Base Load Power Hub (BLPH)

Technical Data Sheet (TDS) for Electrical Power and Control Cables

Document Number: 123A90-DDL-EL-DS-20058

Document Class: 2

01	31/07/2024	Accepted for Construction (AFC)	NLK	FMA/AMA	FPA/DLO
00	19/03/2024	Issue for Review (IFR)	NLK	FMA/AMA	FPA/DLO
Rev.	Date	Description	Prepared	Reviewed	Approved

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Table of Contents

SH.	DESCRIPTION	REVISIONS						
		00	01					
1	Cover	X	X					
2	Table of Contents	X	X					
3	Revision / Change Log	X	X					
4	References	X	X					
5	General	X	X					
6	Data sheet for 66kV HV Cables	X	X					
7	Data sheet for 66kV HV Cables	X	X					
8	Data sheet for 66kV HV Cables	X	X					
9	Data sheet for 6.6kV HV Cables (LSZH, Flame Retardant)	X	X					
10	Data sheet for 6.6kV HV Cables (LSZH, Flame Retardant)	X	X					
11	Data sheet for 6.6kV HV Cables (LSZH, Flame Retardant)	X	X					
12	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
13	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
14	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
15	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
16	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
17	Data sheet for LV Power Cables (LSZH, Flame Retardant)	X	X					
18	Data Sheet for LV Power Cables - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
19	Data Sheet for LV Power Cables - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
20	Data Sheet for LV Power Cables - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
21	Data Sheet for LV Power Cables - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
22	Data Sheet for DC Power Cable - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
23	Data Sheet for DC Power Cable - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
24	Data Sheet for DC Power Cable - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
25	Data Sheet for DC Power Cable - Armoured (LSZH, Flame Retardant + Fire Resistant)	X	X					
26	Data Sheet for PE Cables (LSZH, Flame Retardant)	X	X					
27	Data Sheet for PE Cables (LSZH, Flame Retardant)	X	X					
28	Data Sheet for PE Cables (LSZH, Flame Retardant)	X	X					
29	Data Sheet for PE Cables (LSZH, Flame Retardant)	X	X					
30	Data Sheet for Control Cables (LSZH, Flame Retardant)	X	X					
31	Data Sheet for Control Cables (LSZH, Flame Retardant)	X	X					
32	Data Sheet for Control Cables (LSZH, Flame Retardant)	X	X					
33	Data Sheet for Control Cables with screen (LSZH, Flame Retardant)	X	X					
34	Data Sheet for Control Cables with screen (LSZH, Flame Retardant)	X	X					
35	Supplement	X	X					

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

Revision / Change Log

Rev.	Description
00	ISSUE FOR REVIEW (IFR)
01	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
1.	
2.	
3.	
4.	

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

REFERENCE DOCUMENT AND STANDARD:

1)	Technical Specification, IDS and DDS for Eectrical Cables	Doc. No. 123A90-DDL-EL-SP-20057
2)	Cable Sizing Calculation Report (including end of line minimum fault current clearance verification)	Doc. No. 123A90-DDL-EL-RE-20151
3)	LV Cable Sizing Calculation Report	Doc. No. 123A90-DDL-EL-RE-20181
4)	Electrical Power & Control Cable Schedule	Doc. No. 123A90-DDL-EL-LIS-20148
5)	Electrical Engineering Design-DEP Specification	DEP 33.64.10.10-Gen.

Notes:

1) For Armouring Philosophy refer 123A90-DDL-EL-SP-20057 -Technical Specification, IDS and DDS for Eectrical Cables

2) For Cable quantities please refer 123A90-DDL-EL-MTO-20082 MTO - Electrical Power and Control Cables.

3) For Cable tag please refer 123A90-DDL-EL-LIS-20148 Electrical Power & Control Cable Schedule.

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

TITLE

GENERAL

1	**ENVIRONMENTAL CONDITIONS**	
2	Ambient Temperature(minImum) – hourly @ +10m	-8.4 °C
3		
4	Ambient Temperature(nominal) – hourly @ +10m	10.5°C
5		
6	Ambient Temperature(maximum) – hourly @ +10m	25.0°C
7		
8	Relative humidity (%)	Maximum 95 %
9		
10	Atmospheric Pressure (nominal) – hourly @ +10m	1013.7 mbar
11		
12	Annual average wind speed (at 100m)	9.56 m/s
13		
14	Extreme Wind Speed for 1-Year Recurrence Period (at 100 m)	33.1 m/s
15		
16	Extreme Wind Speed for 50-Year Recurrence Period (at 100 m)	41.0 m/s
17		
18	Atmosphere	Marine Offshore-fixed
19		
20	Altitude > 1000 m (m)	not more than 1000 m
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		

TITLE

DATA SHEET FOR 66KV HV CABLE

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	66 kVac	±	5 %		
FREQUENCE	50 Hz	±	2 %		
NEUTRAL SYSTEM	☐ EARTHED			☑ INSULATED	
	☐ EARTHED BY RESISTANCE			☐	
EXPOSITION OF LIGHTNING OVER VOLTAGE				☐ NO	☑ YES

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60840
		FOR SPECIAL CHARACTERISTIC	
	RATED VOLTAGE (Uo/U): 36/66(72.5) kV		
	MAX. OPERATING TEMPERATURE 90 °C	TEMP.SHORT CIRCUIT TEMPERATURE	250 °C
	POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC)		(*) kV
	COEFFICIEN. K: - FOR CONDUCTOR		(*) A $\sqrt{s}$ /mm^2
	- FOR SCREEN OR METAL SHEATS		(*) A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE		☐ FIRE RESISTANCE
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3		☐ % HCl =
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2		☐ T=
	☐ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5		☐ D=
	☐ U.V. RESISTANT	☐ HALOGEN FREE COMPOUND		☐ FLAME RETARDANT

INSTALL. SPECIAL CONDITION	CABLE LADDER, TREFOIL FORMATION
ACCESS.	

NOTES:
(*) TO BE FILLED BY VENDOR

TITLE

DATA SHEET FOR 66KV HV CABLE

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60840	
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu	
	CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)	
INSULATION	MATERIAL: EPR	
SEMI-CONDUCTOR LAYER	☑ FORESEEN AS PER IEC 60840	
	MATERIAL: (*)	
SCREENS	☑ FORESEEN AS PER IEC 60840	
	MATERIAL: COPPER	
ARMOUR	☐ REQUIRED TYPE:	
	MATERIAL:	
OUTER SHEATING	MATERIAL: PVC	
COMPONENTS AND SPECIAL CONSTR.		

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).
(*) TO BE FILLED BY VENDOR

TITLE

DATA SHEET FOR 66KV HV CABLE

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3			
4	n° x NOMINAL AREA OF CONDUCTORS		$N.xmm^2$	1Cx300			
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		$N.xmm^2$	(*)			
6	CONDUCTOR CLASS (2)			(*)			
7	RATED CURRENT IN AIR AT 30°		A	(*)			
8	RATED CURRENT IN GROUND AT 20°		A	(*)			
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	(*)			
11	PHASE REACTANCE AT 50 Hz		Ω/km	(*)			
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	(*)			
13	PHASE CAPACITY		µF/km	(*)			
14							
15	MINIMUM ORDER Q.TY		m	(*)			
16	MAX LENGHT OF DRUMS		m	(*)			
17	DIAMETERS	BARE CONDUCTOR	mm	(*)			
18		CORE (INSULATED CORE)	mm	(*)			
19		METALLIC COVERING	mm	(*)			
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	(*)			
21							
22							
23		OVERALL	mm	(*)			
24	MASSES	CONDUCTORS	kg/km	(*)			
25		INSULATION	kg/km	(*)			
26		METALLIC COVERING	kg/km	(*)			
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	(*)			
28		OUTER SHEATING	kg/km	(*)			
29							
30		TOTAL	kg/km	(*)			
31	EXTERNAL COLOUR			RED			
32	CORE IDENTIFICATION (1)			BLACK			
33							
34							
35							
36							
37							
38							
39							
40	NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN						
41	(*) TO BE FILLED BY VENDOR						
42	NA NOT APPLICABLE						
43							
44							
45							
46							
47							
48							
49							
50							
51							

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	6,6	kVac	±	5	%	
FREQUENCE	50	Hz	±	2	%	
NEUTRAL SYSTEM	☐	EARTHED		☐	INSULATED	
	☑	EARTHED BY RESISTANCE		☐		
EXPOSITION OF LIGHTNING OVER VOLTAGE	☐	NO		☑	YES	

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC-60754-1, IEC-60332-1-2**
			IEC-61034-2
	RATED VOLTAGE (Uo/U): 3.6/6(7.2) kV		
	MAX. OPERATING TEMPERATURE 90 °C	TEMP.SHORT CIRCUIT TEMPERATURE	250 °C
	POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC)		21 kV
	COEFFICIEN. K: - FOR CONDUCTOR		143 A $\sqrt{s}$ /mm^2
	- FOR SCREEN OR METAL SHEATS		115 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	CABLE LADDER, TREFOIL FORMATION
ACCESS.	

NOTES:

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60092-350
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL: EPR
SEMI-CONDUCTOR LAYER	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: HF EXTRUDED COMPOUND
SCREENS	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: Plain Copper Taped Screen
ARMOUR	☑ REQUIRED TYPE: MATERIAL: Plain Copper Wire Braid
OUTER SHEATING	MATERIAL: SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

TITLE

DATA SHEET FOR 6.6KV HV CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

					Note-3	Note-3		
3	MR TAG / PART NUMBER							
4	n° x NOMINAL AREA OF CONDUCTORS			N.xmm^2	1Cx70	1Cx150		
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR			N.xmm	352x0,52	776X0,51		
6	CONDUCTOR CLASS (2)				2	2		
7	RATED CURRENT IN AIR AT 30°			A	285	460		
8	RATED CURRENT IN GROUND AT 20°			A	272	416		
9								
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.			Ω/km	0,345	0,163		
11	PHASE REACTANCE AT 50 Hz			Ω/km	0,110	0,097		
12	MINIMUM INSULATION RESISTANCE AT 20°			MΩ/km	745	567		
13	PHASE CAPACITY			µF/km	0,301	0,396		
14								
15	MINIMUM ORDER Q.TY			m	TBD	TBD		
16	MAX LENGHT OF DRUMS			m	TBD	TBD		
17	DIAMETERS	BARE CONDUCTOR		mm	10	14,3		
18		CORE (INSULATED CORE)		mm	19,6	24		
19		UNDER ARMOUR		mm	23,6	28,3		
20		ARMOUR OR CONCENTRIC CONDUCTOR		mm	24,8	29,5		
21								
22								
23		OVERALL		mm	29	34		
24	MASSES	CONDUCTORS		kg/km	640	1350		
25		INSULATION		kg/km	290	410		
26		INNER COVERING		kg/km	180	220		
27		ARMOUR OR CONCENTRIC CONDUCTOR		kg/km	220	250		
28		OUTER SHEATING		kg/km	280	350		
29								
30		TOTAL		kg/km	1610	2580		
31	EXTERNAL COLOUR				RED	RED		
32	CORE IDENTIFICATION (1)				NATURAL	NATURAL		
33								
34								
35								
36								
37								
38								

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

(*) TO BE FILLED BY VENDOR

NA NOT APPLICABLE

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	0.8/0.4/0.23 kVac	±	5 %			
FREQUENCE	50 Hz	±	2 %			
NEUTRAL SYSTEM	☑ EARTHED			☐ INSULATED		
	☐ EARTHED BY RESISTANCE			☐		
EXPOSITION OF LIGHTNING OVER VOLTAGE				☐ NO	☑ YES	
PROJECT SPECIFICATION:	123A90-DDL-EL-SP-20057					

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC-60754-1, IEC-60332-1-2**
			IEC-61034-2
	RATED VOLTAGE (Uo/U): 0.6/1 kV		
	MAX. OPERATING TEMPERATURE 90 °C	TEMP.SHORT CIRCUIT TEMPERATURE	250 °C
	POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC)		3,5 kV
	COEFFICIEN. K: - FOR CONDUCTOR		143 A $\sqrt{s}$ /mm^2
	- FOR SCREEN OR METAL SHEATS		NA A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	CABLE LADDER, SINGLE CORE CABLE -TREFOIL FORMATION
	MULTI CORE CABLE - FLAT / DOUBLE LAYER
ACCESS.	

NOTES:

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.:	IEC 60092-350
CONDUCTOR	MATERIAL:	☑ Cu ☐ Al ☐ Tinned Cu
	CLASS (1):	☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL:	SINGLE CORE - EPR MULTICORE - EPR
SEMI-CONDUCTOR LAYER		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	
SCREENS		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	COPPER
ARMOUR		☐ REQUIRED TYPE:
	MATERIAL:	
OUTER SHEATING	MATERIAL:	SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.		

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER		Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS	N.xmm^2	1Cx300	1Cx95	3G2.5	3G4
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR	N.xmm	37X3,35	19X2,67	7X0,67	7X0,85
6	CONDUCTOR CLASS (2)		2	2	2	2
7	RATED CURRENT IN AIR AT 30°	A	698	323	31	41
8	RATED CURRENT IN GROUND AT 20°	A	623	333	41	53
9						
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.	Ω/km	0,08	0,247	9,45	5,88
11	PHASE REACTANCE AT 50 Hz	Ω/km	0,08	0,085	0,103	0,096
12	MINIMUM INSULATION RESISTANCE AT 20°	MΩ/km	330	400	1100	1100
13	PHASE CAPACITY	µF/km	0,722	0,451	0,157	0,178
14						
15	MINIMUM ORDER Q.TY	m	300	300	300	300
16	MAX LENGHT OF DRUMS	m	1000	3000	7000	6000
17	DIAMETERS	BARE CONDUCTOR	mm	21	11,3	2	2,6
18		CORE (INSULATED CORE)	mm	25,8	14,5	4	4,6
19		INNER COVERING	mm	NA	NA	10,6	11,9
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA	NA	NA
21							
22							
23		OVERALL	mm	29,4	17,3	13	14,3
24	MASSES	CONDUCTORS	kg/km	2730	864	68	109
25		INSULATION	kg/km	205	58	28	34
26		INNER COVERING	kg/km	NA	NA	83	101
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA	NA	NA
28		OUTER SHEATING	kg/km	320	100	74	82
29							
30		TOTAL	kg/km	3255	1022	253	326
31	EXTERNAL COLOUR			GREY	GREY	GREY	GREY
32	CORE IDENTIFICATION (1)			BK	BK	BN,BU,Y/G	BN,BU,Y/G
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

NA NOT APPLICABLE

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER		Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS	N.xmm^2	3G6	3G10	4G2.5_E	4G4_E
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR	N.xmm	7X1,05	7X1,35	7X0,67	7X0,85
6	CONDUCTOR CLASS (2)		2	2	2	2
7	RATED CURRENT IN AIR AT 30°	A	53	72	31	41
8	RATED CURRENT IN GROUND AT 20°	A	67	88	41	53
9						
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.	Ω/km	3,93	2,33	9,45	5,88
11	PHASE REACTANCE AT 50 Hz	Ω/km	0,09	0,084	0,103	0,096
12	MINIMUM INSULATION RESISTANCE AT 20°	MΩ/km	770	630	1100	1100
13	PHASE CAPACITY	µF/km	0,196	0,219	0,143	0,16
14						
15	MINIMUM ORDER Q.TY	m	300	300	300	300
16	MAX LENGHT OF DRUMS	m	5000	4000	6000	5000
17	DIAMETERS	BARE CONDUCTOR	mm	3,2	4,1	2	2,6
18		CORE (INSULATED CORE)	mm	5,2	6,1	4	4,6
19		INNER COVERING	mm	13,2	15,1	11,6	13,1
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA	NA	NA
21							
22							
23		OVERALL	mm	15,6	17,7	14	15,5
24	MASSES	CONDUCTORS	kg/km	163	273	91	145
25		INSULATION	kg/km	40	49	37	46
26		INNER COVERING	kg/km	120	151	87	106
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA	NA	NA
28		OUTER SHEATING	kg/km	93	113	83	94
29							
30		TOTAL	kg/km	416	586	298	391
31	EXTERNAL COLOUR			GREY	GREY	GREY	GREY
32	CORE IDENTIFICATION (1)			BN,BU,Y/G	BN,BU,Y/G	BK,BN,BU,Y/G	BK,BN,BU,Y/G
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER		Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS	N.xmm^2	4G4	4Cx10	4G16	4G35
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR	N.xmm	7X0,85	7X1,35	7X1,7	7X2,64
6	CONDUCTOR CLASS (2)		2	2	2	2
7	RATED CURRENT IN AIR AT 30°	A	41	72	96	158
8	RATED CURRENT IN GROUND AT 20°	A	53	88	114	179
9						
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.	Ω/km	5,88	2,33	1,47	0,668
11	PHASE REACTANCE AT 50 Hz	Ω/km	0,096	0,084	0,08	0,076
12	MINIMUM INSULATION RESISTANCE AT 20°	MΩ/km	1100	630	530	480
13	PHASE CAPACITY	µF/km	0,16	0,192	0,209	0,217
14						
15	MINIMUM ORDER Q.TY	m	300	300	300	300
16	MAX LENGHT OF DRUMS	m	5000	3000	3000	1500
17	DIAMETERS	BARE CONDUCTOR	mm	2,6	4,1	5,1	6,9
18		CORE (INSULATED CORE)	mm	4,6	6,1	7,1	9,3
19		INNER COVERING	mm	13,1	16,7	19,1	24,4
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA	NA	NA
21							
22							
23		OVERALL	mm	15,5	19,3	21,9	27,4
24	MASSES	CONDUCTORS	kg/km	145	364	582	1274
25		INSULATION	kg/km	46	65	76	121
26		INNER COVERING	kg/km	106	157	196	297
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA	NA	NA
28		OUTER SHEATING	kg/km	94	133	161	204
29							
30		TOTAL	kg/km	391	719	1015	1896
31	EXTERNAL COLOUR			GREY	GREY	GREY	GREY
32	CORE IDENTIFICATION (1)			BK,BN,GY,Y/G	BK,BN,GY,BU	BK,BN,GY,Y/G	BK,BN,GY,Y/G
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 17 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR LV POWER CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER		Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS	N.xmm^2	5G4	5G16	5G50	5G70
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR	N.xmm	7X0,85	7X1,7	14X2,21	14X2,64
6	CONDUCTOR CLASS (2)		2	2	2	2
7	RATED CURRENT IN AIR AT 30°	A	41	96	193	245
8	RATED CURRENT IN GROUND AT 20°	A	53	114	212	259
9						
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.	Ω/km	5,88	1,47	0,494	0,342
11	PHASE REACTANCE AT 50 Hz	Ω/km	0,096	0,08	0,076	0,074
12	MINIMUM INSULATION RESISTANCE AT 20°	MΩ/km	910	530	480	410
13	PHASE CAPACITY	µF/km	0,16	0,209	0,219	0,223
14						
15	MINIMUM ORDER Q.TY	m	300	300	300	300
16	MAX LENGHT OF DRUMS	m	4000	2500	1000	900
17	DIAMETERS	BARE CONDUCTOR	mm	2,6	5,1	8	9,6
18		CORE (INSULATED CORE)	mm	4,6	7,1	10,8	12,4
19		INNER COVERING	mm	14,4	21,2	31,6	35,9
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA	NA	NA
21							
22							
23		OVERALL	mm	17	24	35	39,5
24	MASSES	CONDUCTORS	kg/km	182	728	2275	3185
25		INSULATION	kg/km	57	95	204	238
26		INNER COVERING	kg/km	114	211	434	538
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA	NA	NA
28		OUTER SHEATING	kg/km	120	197	206	311
29							
30		TOTAL	kg/km	473	1231	3119	4272
31	EXTERNAL COLOUR			GREY	GREY	GREY	GREY
32	CORE IDENTIFICATION (1)			BK,BN,GY,BU,Y/G	BK,BN,GY,BU,Y/G	BK,BN,GY,BU,Y/G	BK,BN,GY,BU,Y/G
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

TITLE

Data Sheet for LV Power Cables - Armoured (LSZH, FLAME RETARDANT + FIRE RESISTANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	0.4/0.23 kVac	±	5 %			
FREQUENCE	50 Hz	±	2 %			
NEUTRAL SYSTEM	☑ EARTHED			☐ INSULATED		
	☐ EARTHED BY RESISTANCE			☐		
EXPOSITION OF LIGHTNING OVER VOLTAGE				☐ NO	☑ YES	

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT

REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
	FOR SPECIAL CHARACTERISTIC	**IEC 60332-1-2, IEC 60331-21, IEC-60754-1, IEC 61034-2**
		IEC 60079-14

RATED VOLTAGE (Uo/U): 0.6/1 kV

MAX. OPERATING TEMPERATURE 90 °C TEMP.SHORT CIRCUIT TEMPERATURE 250 °C

POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC) 3,5 kV

COEFFICIEN. K: - FOR CONDUCTOR 143 A $\sqrt{s}$ /mm^2

- FOR SCREEN OR METAL SHEATS 64 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.

☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☑ FIRE RESISTANCE	
☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION

CABLE LADDER, SINGLE CORE CABLE -TREFOIL FORMATION

MULTI CORE CABLE - FLAT / DOUBLE LAYER

HAZARDOUS AREA CLASSIFICATION = Zone-1, Gr IIC (II-B + H2), T1

ACCESS.

NOTES:

TITLE

Data Sheet for LV Power Cables - Armoured (LSZH, FLAME RETARDANT + FIRE RESISTANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60092-350, IEC 60079-14
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL: SINGLE CORE - EPR MULTICORE - EPR
SEMI-CONDUCTOR LAYER	☐ FORESEEN AS PER IEC 60092-350 MATERIAL:
SCREENS	☐ FORESEEN AS PER IEC 60092-350 MATERIAL: COPPER
ARMOUR	☑ REQUIRED TYPE: STEEL WIRE MATERIAL: GALVANIZED STEEL
OUTER SHEATING	MATERIAL: SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

TITLE

Data Sheet for LV Power Cables - Armoured (LSZH, FLAME RETARDANT + FIRE RESISTANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER			Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	3G2.5	3G4	3G6	4G2.5_E
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7X0,67	7X0,85	7x1,05	7x0,67
6	CONDUCTOR CLASS (2)			2	2	2	2
7	RATED CURRENT IN AIR AT 30°		A	31	41	53	31
8	RATED CURRENT IN GROUND AT 20°		A	41	53	67	41
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	9,45	5,88	3,93	9,45
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,107	0,1	0,094	0,107
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	940	790	690	940
13	PHASE CAPACITY		µF/km	0,157	0,178	0,196	0,143
14							
15	MINIMUM ORDER Q.TY		m	300	300	300	300
16	MAX LENGHT OF DRUMS		m	5000	4000	4000	4500
17	DIAMETERS	BARE CONDUCTOR	mm	2	2,6	3,2	2
18		CORE (INSULATED CORE)	mm	4,5	5,1	5,7	4,5
19		INNER COVERING	mm	11,7	13	14,3	12,8
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	12,9	14,2	15,5	14
21							
22							
23		OVERALL	mm	15,5	17	18,3	16,8
24	MASSES	CONDUCTORS	kg/km	68	109	163	91
25		INSULATION	kg/km	41	50	58	55
26		INNER COVERING	kg/km	98	117	137	103
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	99	113	123	108
28		OUTER SHEATING	kg/km	96	114	126	116
29							
30		TOTAL	kg/km	402	503	607	473
31	EXTERNAL COLOUR			ORANGE	ORANGE	ORANGE	ORANGE
32	CORE IDENTIFICATION (1)			BN,BU,Y/G	BN,BU,Y/G	BN,BU,Y/G	BK,BN,BU,Y/G
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

TITLE

Data Sheet for LV Power Cables - Armoured (LSZH, FLAME RETARDANT + FIRE RESISTANT)

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3			
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	4G4_E			
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7x0,85			
6	CONDUCTOR CLASS (2)			2			
7	RATED CURRENT IN AIR AT 30°		A	41			
8	RATED CURRENT IN GROUND AT 20°		A	53			
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	5,88			
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,1			
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	790			
13	PHASE CAPACITY		µF/km	0,16			
14							
15	MINIMUM ORDER Q.TY		m	300			
16	MAX LENGHT OF DRUMS		m	4000			
17	DIAMETERS	BARE CONDUCTOR	mm	2,6			
18		CORE (INSULATED CORE)	mm	5,1			
19		INNER COVERING	mm	14,3			
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	15,5			
21							
22							
23		OVERALL	mm	18,3			
24	MASSES	CONDUCTORS	kg/km	145			
25		INSULATION	kg/km	67			
26		INNER COVERING	kg/km	122			
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	123			
28		OUTER SHEATING	kg/km	129			
29							
30		TOTAL	kg/km	586			
31	EXTERNAL COLOUR			ORANGE			
32	CORE IDENTIFICATION (1)			BK,BN,BU,Y/G			
33							
34							
35							
36							
37							
38							
39							
40	NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN						
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							

TITLE

DATA SHEET FOR DC POWER CABLE - ARMOURED (LSZH, FLAME RETARDANT + FIRE RESISTANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	0.216/0.132/0.110/0.024 kVdc		±	5 %		
FREQUENCE						
NEUTRAL SYSTEM	☐ EARTHED		☐ INSULATED			
	☐ EARTHED BY RESISTANCE		☐			
EXPOSITION OF LIGHTNING OVER VOLTAGE	☐ NO		☑ YES			

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC 60332-1-2, IEC 60331-21, IEC-60754-1, IEC 61034-2**
			IEC 60079-14
	RATED VOLTAGE (Uo/U): 0.6/1 kV		
	MAX. OPERATING TEMPERATURE 90 °C	TEMP.SHORT CIRCUIT TEMPERATURE	250 °C
	POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC)		3,5 kV
	COEFFICIEN. K: - FOR CONDUCTOR		143 A $\sqrt{s}$ /mm^2
	- FOR SCREEN OR METAL SHEATS		64 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☑ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	CABLE LADDER, SINGLE CORE CABLE -TREFOIL FORMATION
	MULTI CORE CABLE - FLAT / DOUBLE LAYER
ACCESS.	

NOTES:

TITLE

DATA SHEET FOR DC POWER CABLE - ARMOURED (LSZH, FLAME RETARDANT + FIRE RESISTANT)

MATERIALS

GENERAL DATA	REF.STD N.:	IEC 60092-350, IEC 60079-14
CONDUCTOR	MATERIAL:	☑ Cu ☐ Al ☐ Tinned Cu
	CLASS (1):	☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL:	SINGLE CORE - EPR MULTICORE - EPR
SEMI-CONDUCTOR LAYER		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	
SCREENS		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	COPPER
ARMOUR		☑ REQUIRED TYPE: STEEL WIRE
	MATERIAL:	GALVANIZED STEEL
OUTER SHEATING	MATERIAL:	SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.		

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 24 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR DC POWER CABLE - ARMOURED (LSZH, FLAME RETARDANT + FIRE RESISTANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER			Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	1CX25	1CX25	1CX70	1CX70
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7X2,25	7X2,25	14X2,64	14X2,64
6	CONDUCTOR CLASS (2)			2	2	2	2
7	RATED CURRENT IN AIR AT 30°		A	137	137	261	261
8	RATED CURRENT IN GROUND AT 20°		A	161	161	278	278
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	0,927	0,927	0,342	0,342
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,13	0,13	0,11	0,11
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	480	480	380	380
13	PHASE CAPACITY		µF/km	0,292	0,292	0,393	0,393
14							
15	MINIMUM ORDER Q.TY		m	300	300	300	300
16	MAX LENGHT OF DRUMS		m	5000	5000	3000	3000
17	DIAMETERS	BARE CONDUCTOR	mm	5,9	5,9	9,6	9,6
18		CORE (INSULATED CORE)	mm	9,2	9,2	13,3	13,3
19		INNER COVERING	mm	11,2	11,2	15,3	15,3
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	12,4	12,4	16,5	16,5
21							
22							
23		OVERALL	mm	15	15	19,5	19,5
24	MASSES	CONDUCTORS	kg/km	227	227	637	637
25		INSULATION	kg/km	42	42	71	71
26		INNER COVERING	kg/km	53	53	75	75
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	96	96	131	131
28		OUTER SHEATING	kg/km	96	96	112	112
29							
30		TOTAL	kg/km	514	514	1026	1026
31	EXTERNAL COLOUR			ORANGE	ORANGE	ORANGE	ORANGE
32	CORE IDENTIFICATION (1)			RED	BLACK	RED	BLACK
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 25 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR DC POWER CABLE - ARMOURED (LSZH, FLAME RETARDANT + FIRE RESISTANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER			Note-3	Note-3	Note-3	
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	2CX2.5	2CX2.5	3G16	
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm^2	7X0,67	7X0,67	7X1,7	
6	CONDUCTOR CLASS (2)			2	2	2	
7	RATED CURRENT IN AIR AT 30°		A	38	38	96	
8	RATED CURRENT IN GROUND AT 20°		A	47	47	114	
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	9,45	9,45	1,47	
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,107	0,107	0,082	
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	940	940	460	
13	PHASE CAPACITY		µF/km	0,157	0,157	0,241	
14							
15	MINIMUM ORDER Q.TY		m	300	300	300	
16	MAX LENGHT OF DRUMS		m	6000	6000	2000	
17	DIAMETERS	BARE CONDUCTOR	mm	2	2	5,1	
18		CORE (INSULATED CORE)	mm	4,5	4,5	8	
19		INNER COVERING	mm	11	11	19,2	
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	12,2	12,2	20,4	
21							
22							
23		OVERALL	mm	14,8	14,8	23,6	
24	MASSES	CONDUCTORS	kg/km	45	45	436	
25		INSULATION	kg/km	28	28	98	
26		INNER COVERING	kg/km	105	105	230	
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	95	95	162	
28		OUTER SHEATING	kg/km	91	91	182	
29							
30		TOTAL	kg/km	364	364	1108	
31	EXTERNAL COLOUR			ORANGE	ORANGE	ORANGE	
32	CORE IDENTIFICATION (1)			RD,BK	Black	RD,BK,Y/G	
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

TITLE

DATA SHEET FOR PE CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	0,4	kVac	±	5	%		
FREQUENCE	50	Hz	±	2	%		
NEUTRAL SYSTEM	☑ EARTHED					☐ INSULATED	
	☐ EARTHED BY RESISTANCE					☐	
EXPOSITION OF LIGHTNING OVER VOLTAGE						☐ NO	☑ YES

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT

REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
	FOR SPECIAL CHARACTERISTIC	

RATED VOLTAGE (Uo/U): 0.45/0.75 kV

MAX. OPERATING TEMPERATURE 70 °C — TEMP.SHORT CIRCUIT TEMPERATURE 160 °C

SPARK TEST VOLTAGE : (AS PER IEC) 7 to 13 kV

COEFFICIEN. K: - FOR CONDUCTOR 115 A $\sqrt{s}$ /mm^2

- FOR SCREEN OR METAL SHEATS NA A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.

☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION

CABLE LADDER, SINGLE CORE CABLE -TREFOIL FORMATION

ACCESS.

NOTES:

TITLE

DATA SHEET FOR PE CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60228
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL:
SEMI-CONDUCTOR LAYER	☐ FORESEEN MATERIAL:
SCREENS	☐ FORESEEN MATERIAL: COPPER
ARMOUR	☐ REQUIRED TYPE: MATERIAL:
OUTER SHEATING	MATERIAL: LSZH Compound to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 28 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR PE CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER			Note-3	Note-3	Note-3	Note-3
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	1Cx150	1Cx95	1Cx35	1Cx16
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	30X2,64	19X2,67	7X2,64	7X1,7
6	CONDUCTOR CLASS (2)			2	2	2	2
7	RATED CURRENT IN AIR AT 30°		A	275	207	110	68
8	RATED CURRENT IN GROUND AT 20°		A	268	213	126	84
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	0,16	0,247	0,668	1,47
11	PHASE REACTANCE AT 50 Hz		Ω/km	NA	NA	NA	NA
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	10	10	10	10
13	PHASE CAPACITY		µF/km	NA	NA	NA	NA
14							
15	MINIMUM ORDER Q.TY		m	300	300	300	500
16	MAX LENGHT OF DRUMS		m	2000	3000	7000	10000
17	DIAMETERS	BARE CONDUCTOR	mm	14,1	11,3	6,9	5,1
18		CORE (INSULATED CORE)	mm	17,7	14,5	9,3	7,1
19		INNER COVERING	mm	NA	NA	NA	NA
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA	NA	NA
21							
22							
23		OVERALL	mm	NA	NA	NA	NA
24	MASSES	CONDUCTORS	kg/km	1365	864	318	145
25		INSULATION	kg/km	86	85	47	32
26		INNER COVERING	kg/km	NA	NA	NA	NA
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA	NA	NA
28		OUTER SHEATING	kg/km	NA	NA	NA	NA
29							
30		TOTAL	kg/km	1451	949	365	177
31	EXTERNAL COLOUR			Y/G	Y/G	Y/G	Y/G
32	CORE IDENTIFICATION (1)			NA	NA	NA	NA
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

NA NOT APPLICABLE

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 29 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR PE CABLE (LSZH, FLAME RETARDANT)

CONSTRUCTIVE DATA

3	MR TAG / PART NUMBER			Note-3	Note-3		
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	1Cx10	1Cx6		
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7X1,35	7X1,05		
6	CONDUCTOR CLASS (2)			2	2		
7	RATED CURRENT IN AIR AT 30°		A	50	36		
8	RATED CURRENT IN GROUND AT 20°		A	62	47		
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	2,33	3,93		
11	PHASE REACTANCE AT 50 Hz		Ω/km	NA	NA		
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	10	10		
13	PHASE CAPACITY		µF/km	NA	NA		
14							
15	MINIMUM ORDER Q.TY		m	500	1000		
16	MAX LENGHT OF DRUMS		m	11000	11000		
17	DIAMETERS	BARE CONDUCTOR	mm	4,1	3,2		
18		CORE (INSULATED CORE)	mm	6,1	4,8		
19		METALLIC COVERING	mm	NA	NA		
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA	NA		
21							
22							
23		OVERALL	mm	NA	NA		
24	MASSES	CONDUCTORS	kg/km	91	54		
25		INSULATION	kg/km	28	19		
26		METALLIC COVERING	kg/km	NA	NA		
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA	NA		
28		OUTER SHEATING	kg/km	NA	NA		
29							
30		TOTAL	kg/km	119	73		
31	EXTERNAL COLOUR			Y/G	Y/G		
32	CORE IDENTIFICATION (1)			NA	NA		
33							
34							
35							
36							
37							
38							

NOTE: (1) BK=BLACK, BN=BROWN, GY=GRAY, BU=BLUE, RD=RED, Y/G=YELLOW/GREEN

NA NOT APPLICABLE

TITLE

DATA SHEET FOR CONTROL CABLE (LSZH, FLAME RETARDANT)

ELECTRICAL SYSTEM CHARACTERISTIC

OPERATING VOLTAGE	0.110 kVdc	±	5 %			
FREQUENCE	50 Hz	±	2 %			
NEUTRAL SYSTEM	☑ EARTHED			☐ INSULATED		
	☐ EARTHED BY RESISTANCE			☐		
EXPOSITION OF LIGHTNING OVER VOLTAGE				☐ NO	☑ YES	

PROJECT SPECIFICATION: 123A90-DDL-EL-SP-20057

CABLE CHARACTERISTIC

GENERAL CHARACT	REFERENCE STD	FOR CONSTRUCTION AND TEST	IEC 60092-350
		FOR SPECIAL CHARACTERISTIC	**IEC-60754-1, IEC-60332-1-2**
			IEC-61034-2
	RATED VOLTAGE (Uo/U): 0.6/1 kV		
	MAX. OPERATING TEMPERATURE 90 °C	TEMP.SHORT CIRCUIT TEMPERATURE	250 °C
	POWER FREQUENCY TEST VOLTAGE/IMPULSE WITHSTAND VOLTAGE (Up): (AS PER IEC)		3,5 kV
	COEFFICIEN. K: - FOR CONDUCTOR		143 A $\sqrt{s}$ /mm^2
	- FOR SCREEN OR METAL SHEATS		115 A $\sqrt{s}$ /mm^2

SPECIAL CHARACT.	☐ HYDROCARBON RESISTANCE	☐ NON PROPAGATING FIRE	☐ FIRE RESISTANCE	
	☐ BUNCHED CABLES NON PROPAGATING FIRE : TOT. Q.TY OF COMBUSTIBLE MATERIAL			kg/m
	☐ LOW CORROSIVE GAS EMISSION	☐ % HCl ≤ 0,3	☐ % HCl =	
	☐ LOW TOXIC GAS EMISSION (T INDEX)	☐ T ≤ 2	☐ T=	
	☑ LOW SMOKE EMISION (OPTICAL DENSITY)	☐ D ≤ 1,5	☐ D=	
	☐ U.V. RESISTANT	☑ HALOGEN FREE COMPOUND	☑ FLAME RETARDANT	

INSTALL. SPECIAL CONDITION	MULTI CORE CABLE - FLAT / DOUBLE LAYER
ACCESS.	

NOTES:

TITLE

DATA SHEET FOR CONTROL CABLE (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.:	IEC 60092-350
CONDUCTOR	MATERIAL:	☑ Cu ☐ Al ☐ Tinned Cu
	CLASS (1):	☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL:	SINGLE CORE - XLPE MULTICORE - XLPE
SEMI-CONDUCTOR LAYER		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	
SCREENS		☐ FORESEEN AS PER IEC 60092-350
	MATERIAL:	COPPER
ARMOUR		☐ REQUIRED TYPE:
	MATERIAL:	
OUTER SHEATING	MATERIAL:	SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.		

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 32 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR CONTROL CABLE (LSZH, FLAME RETARDANT)

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3			
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	7Cx1.5			
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7X0,53			
6	CONDUCTOR CLASS (2)			2			
7	RATED CURRENT IN AIR AT 30°		A	17			
8	RATED CURRENT IN GROUND AT 20°		A	22			
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	15,43			
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,11			
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	1000			
13	PHASE CAPACITY		µF/km	0,081			
14							
15	MINIMUM ORDER Q.TY		m	300			
16	MAX LENGHT OF DRUMS		m	6000			
17	DIAMETERS	BARE CONDUCTOR	mm	1,6			
18		CORE (INSULATED CORE)	mm	3			
19		INNER COVERING	mm	11,1			
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	NA			
21							
22							
23		OVERALL	mm	13,5			
24	MASSES	CONDUCTORS	kg/km	95			
25		INSULATION	kg/km	36			
26		INNER COVERING	kg/km	63			
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	NA			
28		OUTER SHEATING	kg/km	82			
29							
30		TOTAL	kg/km	276			
31	EXTERNAL COLOUR			GREY			
32	CORE IDENTIFICATION (1)			BLACK			
33							
34							
35							
36							
37							
38							

39

40 NOTE: (1) CONTROL CABLES: 5 CORES & ABOVE BLACK WITH SEQUENTIAL NUMBERING INDELEBILY MARKED

41 NA NOT APPLICABLE

42

43

44

45

46

47

48

49

50

51

TITLE

DATA SHEET FOR CONTROL CABLE WITH SCREEN (LSZH, FLAME RETARDANT)

MATERIALS

GENERAL DATA	REF.STD N.: IEC 60092-350
CONDUCTOR	MATERIAL: ☑ Cu ☐ Al ☐ Tinned Cu CLASS (1): ☑ CLASS 2 ☐ CLASS 5 (F) ☐ CLASS 6 (H)
INSULATION	MATERIAL: SINGLE CORE - XLPE MULTICORE - XLPE
SEMI-CONDUCTOR LAYER	☐ FORESEEN AS PER IEC 60092-350 MATERIAL:
SCREENS	☑ FORESEEN AS PER IEC 60092-350 MATERIAL: COPPER
ARMOUR	☐ REQUIRED TYPE: MATERIAL:
OUTER SHEATING	MATERIAL: SHF1 to IEC 60093.360
COMPONENTS AND SPECIAL CONSTR.	

NOTE: (1) CLASS 1 : SOLID CONDUCOR - (U).
CLASS 2 : STRANDARD CONDUCTOR: CIRCULAR -R-, SHAPED -S-
CLASS 5 : FLEXIBLE CONDUCTOR - (F).
CLASS 6 : HIGHLY FLEXIBLE CONDUCTOR - (H) o (FF).

CROSSWIND	HOLLANDSE KUST NOORD WIND PARK Project Contract No. CW-I-WP4-2023-05	ROSETTI MARINO Sh: 34 of 35
Document Title:	Technical Data Sheet (TDS) for Electrical Power and Control Cables	Date: 31/07/2024 Rev.: 01

TITLE

DATA SHEET FOR CONTROL CABLE WITH SCREEN (LSZH, FLAME RETARDANT)

1	**CONSTRUCTIVE DATA**						
2							
3	MR TAG / PART NUMBER			Note-3			
4	n° x NOMINAL AREA OF CONDUCTORS		N.xmm^2	4C X 4			
5	n° AND DIAMETER OF WIRES IN EACH CONDUCTOR		N.xmm	7X0,85			
6	CONDUCTOR CLASS (2)			2			
7	RATED CURRENT IN AIR AT 30°		A	41			
8	RATED CURRENT IN GROUND AT 20°		A	53			
9							
10	A.C. PHASES RESISTANCE AT THE MAX OP. TEMP.		Ω/km	5,88			
11	PHASE REACTANCE AT 50 Hz		Ω/km	0,096			
12	MINIMUM INSULATION RESISTANCE AT 20°		MΩ/km	690			
13	PHASE CAPACITY		µF/km	0,16			
14							
15	MINIMUM ORDER Q.TY		m	300			
16	MAX LENGHT OF DRUMS		m	5000			
17	DIAMETERS	BARE CONDUCTOR	mm	2,6			
18		CORE (INSULATED CORE)	mm	4			
19		INNER COVERING	mm	11,6			
20		ARMOUR OR CONCENTRIC CONDUCTOR	mm	12,8			
21							
22							
23		OVERALL	mm	15,4			
24	MASSES	CONDUCTORS	kg/km	145			
25		INSULATION	kg/km	30			
26		INNER COVERING	kg/km	88			
27		ARMOUR OR CONCENTRIC CONDUCTOR	kg/km	109			
28		OUTER SHEATING	kg/km	99			
29							
30		TOTAL	kg/km	471			
31	EXTERNAL COLOUR			GREY			
32	CORE IDENTIFICATION (1)			BLACK			
33							
34							
35							
36							
37							
38							
39							
40	NOTE: (1) CONTROL CABLES: 5 CORES & ABOVE BLACK WITH SEQUENTIAL NUMBERING INDELEBILY MARKED						
41	NA NOT APPLICABLE						
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							

Row	Supplement		Rev.
1	Tag No. :		
2	Service :		
3	PURCHASE ORDER SPECIFIC REQUIREMENTS		

This document undergoes an issuance cycle within EDMS "Fusionlive".
Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy