MATERIAL APPROVAL

Project : VISHAY SEMICONDUCTOR (M) SDN. BHD
To : PERUNDING SHANU SDN. BHD.
From : HX SOLUTIONS SDN BHD
Ref : PRM01/HX/M7956/C-003
Date : 12nd SEPTEMBER 2024

Item	Product Name	Product Model
1)	HIGH VOLTAGE CABLE	SOUTHERN CABLE

Attachment
Manufacturer : SOUTHERN CABLE
Supplier : GEMILITE (M) SDN. BHD
Supplier Tel No : 012-211 4818

Submitted By : HX SOLUTIONS SDN BHD

Sign : .....

Name : HO CHAN HOONG

Approved		PERUNDING SHANU SDN. BHD.
Rejected		
Commented		Date :

Comments :-

SOUTHERN CABLE SDN. BHD.
(268538-U)

Design with specification, manufacture with intergrity.

MEDIUM & HIGH VOLTAGE CABLE

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DESIGN FOR HIGH POWER TRANSMISSION

SOUTHERNCABLE.COM.MY

Southern Cable manufactures medium voltage (MV) cables defined by the International Electrotechnical Commission (IEC) with voltage rating from 1kV up to 132kV. From single core to multicore, we supply our MV cable for power distribution between high and low voltage application, eg. from utilities company to residential or industrial complexes, even renewable energy resources such as hydrodam and solar farm to power grids.

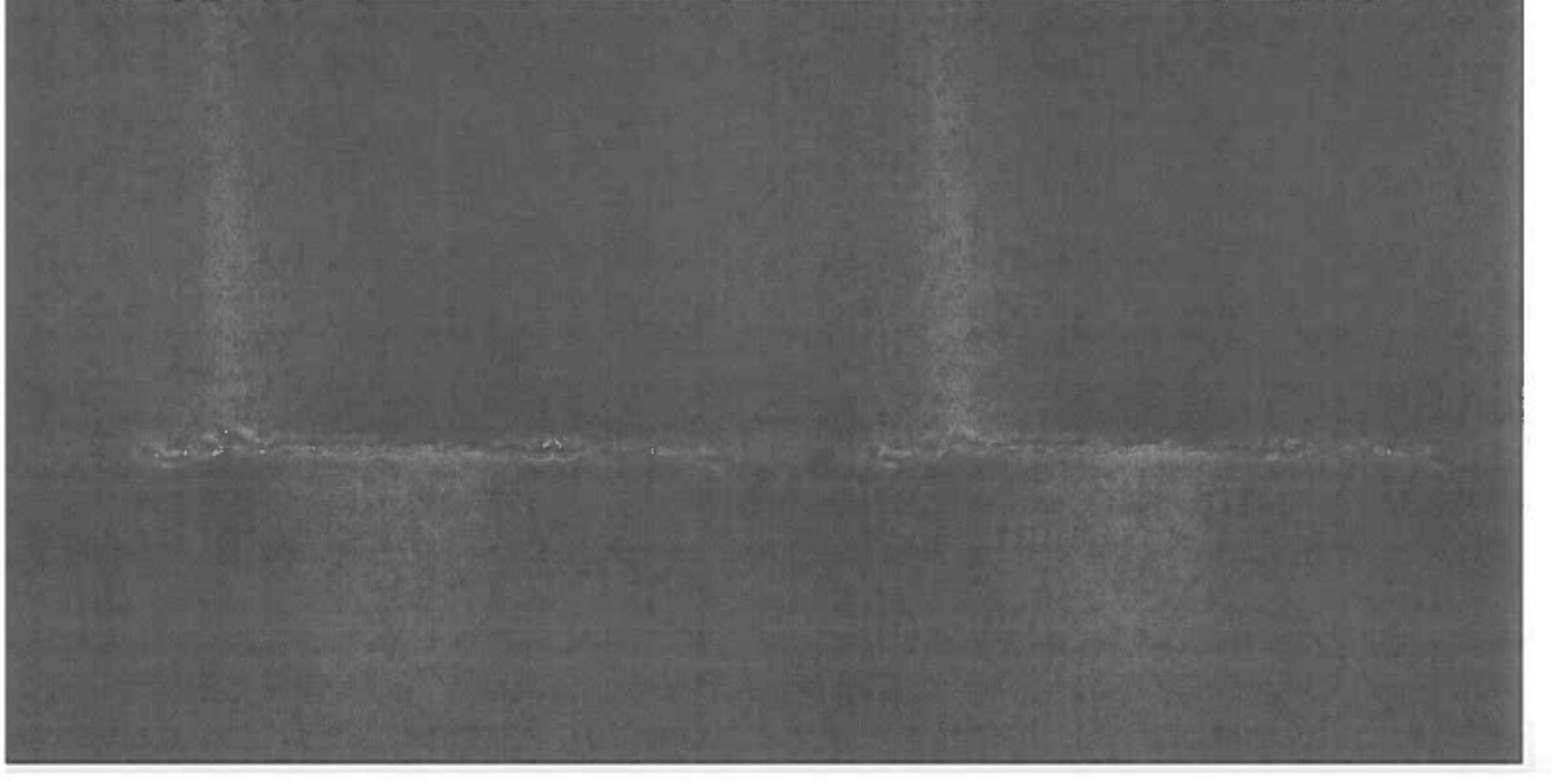
Our underground high voltage (HV) cables are designed primarily for distribution of power of 132kV on a network grid for utilities company. We provide water blocking tape options to ensure that should the HV cable be damaged, the repair lengths and associated works are kept to a minimum.

The medium and high voltage cables manufactured by Southern Cable complied to the specification of:

STANDARD SPECIFICATIONS

IEC 60502-2	6kV to 30kV Cable Design Guidelines
BS 6622	3.8/6.6kV to 19/33kV Design Guidelines
IEC 60840	High Voltage Cable Design Guidelines
TNB SPEC	Based on Tenaga Nasional Berhad Cable Standard Guideline

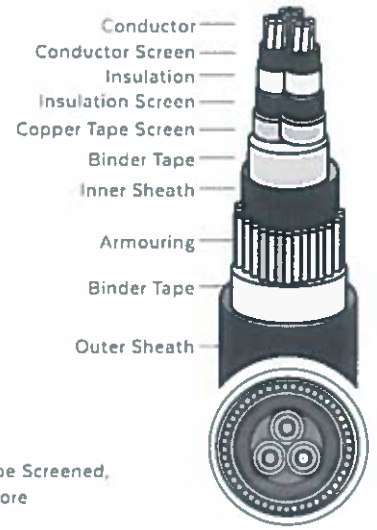
For more details on the detailed design guideline, test method and performance requirement on each specification, please refer to the last page of catalogue.



MEDIUM VOLTAGE CABLE

THREE CORE – COPPER OR ALUMINIUM, XLPE INSULATED, COPPER TAPE SCREENED, GALVANISED STEEL WIRE ARMOURED, PVC SHEATHED CABLE

6/10(12)KV OR 6.35/11(12)KV CU / XLPE / CTS / SWA / PVC OR AL / XLPE / CTS / SWA / PVC



STANDARD SPECIFICATION	IEC 60502-2, BS6622
CABLE DESCRIPTION	Copper or Aluminium Conductor, XLPE Insulated, Copper Tape Screened, Galvanised Steel Wire Armoured, PVC Sheathed Cables - 3 Core
CABLE SIZES RANGE	3 Core x (50 - 400)mm²
SHEATHING COLOURS	Black, other colours is available upon request.

APPLICATION

Suitable for indoor and outdoor static installation, directly in the ground or in cable ducts, as part of power distribution networks, transformer stations, switching blocks and power plants, including in the renewable energy sector.

SPECIAL FEATURE ON REQUEST

- UV Resistance
- Anti Termite
- Anti Rodent
- Low Smoke Zero Halogen
- Flame Retardant

CUSTOMISATION

Customisation is available upon request based on your cable specification

CONSTRUCTION DATA

Number of Core	Nominal Sectional Area	Conductor Diameter (Approx)	Nominal Insulation Thickness	Nominal Inner Sheath Thickness	Inner Sheath Diameter (Approx)	Nom. Galvanised Steel Wire Armour Diameter	Nominal Outer-Sheath Thickness	Overall Diameter (Approx)	Copper Cable Weight (Approx)	Aluminium Cable Weight (Approx)
Nos	mm²	mm	mm	mm	mm	mm	mm	mm	kg/km	kg/km
3	50	8.10	3.4	1.4	42.2	2.5	2.7	53.1	4,996	4,082
	70	9.74			45.7		2.8	56.9	5,937	4,617
	95	11.46		1.6	49.8		2.9	61.2	7,105	5,275
	120	12.93			53.0		3.1	64.7	8,175	5,834
	150	14.33			56.0		3.2	67.9	9,363	6,412
	185	16.05			59.7		3.3	71.9	10,638	7,075
	240	18.43		1.8	65.3	3.15	3.5	79.1	13,674	9,052
	300	20.64			70.0		3.7	84.2	16,046	10,171
	400	23.34			75.8		3.9	90.5	19,139	11,624

SHAPE OF CONDUCTOR

50 - 630 sqmm Circular Compacted

REMARK

Detailed applicable calculation such as ampacity, voltage drop shall be stipulated in the technical specification(s) if the client provides the condition(s) of installation.

CURRENT CARRYING CAPACITY

CURRENT RATING FOR THREE CORE COPPER CABLE WITH XLPE INSULATION RATED VOLTAGE 3.6/6KV TO 18/30KV

Nominal Area of Conductor	Un-Armoured			Armoured		
	Buried Direct in Ground	In Buried in Duct	In Air	Buried Direct in Ground	In Buried in Duct	In Air
mm²	A	A	A	A	A	A
50	181	158	204	181	158	205
70	221	193	253	220	194	253
95	262	231	304	263	232	307
120	298	264	351	298	264	352
150	334	297	398	332	296	397
185	377	336	455	374	335	453
240	434	390	531	431	387	529
300	489	441	606	482	435	599
400	553	501	696	541	492	683

MAXIMUM CONDUCTOR TEMPERATURE	90°C	DEPTH OF LAYING	0.8m
AMBIENT AIR TEMPERATURE	30°C	THERMAL RESISTIVITY OF SOIL	1.5 K.m/W
GROUND TEMPERATURE	20°C	THERMAL RESISTIVITY OF EARTHWARE DUCT	1.2 K.m/W

CURRENT RATING FOR THREE CORE ALUMINIUM CABLE WITH XLPE INSULATION RATED VOLTAGE 3.6/6KV TO 18/30KV

Nominal Area of Conductor	Un-Armoured			Armoured		
	Buried Direct in Ground	In Buried in Duct	In Air	Buried Direct in Ground	In Buried in Duct	In Air
mm²	A	A	A	A	A	A
50	140	122	158	140	123	159
70	171	150	196	171	150	196
95	203	179	236	204	180	238
120	232	205	273	232	206	274
150	260	231	309	259	231	309
185	294	262	355	293	262	354
240	340	305	415	338	304	415
300	384	346	475	380	343	472
400	438	398	552	432	393	545

MAXIMUM CONDUCTOR TEMPERATURE	90°C	DEPTH OF LAYING	0.8m
AMBIENT AIR TEMPERATURE	30°C	THERMAL RESISTIVITY OF SOIL	1.5 K.m/W
GROUND TEMPERATURE	20°C	THERMAL RESISTIVITY OF EARTHWARE DUCT	1.2 K.m/W
DEPTH OF LAYING	0.8m		

IEC 60502-2

DESIGN GUIDELINE

Class 2 conductor cables for rated voltage from 6kV (U_m=7,2kV) up to 30kV (U_m=36kV) with extruded solid insulation.

PERFORMANCE REQUIREMENT

Cable design with water barrier to prevent longitudinal water penetration.

BS 6622

DESIGN GUIDELINE

Single core and three core armoured cables with thermosetting insulation with a voltage rating ranging from 3.8/6.6kV up to 19/33kV.

TEST METHOD

Cat. A	Systems where phase conductors that comes into contact with earth or an earth conductor are disconnected within 1 minute.
Cat. B	Systems which continue to operate under fault conditions of up to 8 hours (not exceeding 125 hours per annum)
Cat. C	Systems not failing under A or B

PERFORMANCE REQUIREMENT

Maximum operating temperature of 90°C for use in fixed installations including networks and industrial installations.

IEC 60840

DESIGN GUIDELINE

High voltage single core or individually screened three-core cables for rated voltage from 30kV (Um 36kV) and 150kV (Um 170kV) designed for fixed installations and suitable for the primary distribution of power, excludes cables for special applications such as submarine and mining.

PERFORMANCE REQUIREMENT

Cable test are simulated to represent a 30 year service lifetime on a cable sample of at least 1 metre.

HEAD OFFICE & FACTORY

Lot 42, Jalan Merbau Pulas,
Kawasan Perusahaan Kuala Ketil,
09300 Kuala Ketil, Baling, Kedah.

CUSTOMER SERVICE

+6 03 6151 1601
sc@southerncable.com.my
@southerncable

QUALITY ACCREDITATION

MS ISO 9001:2015
QMS 00688

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