
The cables are primarily intended for installation in conduit or trunking.

Current Ratings
The following ratings apply to cables bunched and enclosed in conduit on a wall, or enclosed in trunking, and are based on an ambient temperature of 30°C.

Table 1 Ducab Smokemaster Wiring Cables 450/750V Grade

Nominal Conductor Area	Radial Thickness of Insualtion	Mean Overall Diameter (Upper limit)	Approximate Cable Weight	Maximum conductor Resistance at 20°C	Enclosed in Conduit (method 3)			
					Two Cables, Single Phase a.c. Current Rating	Two Cables, Single Phase a.c. Volt Drop per amp per metre	Three or Four Cables, Three Phase a.c. Current Rating	Three or Four Cables, Three Phase a.c. Volt Drop per Amp per Metre
mm^2	mm	mm	kg/km	ohm/km	amp	mV/A/m	amp	mV/A/m
1.5	0.7	3.4	22	12.1	22	31	19	27
2.5	0.8	4.1	33	7.41	30	19	26	16
4	0.8	4.7	49	4.61	40	12	35	10
6	0.8	5.4	69	3.08	51	7.9	45	6.8
10	1.0	7.0	116	1.83	71	4.7	63	4.0
16	1.0	8.0	175	1.15	95	2.9	85	2.5
25	1.2	10.1	274	0.727	126	1.90	111	1.65
35	1.2	11.3	367	0.524	156	1.35	138	1.15
50	1.4	13.0	495	0.387	189	1.05	168	0.90
70	1.4	15.0	699	0.268	240	0.75	214	0.65
95	1.6	17.0	968	0.193	290	0.58	259	0.50
120	1.6	19.0	1164	0.153	336	0.48	299	0.42
150	1.8	21.0	1413	0.124	375	0.43	328	0.37
185	2.0	23.5	1828	0.0991	426	0.37	370	0.32
240	2.2	26.5	2320	0.0754	500	0.33	433	0.29
300	2.4	29.5	2988	0.0601	573	0.31	493	0.27
400	2.6	34.3	3700	0.0470	683	0.29	584	0.25
500	2.8	38.2	4750	0.0366	783	0.28	666	0.24
630	2.8	42.5	6000	0.0283	900	0.27	764	0.23

Technical Data

Ducab Smokemaster Armoured Cables to BS 6724

Construction
Circular or shaped stranded plain annealed copper conductors[1], XLPE insulated, LSZH bedded, galvanised steel wire armoured[2] and LSZH sheathed.
Voltage grades 600/1000V and 1900/3300V.

[1] Aluminium conductors also available on some sizes.
[2] Aluminium armour on single core cables.

Identification
Core Colours:

Single	- Red or Black
Two	- Red, Black
Three	- Red, Yellow, Blue
Four	- Red, Yellow, Blue, Black
Five	- Red, Yellow, Blue, Black, Green/Yellow
Six and Above	- White, printed with Black numerals

Sheath: Black as standard.
Power/Control cables up to five cores are embossed with the legend - BS 6724 ELECTRIC CABLE 600/1000V(or 3300V as appropriate) BICC **Ducab Smokemaster** LSZH.

Multicore auxiliary cables are marked with the legend - BS 6724 ELECTRIC CABLE 600/1000V AUX BICC **Ducab Smokemaster** LSZH.

Installation
Ducab Smokemaster armoured cables are primarily intended for installation in air. To avoid risk of damage during handling they should not be installed in temperatures lower than minus 10°C. Cables with copper conductors should not be bent during installation to radii less than 6 x overall diameter.
(Shaped conductors 8 x overall diameter).

Ducab Smokemaster armoured cables combine the excellence of cross linked polyethylene (XLPE) insulation with Low Smoke Zero Halogen materials as the bedding and outer sheath.

This material is notable for the absence of smoke-generating constituents, particularly halogens (fluorine, bromine, chlorine) thus avoiding the hazards of corrosive and noxious fumes emitted by standard materials such as PVC when exposed to flames.

These cables are developed and manufactured to pass large-scale vertical fire-propagation tests in British and International (IEC) standards. In the three-metre cube smoke emission test they perform to exacting standards.

They are free of added halogens so that acid gas emissions are not detectable when tested to IEC 60754 Part 1 & Part 2. The completed cables comply with Category C of IEC 60332-3.

Ducab Smokemaster armoured cables can be used in place of standard PVC insulated armoured cables but can operate continuously at 90°C which means they have higher current and short circuit ratings than conventional PVC insulated armoured cables. As a result it may be possible to use a smaller conductor size.

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Technical Data

Table 2 Ducab Smokemaster Single Core Armoured cables 600/1000V Grade

Conductor Area	Approximate Diameter			Approx-imate cable Wt.	Maxi-mum armour resistance at 20°C	Maximum conductor resistance at 20°C	Free air (Method 12)			
	Under Armour	Armour wire Dia	Overall				Two cables vertical flat spaced**a.c.		Three cables Trefoil Touching	
mm²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Current rating Amp	Volt Drop Per Amp Per Metre mV	Current Rating mV	Volt Drop Per Amp Per Metre mV/A/m
V Copper Power Cables 600/1000										
50	12.6	*1.6	18.4	800	1.30	0.387	266	1.00	222	0.87
70	14.5	1.6*	20.2	990	0.75	0.268	337	0.75	285	0.62
95	16.4	*1.6	22.3	1280	0.67	0.193	412	0.60	346	0.47
120	18.0	1.6*	24.2	1550	0.61	0.153	477	0.51	402	0.39
150	19.8	1.6	27.4	1900	0.42	0.124	539	0.45	463	0.33
185	22.0	1.6	30.0	2320	0.38	0.0991	614	0.40	529	0.28
240	24.6	1.6	32.8	2930	0.34	0.0754	714	0.35	625	0.24
300	27.3	1.6	36.6	3580	0.31	0.0601	805	0.32	720	0.21
400	31.2	2.0	40.5	4600	0.22	0.0470	889	0.30	815	0.195
500	36.0	2.0	44.2	5680	0.20	0.0366	989	0.29	918	0.180
630	40.0	2.0	48.8	7160	0.18	0.0283	1092	0.27	1027	0.170
800	45.8	2.5	55.4	9315	0.13	0.0221	1155	0.27	1119	0.165
1000	50.8	2.5	60.6	11490	0.12	0.0176	1238	0.25	1214	0.155

** Wire diameters are larger than those specified in BS 6724*
*** Adjacent surfaces separated by one cable diameter.*

Installation conditions for above rating
Ambient Air Temperature 30°C Conductor operating temperature 90°C

Table 3 Ducab Smokemaster Two Core Armoured cables 600/1000V Grade

Conductor Area	Approximate Diameter			Approximate cable Wt.	Maximum armour resistance at 20°C	Maximum conductor resistance at 20°C	Free air (Method 13)	
	Under Armour	Armour wire Dia	Overall				Current Rating	Volt Drop Per Amp per Metre
mm²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
V Copper Power and Control Cables 600/1000							**Single phase a.c or d.c**	
*1.5	7.8	0.9	12.0	285	10.2	12.1	29	31
2.5*	9.1	0.9	13.0	340	8.8	7.41	39	19
*4	9.7	0.9	14.0	410	7.9	4.61	52	12
*6	10.9	0.9	15.2	490	7.0	3.08	66	7.9
10*	13.0	0.9	17.5	640	6.0	1.83	90	4.7
*16	15.2	1.25	20.4	900	3.7	1.15	115	2.9
*25	18.5	1.25	24.1	1240	3.7	0.727	152	1.9
35*	21.5	1.6	27.7	1710	2.6	0.524	188	1.35
50	18.7	1.6	25.8	1800	2.3	0.387	228	1.00
70	21.5	1.6	29.0	2320	2.0	0.268	291	0.69
95	24.6	2.0	33.1	3150	1.4	0.193	354	0.52
120	26.8	2.0	36.1	3880	1.3	0.153	410	0.42
150	29.7	2.0	39.3	4820	1.2	0.124	472	0.35
185	33.3	2.5	44.7	5920	0.82	0.0991	539	0.29
240	38.1	2.5	49.0	7300	0.73	0.0754	636	0.24
300	42.3	2.5	53.5	8770	0.67	0.0601	732	0.21
400	47.6	2.5	58.2	10770	0.59	0.0470	847	0.19

** Circular conductor all others are Sector shaped*

Installation conditions for above rating Ambient
Air Temperature 30°C Conductor operating temperature 90°C

Technical Data

Table 4 Ducab Smokemaster Three Core Armoured Cables 600/1000V Grade

Conductor Area	Approximate Diameter			Approximate .cable Wt	Maximum armour resistance at 20°C	Maximum conductor resistance at 20°C	(Free air (Method 13	
	Under Armour	Armour wire Dia	Overall				Current Rating	Volt Drop Per Amp per Metre
mm^2	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
V Copper Power and Control Cables 600/1000							Three phase a.c	
1.5*	8.3	0.9	12.4	320	9.5	12.1	25	27
2.5*	9.6	0.9	13.5	390	8.2	7.41	33	16
4*	10.4	0.9	14.5	470	7.5	4.61	44	10
6*	11.6	0.9	16.0	565	6.7	3.08	56	6.8
10*	13.6	1.25	19.0	850	4.0	1.83	78	4.0
16*	16.0	1.25	21.6	1130	3.5	1.15	99	2.5
25*	20.0	1.6	26.7	1710	2.5	0.727	131	1.65
35*	22.7	1.6	29.4	2100	2.3	0.524	162	1.15
50	23.0	1.6	28.5	2450	2.0	0.387	197	0.87
70	26.0	1.6	32.2	3120	1.8	0.268	251	0.60
95	30.0	2.0	37.0	4310	1.3	0.193	304	0.45
120	32.8	2.0	40.4	5160	1.2	0.153	353	0.37
150	36.8	2.5	45.5	7160	0.78	0.124	406	0.30
185	41.5	2.5	49.8	8600	0.71	0.0991	463	0.26
240	46.0	2.5	55.1	10755	0.63	0.0754	546	0.21
300	51.5	2.5	60.2	13080	0.58	0.0601	628	0.185
400	56.4	2.5	66.6	15810	0.52	0.0470	728	0.165

Table 5 Ducab Smokemaster Four Core Armoured Cables 600/1000V Grade

Conductor Area	Approximate Diameter			Approximate .cable Wt	Maximum armour resistance at 20°C	Maximum conductor resistance at 20°C	(Free air (Method 13	
	Under Armour	Armour wire Dia	Overall				Current Rating	Volt Drop Per Amp per Metre
mm^2	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV
V Copper Power and Control Cables 600/1000							Three phase a.c	
*1.5	9.1	0.9	13.5	380	8.8	12.1	25	27
*2.5	10.6	0.9	14.5	445	7.7	7.41	33	16
*4	11.4	0.9	17.0	550	6.8	4.61	44	10
*6	13.0	1.25	18.5	770	4.3	3.08	56	6.8
*10	15.0	1.25	20.5	1020	3.7	1.83	78	4.0
*16	18.0	1.25	23.5	1320	3.1	1.15	99	2.5
25	20.0	1.6	26.1	1840	2.3	0.727	131	1.65
35	22.8	1.6	28.6	2310	2.0	0.524	162	1.15
50	25.5	1.6	32.0	2970	1.8	0.387	197	0.87
70	29.5	2.0	37.7	4240	1.2	0.268	251	0.60
95	33.5	2.0	41.7	5400	1.1	0.193	304	0.45
120	37.5	2.5	47.1	7000	0.76	0.153	353	0.37
150	41.5	2.5	51.4	8350	0.68	0.124	406	0.30
185	46.0	2.5	56.6	10130	0.61	0.0991	463	0.26
240	52.5	2.5	63.0	12840	0.54	0.0754	546	0.21
300	57.5	2.5	68.8	15530	0.49	0.0601	628	0.185
400	65.0	3.15	78.1	19950	0.35	0.0470	728	0.165

** Circular conductor all others are Sector shaped*

Installation conditions for rating
Ambient Air Temperature 30°C
Conductor operating temperature 90°C

DucabSmokemaster

Technical Data

Table 6 Ducab Smokemaster Multi Core Armoured Cables 600/1000V Grade

Number of Cores	Nominal conductor area	Approximate Diameter			Approximate .cable Wt	Approximate armour resistance at 20°C	Maximum conductor resistance at 20°C	(Free air (Method 13	
		Under Armour	Armour wire Dia	Overall				Current Rating	Volt Drop ((3°AC
	mm²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
V Copper Auxilliary Control Cables 600/1000									
7	1.5	11.1	0.9	15.2	475	7.5	12.1	19	27
12		14.8	1.25	19.4	790	4.0	12.1	16	27
19		17.5	1.25	22.2	1030	3.5	12.1	14	27
27		21.6	1.6	26.7	1520	2.3	12.1	12	27
37		24.2	1.6	29.0	1840	2.0	12.1	11	27
48		25.9	1.6	32.7	2000	1.8	12.1	10	27
7	2.5	13.0	0.9	17.1	580	6.3	7.41	25	16
12		17.0	1.25	22.4	975	3.5	7.41	21	16
19		20.5	1.6	26.6	1470	2.3	7.41	18	16
27		24.5	1.6	30.7	1900	1.9	7.41	17	16
37		27.5	1.6	33.8	2330	1.7	7.41	15	16
48		31.3	2.0	39.3	3045	1.2	7.41	14	16
7	4	14.6	1.25	19.7	830	4.0	4.61	33	10
12		19.2	1.6	25.7	1340	2.3	4.61	28	10
19		23.1	1.6	29.3	1800	2.0	4.61	24	10
27		27.6	1.6	34.4	2350	1.7	4.61	22	10
37		31.0	2.0	39.2	3320	1.2	4.61	19	10
48		35.6	2.0	44.1	3910	1.0	4.61	17	10

Installation conditions for rating Ambient Air Temperature 30°C
Conductor operating temperature 90°C

Note: Data for multicore cables with conductor size higher than tabulated is available on request

Table 7 Ducab Smokemaster Single Core Armoured Cables 1900/3300V Grade

Conductor Area	Approximate Diameter			Approximate cable wt.	Maximum armour resistance at 20°C	Maximum conductor resistance at 20°C	Free air (Method 12)
	Under Armour	Armour wire Dia	Overall				Current Rating
mm²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amps
V Copper Power Cables 1900/3300							Three cable in Trefoil
50	15.0	1.6*	20.6	810	0.75	0.387	228
70	16.6	1.6*	22.4	1040	0.67	0.268	285
95	18.4	1.6*	24.3	1330	0.61	0.193	350
120	19.8	1.6	27.2	1680	0.42	0.153	407
150	21.2	1.6	28.8	1970	0.39	0.124	463
185	23.0	1.6	30.8	2370	0.37	0.0991	528
240	25.5	1.6	33.5	2960	0.34	0.0754	623
300	27.7	1.6	36.1	3610	0.31	0.0601	710
400	31.0	2.0	40.5	4600	0.22	0.0470	808
500	36.0	2.0	44.2	5680	0.20	0.0366	915
630	40.0	2.0	48.8	7160	0.18	0.0283	1030
800	45.8	2.5	55.4	9150	0.13	0.0221	1119
1000	50.8	2.5	60.6	11270	0.12	0.0176	1214

** Wire diameters are larger than those specified in BS6724*

Installation conditions for above rating Ambient Air Temperature 30°C
Conductor operating temperature 90°C

Technical Data

Table 8 **Ducab Smokemaster Three Core Armoured Cables 1900/3300V Grade**

Conductor Area	Approximate Diameter			Approximate cable wt.	Maximum armour resistance at 20°C	Maximum conductor resistance at 20°C	Free air (Method 13)
	Under armour	Armour wire dia	Overall				Current Rating
mm^2	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amps
V Copper Power Cables 1900/3300							Three phase AC
*16	21.5	1.6	29.3	1600	1.9	1.15	106
*25	24.5	1.6	32.2	2060	1.7	0.727	142
*35	26.5	1.6	34.8	2400	1.8	0.524	168
50	25.2	2.0	34.7	3200	1.3	0.387	202
70	28.4	2.0	38.0	3800	1.2	0.268	255
95	31.0	2.0	41.4	4730	1.1	0.193	312
120	36.6	2.5	45.7	6070	0.76	0.153	361
150	38.5	2.5	48.5	7010	0.71	0.124	410
185	42.5	2.5	51.9	8270	0.65	0.0991	471
240	47.8	2.5	56.9	10310	0.59	0.0754	554
300	52.5	2.5	61.2	12300	0.55	0.0601	634
400	56.4	2.5	66.6	14980	0.50	0.0470	734

Circular conductor *

Installation conditions for above rating Ambient Air Temperature 30°C
Conductor operating temperature 90°C

Rating Correction Factors (Ca)

For ambient temperatures other than 30°C, the tabulated current ratings must be adjusted by temperature correction factors listed below:

Derating Factors for Cables with a 90°C Operating Temperature

Ambient Temperature °C	25	35	40	45	50	55
Fuse to BS 88 or BS 1361 or Circuit Breaker to BS 3871 or BS EN 60898	1.02	0.96	0.91	0.87	0.82	0.76
Semi-enclosed Fuse to BS 3036	1.02	0.98	0.95	0.93	0.91	0.89

NOTE: All operational data is circulated on the basis of cables installed in air. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to Appendix 4 of BS 7671.

Group Rating Correction Factors (Cg)

For groups of more than one circuit of single core cables, or more than one multicore cable (to be applied to the corresponding current-carrying capacity for a single circuit in the previous Current Ratings Tables).

Derating Factors for Cables with a 90°C Operating Temperature

Number of Cicuits or Multi-core Cables	2	3	4	5	6	8	10	12	14	16	18	20
Grouping Factors for Reference Methods 1 and 3 in Table 4A of BS 7671 IEE Wiring Regulations	0.8	0.7	0.65	0.6	0.57	0.52	0.48	0.45	0.43	0.41	0.39	0.38

Note: All operational data is circulated on the basis of cables installed in air

Technical Data

Short Circuit Current Rating Formula

The formula given below is based on the cables being fully loaded at the start of a short circuit (conductor temperature 90˚C) and a final conductor temperature of 250˚C. It should be ensured that the accessories associated with the cables are also capable of operation at these values of fault current and temperature.

$$I = \frac{kS}{\sqrt{t}} \quad \text{Amps}$$

Where I = Short circuit current (Amps)
S = Copper area of conductor (mm2)
t = Duration of short circuit current (seconds) up to 5 seconds maximum
k = Constant to allow for an initial temperature of 90˚C & final conductor temperature of 250˚C = 143

Special precautions for handling/installation LSZH (Low Smoke Zero Halogen) Sheathed Cables

Cable Sheath Application

Material	Key Properties	Recomended for
PE	High mechanical strength	Direct burial/Duct Installations
PVC	Flexibility & Flame Retardance	General purpose, Laying in trench
LSZH	Zero Halogen / Low Smoke	Mass Transit Systems, High rise buildings & confined locations

Cables like LSZH sheath need to be handled with care during installation. While special additives are used in the formulation of LSZH compound to give the typical flame retardant characteristics of Zero halogen polymers (e.g. high oxygen index, very low smoke density, no acid gas liberation and retardance to flame propagation) some mechanical properties deteriorate. The following basic installation methos are particularly applicable.

a) Cables should not be exposed to sunlight for considerable period before installation i.e., the temp. of the cable sheath should be below 40 degree Celsius.

b) Preferably the installation is done during morning hours when the ambient temp is low.

c) Wire/Rope should not be used directly on cable sheath for pulling.

d) When pulled on cable trays/or any uneven surface, special attention is needed to weldings/or unusually rough terrains.

e) Rollers and bends should not have any sharpness which may damage sheath.

f) Special LSZH compatible accessories and fixings are recommended for installations requiring enhanced fire performance.

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Ducab Smokemaster LSZH Components Look Up Chart
Ducab Smokemaster 600/1000V Cables to BS 6724
COMPONENTS REFERENCE CHART

Nominal Con. Area mm²	No. of cores	Thread Size mm	 BW Indoor Gland LSZH Kit Reference	 CW Outdoor Gland LSZH Kit Reference	 E1W Outdoor Gland LSZH Kit Reference	 Telcleat Ref. 385LSZH	 Ranger Cleat Ref. 382LSZH	 Bolt Cleat 2 Ref. 374 LSZH	 LSZH Resin Joint	 Copper Connectors Lugs
1.5	2	20	LSZH20SBW	LSZH20SSCW	LSZH20SSE1W	01	-	-	-	BT2CS
	3	20	LSZH20SBW	LSZH20SSCW	LSZH20SSE1W	01	01	-	-	BT2CS
	4	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	01	01	-	-	BT2CS
	7	20	LSZH20BW	LSZH20CW	LSZH20E1W	02	01	-	-	BT2CS
	12	25	LSZH25BW	LSZH25CW	LSZH25E1W	02	02	-	-	BT2CS
	19	25	LSZH25BW	LSZH25CW	LSZH25E1W	04	03	-	-	BT2CS
	27	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	03	-	-	BT2CS
	37	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	-	BT2CS
2.5	2	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	01	01	-	-	BT2CS
	3	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	02	01	-	-	BT2CS
	4	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	02	01	-	-	BT2CS
	7	20	LSZH20BW	LSZH20CW	LSZH20E1W	03	01	-	-	BT2CS
	12	25	LSZH25BW	LSZH25CW	LSZH25E1W	04	03	-	-	BT2CS
	19	25	LSZH25BW	LSZH25CW	LSZH25E1W	05	03	-	-	BT2CS
	27	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	-	BT2CS
	37	40	LSZH40BW	LSZH40CW	LSZH40E1W	07	04	-	-	BT2CS
4	2	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	02	01	-	ZHMPJ2	BT6S
	3	20	LSZH20SBW	LSZH20SCW	LSZH20SE1W	02	01	-	ZHMPJ2	BT6S
	4	20	LSZH20BW	LSZH20CW	LSZH20E1W	03	01	-	ZHMPJ2	BT6S
6	2	20	LSZH20SBW	LSZH20CW	LSZH20SE1W	03	02	-	ZHMPJ2	BT6S
	3	20	LSZH20SBW	LSZH20CW	LSZH20E1W	03	02	-	ZHMPJ2	BT6S
	4	20	LSZH20SBW	LSZH20CW	LSZH20E1W	04	02	-	ZHMPJ2	BT6S
10	2	20	LSZH20BW	LSZH20CW	LSZH20E1W	03	02	-	ZHMPJ2	BT10S
	3	20	LSZH20BW	LSZH20CW	LSZH20E1W	04	02	-	ZHMPJ2	BT10S
	4	25	LSZH25BW	LSZH25CW	LSZH25E1W	04	02	-	ZHMPJ2	BT10S
16	2	25	LSZH25BW	LSZH25CW	LSZH25E1W	04	03	-	ZHMPJ2	BT16S
	3	25	LSZH25BW	LSZH25CW	LSZH25E1W	04	03	-	ZHMPJ3	BT16S
	4	25	LSZH25BW	LSZH25CW	LSZH25E1W	05	04	-	ZHMPJ3	BT16S

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Nominal Con. Area mm²	No. of cores	Thread Size mm	BW Indoor Gland LSZH Kit Reference	CW Outdoor Gland LSZH Kit Reference	E1W Outdoor Gland LSZH Kit Reference	Telcleat Ref. 385LSZH	Ranger Cleat Ref. 382LSZH	2 Bolt Cleat Ref. 374 LSZH	LSZH Resin Joint	Copper Connectors Lugs
25	2	25	LSZH25BW	LSZH25CW	LSZH2E1W	05	03	-	ZHMPJ2	BT25CS
	3	32	LSZH32BW	LSZH32CW	LSZH32E1W	05	03	-	ZHMPJ3	BT25CS
	4	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ4	BT25CS
35	2	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ3	BT35CS
	3	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ4	BT35CS
	4	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ4	BT35CS
50	2	25	LSZH25BW	LSZH25CW	LSZH25E1W	05	03	-	ZHMPJ3	BT50CS
	3	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ5	BT50CS
	4	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ5	BT50CS
70	2	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ4	BT70CS
	3	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ5	BT70CS
	4	40	LSZH40BW	LSZH40CW	LSZH40E1W	07	05	-	ZHMPJ5	BT70CS
95	2	32	LSZH32BW	LSZH32CW	LSZH32E1W	06	04	-	ZHMPJ4	BT95CS
	3	40	LSZH40BW	LSZH40CW	LSZH40E1W	07	05	-	ZHMPJ5	BT95CS
	4	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ5	BT95CS
120	2	40	LSZH40BW	LSZH40CW	LSZH40E1W	07	04	-	ZHMPJ5	BT120CS
	3	50	LSZH50BW	LSZH50CW	LSZH50E1W	07	05	-	ZHMPJ6	BT120CS
	4	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ6	BT120CS
150	2	40	LSZH40BW	LSZH40CW	LSZH40E1W	07	05	-	ZHMPJ5	BT150CS
	3	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ6	BT150CS
	4	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ6	BT150CS
185	2	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ5	BT185CS
	3	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ6	BT185CS
	4	63	LSZH63BW	LSZH63CW	LSZH63E1W	-	06	01	ZHMPJ6	BT185CS
240	2	50	LSZH50BW	LSZH50CW	LSZH50E1W	08	05	-	ZHMPJ6	BT240CS
	3	63	LSZH63BW	LSZH63CW	LSZH63E1W	-	06	01	ZHMPJ7	BT240CS
	4	63	LSZH63BW	LSZH63CW	LSZH63E1W	-	06	02	ZHMPJ7	BT240CS
300	2	50	LSZH50BW	LSZH50CW	LSZH50E1W	-	06	01	ZHMPJ6	BT300CS
	3	63	LSZH63BW	LSZH63CW	LSZH63E1W	-	06	02	ZHMPJ7	BT300CS
	4	75	LSZH75SBW	LSZH75CW	LSZH75E1W	-	06	03	ZHMPJ7	BT300CS
400	2	63	LSZH50BW	LSZH63CW	LSZH63E1W	-	06	02	-	BT400CS
	3	75	LSZH75SBW	LSZH75CW	LSZH75E1W	-	06	03	-	BT400CS
	4	75	LSZH75BW	LSZH75CW	LSZH75E1W	-	06	04	ZHMPJ8	BT400CS

All components available from Ducab Connect and authorised distributors

Please Note: When ordering connectors specify stud hole size required, eg. BT10CS8 is a 10 mm² connector with a 8 mm stud hole.
Important Note: The dimensions of cables vary with manufacturing tolerances. We advise the cable diameter is measured where possible before purchasing component.
The recommendations here are given in good faith but Ducab Connect cannot be held liable for mistakes in selection however caused.

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