

**Saudi Electricity Company**



**الشركة السعودية للكهرباء**

**SEC DISTRIBUTION MATERIALS SPECIFICATION**

**31-SDMS-11 Rev. 00**

**DATE: April 2017G**

**31-SDMS-11**

**REV. 00**

**SPECIFICATIONS**

**FOR**

**TERMINAL BLOCKS**

**FOR**

**PRIMARY DISTRIBUTION SUBSTATIONS**

**This specification is property of SEC and  
subject to change or modification without any notice**



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### 1.0 SCOPE

This specification covers the minimum requirement for terminal blocks to be used for relay and control panel, Medium Voltage Switchgear Panel, GIS Local Control Cabinet etc, in the system network of Distribution Sector of Saudi Electricity Company (SEC), Saudi Arabia.

### 2.0 CROSS REFERENCES

This Material Standard Specification shall always be read in conjunction with SEC General Specification No. 01-SDMS-01, titled "General Requirements for All Equipment/Materials", which shall be considered as an integral part of this SDMS.

This SDMS shall also be read in conjunction with SEC Purchase Order or Contract Schedules for project, as applicable.

### 3.0 APPLICABLE CODES AND STANDARDS

The latest revision/amendments of the following Codes and Standards shall be applicable for the equipment/material covered in this SDMS. In case of conflict, the vendor/manufacturer may propose equipment/material conforming to one group of Industry Codes and Standards quoted hereunder without jeopardizing the requirements of this SDMS.

IEC 60947-1	Low voltage switchgear and controlgear – General Rules
IEC 60947-7-1	Low voltage switchgear and controlgear – Ancillary Equipment: Terminal Blocks for copper conductor
IEC 60947-7-2	Low voltage switchgear and controlgear – Ancillary Equipment: Protective Conductor Terminal Blocks for copper conductor
IEC 60352-4	Solderless Connections – Part 4 Solderless non-accessible insulation displacement connections – General Requirements, test methods and practical guidance.



#### **4.0 DESIGN AND CONSTRUCTION REQUIREMENTS**

##### 4.1 Insulating Material

Terminal block insulating material shall conform to Material Group IIIa as per IEC 60947-1 with minimum comparative tracking index (CTI) of 200 when tested as per IEC 60112. Minimum creepage distance shall be 8mm.

##### 4.2 Rating/Type

Terminal block shall be screw type or spring loaded as specified in data schedule and rated for 600/1000V. The design shall be such that accumulation of moisture and dust shall be minimized.

##### 4.3 Terminal Block Assembly Material

Terminal block assembly material shall be of copper alloy, copper or tinned copper with high conductivity.

##### 4.4 Other Requirements

4.4.1 Terminal block shall comply with the requirements as per IEC60947 and IEC 60947-7-1.

4.4.2 Terminal block shall be suitable for sizes of wires that are to be terminated in the block. Not more than two (2) terminations shall be connected to one side of terminal block.

4.4.3 Terminal blocks shall be grouped according to function such as power supplies (AC or DC), VT, CT, DC control, annunciation SOE, SCADA etc. and shall be labelled accordingly. Terminal blocks for different voltages (AC or DC), CT, PT shall be located in separate DIN rails.

4.4.4 Each CT circuit shall be provided with disconnecting CT shorting terminal with copper bars and with ground link. Opening of the link shall enable all CT and relay wiring to be tested clear of ground. There shall be only one ground link per CT circuit.

4.4.5 Test disconnecting terminal blocks shall comply with Annex D of IEC 60947-7-1.



- 4.4.6 Measuring facility shall be provided for the terminal blocks used for CT and VT circuits.
- 4.4.7 For annunciation system, terminal blocks of field points shall have knife action isolation.
- 4.4.8 All PT circuits shall be provided with link type terminal blocks to facilitate isolation of PTs from circuits to perform voltage injection tests. These terminal blocks shall be clearly marked with phase, function, core number and ratio.
- 4.4.9 All AC circuit terminals and DC power terminals shall be fitted with non flammable transparent plastic covers.
- 4.4.10 If common type termination is required, preformed wire jumpers or manufacturer's own shorting bar shall be used.
- 4.4.11 Terminal block shall be assembled on side panel mounted DIN rails and shall be arranged in one tier. The DIN rail shall be mounted vertical. The distance between terminal blocks and race way shall be 80mm.
- 4.4.12 Groups of terminal blocks shall be identified using engraved labels. Terminals shall be clearly and consecutively numbered up to 2 digits in each terminal block. Terminal identification marking shall be as per IEC 60947-7-1.
- 4.4.13 Clear space between two rows of terminal blocks shall be 50mm.
- 4.4.14 Type of terminal blocks is subjected to SEC review and acceptance. All the details of terminal blocks with catalog shall be submitted.
- 4.4.15 Wires for screw type terminal block shall have solderless insulated "O" ring tin plated copper type terminal. Spade/fork type terminals shall not be used.
- 4.4.16 Unless otherwise specified 20% spare terminals shall be provided on each terminal block.
- 4.4.17 Where panels are to be shipped in sections and assembled in the field, the wiring between sections shall be preformed. One end of the wire shall be terminated on terminal block and the other end shall be bundled and tagged properly.



## 5.0 TESTS

### 5.1 Type Test

Type tests and special test as per IEC 60947-7-1 shall be performed. In lieu of actual type (design) and special tests, certified tests reports of type and special tests performed on an identical unit may be submitted to SEC for review and approval.

### 5.2 Routine Test

Power frequency withstand test shall be carried out. Other tests per manufacturer standard shall be carried out. Detail proposal of routine test shall be submitted for SEC review and approval.



## 6.0

**TECHNICAL DATA SCHEDULE**

( TERMINAL BLOCKS)

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SEC Enquiry No. \_\_\_\_\_

Item No. \_\_\_\_\_

SEC Ref.	Description	Unit	SEC Specified Values	Vendor Pro-posed Values
3.0	<b>APPLICABLE CODES AND STANDARDS</b>			
	Applicable Industry Standards		*	
4.0	<b>DESIGN AND CONSTRUCTION REQUIREMENTS</b>			
4.1	Terminal Block Make Type/Model No. Catalogue Enclosed		* * Yes	
	Comparative Tracking Index		≥ 200	
	Creepage Distance		8	
	Material group per IEC 60947-1		*	
	Terminal Block type		Screw / spring loaded	
	CT Terminal Block – disconnecting CT Shortening terminal with ground link		Yes	
	VT circuits		Sliding link	
	Spare terminals per terminal block		20 %	

\* values to be proposed by vendors



## 6.0

**TECHNICAL DATA SCHEDULE**

(TERMINAL BLOCKS)

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SEC Enquiry No: \_\_\_\_\_

Item No: \_\_\_\_\_

- A) Additional technical information or features specified by SEC.
- B) Additional supplementary data or features proposed by Vendor/Supplier.
- C) Other particulars to be filled up by Vendor/Supplier.  
(Use separate sheet if needed).

Address	Manufacturer	Vendor/Supplier
Name of the Company		
Location & Office Address		
Authorized Name & Signature		
Date		
Official Seal / Stamp		