

JABATAN KERJA RAYA MALAYSIA



**UNIT KAWALAN BAHAN DAN FORENSIK
CAWANGAN KEJURUTERAAN ELEKTRIK**

**TECHNICAL INFORMATION
ON
11 kV METAL-ENCLOSED SWITCHGEAR**

A. PARTICULARS OF COMPANY

- 1. Name of Company : -----

- 2. Address : -----
(Please do not provide P.O. Box address) -----

- 3. Telephone No. : -----

- 4. Fax No. : -----

- 5. Email Address : -----

B. PARTICULARS OF PRODUCT

- 1. Brand : -----

- 2. Models : -----

- 3. Name of Accredited Laboratory : -----

- 4. Type Test Report No. : -----

5. Standards Compliance	<i>To be Filled in by the Applicant</i>	<i>For Office Use</i>
	<hr/>	<hr/>
5.1 HV AC Circuit-Breakers (IEC 62271-100)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
5.2 Metal-Enclosed Switchgear (MS IEC 62271-200)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
5.3 Earthing Switches (MS IEC 62271-102)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
5.4 Low Voltage Cables (MS2100,2101, 2102,2103 & 2112) or IEC60502-1	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
6. Rating of Metal-Enclosed Switchgear		
6.1 Max. three (3) phase fault level shall be 20 kA for 3 s (11kV)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7. Metal-Enclosed Switchgear & Controlgear		
7.1 Fully tropicalised and suitable for continuous operation at rated current as below; i) 630A ii) 800A iii) 1250A iv)2000A or others please Specify.....A	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.2 The metal-enclosed switchgear shall be of the single busbar	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.3 The metal-enclosed switchgear shall be of floor mounting, indoor type with horizontal isolation & horizontal drawout features having air insulated busbar	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.4 Provided with CT and VT chambers for separation	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.5 The metal-enclosed switchgear shall be fully extensible both to the left and right	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.6 Compulsory with pressure relief flap at cable and bus bar compartment	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
7.7 The metal-enclosed switchgear shall be designed to prevent ingress of vermin	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
8. Stationary Portion		
8.1 No vertical partitioning in the air insulated busbar chamber	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
8.2 The fixed isolating contacts shall be insulated and shrouded by resin mouldings	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
9. Safety Shutters		
9.1 Means shall be provided to lock in the closed position with padlocks	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
9.2 Busbar & circuit shutters shall be painted and boldly labeled 'BUSBAR' & 'CIRCUIT' respectively	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>
10. Heaters		
10.1 Provided in each circuit breaker panel together with mcb	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>

11. Circuit Breaker Truck

- 11.1 Means shall be provided for locking the truck in service position with padlocks Yes No

12. Mechanical Interlock

- 12.1 To prevent circuit breaker being withdrawn from or inserted into the isolating contacts, when it is **CLOSED** Yes No
- 12.2 To prevent circuit breaker being closed unless correctly located in the service or isolated positions or unless the circuit breaker is fully withdrawn from the stationary portion of the switchgear equipment. Yes No
- 12.3 To prevent the circuit breaker being closed in the service position without completing the auxiliary circuits between the fixed and moving positions. Yes No
- 12.4 To prevent the auxiliary circuits plug and socket been uncoupled when the circuit breaker is in the service position Yes No
- 12.5 To prevent the earthing switch being closed when the circuit breaker is in the service position or between the service and isolated position Yes No
- 12.6 To prevent circuit breaker being inserted into the service positions with the earthing switch **CLOSED** Yes No
- 12.7 To prevent access to the HV fuse orifices of the voltage transformer unless the voltage transformer is isolated (Low applicable fixed type v.t) Yes No
- 12.8 All manually operated mechanical interlocks shall be clearly labeled to indicate their respective functions. Yes No
- 12.9 Means shall be provided for padlocking to effect the above mechanical interlocking systems Yes No

13. Circuit Breaker

- 13.1 A visual indication shall be provided when the SF6 circuit breaker trip on low gas pressure-(**Note: not applicable for VCB**) Yes No

14. Operating Mechanism

- 14.1 Manual tripping shall be effected by a push button Yes No
- 14.2 An operation counter shall be provided to register the number of switching operation Yes No

15. Auxiliary Contacts

- 15.1 Each breaker shall be fitted with a minimum of 4 auxiliary contacts (**4 N.O and 4 N.C**) Yes No

- 15.2 All auxiliary contacts shall be wired to appropriate terminal boards, whether or not these are used in the first instance Yes No
16. Earthing Device
- 16.1 Means shall be provided to enable the earthing switch to be locked in both positions with padlocks Yes No
- 16.2 Mechanical interlocks shall be provided:
- to prevent closing the earthing switch when the circuit breaker is in the servis portion Yes No
 - to prevent inserting the circuit breaker into or withdrawing the circuit breaker from the stationary portion of the switchgear equipment when the earthing switch is closed Yes No
17. Voltage Transformers
- 17.1 VTs shall be of cast epoxy resin filled type Yes No
- 17.2 The primary windings shall be connected through HRC fuses Yes No
- 17.3 The secondary windings shall be connected through fuses Yes No
18. Instrument and Meters
- 18.1 Each switchgear panel, except bus section panel, shall be equipped with an ammeter complete with maximum demand indicator and connected to the protection CT in thee phase with a selector switch. Yes No
- 18.2 When any panel is fitted with a VT, it shall also be equipped with a voltmeter Yes No
19. L.V Wiring
- 19.1 Shall be provided effected with single core black coloured PVC insulated 1.5mm² plain annealed copper conductor cables Yes No
- 19.2 No wire may be teed or jointed between terminal points Yes No
- 19.3 All wires shall have numbered ferrules(marking) at both ends in accordance with the wiring and connection diagrams Yes No
20. Painting
- 20.1 The metal-enclosed switchgear shall have one coat of primer and one undercoat Yes No
- 20.2 The final coat shall be of an oil resisting enamel paint Yes No
21. All mandatory components to be used in metal-enclosed switchgear shall follow the list of brands and models in the **EMAL** Yes No
22. Any peculiarities of installation, assembly, transport and handling? Yes No

22. Technical Particulars

Description		Model	Model	Model	Model	Model	Model	Model	Model	Model	Model
Metal-Enclosed Switchgear	• Rated Voltage (kV)										
	• Rated frequency (Hz)										
	• Continuous Normal Current Rating (A)										
	• Short Time Rating for 3s at 11 kV (kA r.m.s)										
Circuit Breaker	• Rated Voltage (kV)										
	• Continuous Normal Current Rating (A)										
	• Making Capacity (kA peak)										
	• Breaking Capacity (kA r.m.s)										
	• Short Time Rating for 3s at 11 kV (kA r.m.s)										
Earthing Switch	• Rated Voltage (kV)										
	• Making Capacity (kA peak)										
	• Short Time Rating for 3s at 11 kV (kA r.m.s)										
Types of Circuit Breaker	• Vacuum or SF6										
	• Truck-mounted or Cassette-mounted										
	• Provided with Closed Door Operation (Yes / No)										
Heaters Rating (W)											
Max. Ambient Temperature (°C)											

Description		Model	Model	Model	Model	Model	Model	Model	Model	Model	
Max. Altitude (metre a.s.l)											
Max. Relative Humidity (%)											
Impulse Withstand Level on 1.2/50 μ s (kV peak)											
Busbars	• Material										
	• Shrouded with a tight fitting PVC sleeving or epoxy resin?										
CTs	• Short Circuit Rating (kA, s)										
	• Rating (VA)										
	• Class of Accuracy (for protection)										
	• Class of Accuracy (for metering)										
	• Rating (VA)										
VTs	• Rating (VA)										
	• Class										
	• Provided with Withdrawable VTs (Yes / No)										
Accuracy Class of Electrical Measurement/Indication Instrument & Meters											
Earthing Bar	• Material										
	• Size (mm x mm)										

Description		Model	Model	Model	Model	Model	Model	Model	Model	Model	
Enclosure	<ul style="list-style-type: none"> Name of Enclosure Manufacturer <i>(If enclosure is fabricated by others. Use separate sheet if necessary)</i> 										
	<ul style="list-style-type: none"> Address of Enclosure Manufacturer 										
	<ul style="list-style-type: none"> Name of Painting Manufacturer <i>(If painting activities are done by others. Use separate sheet if necessary)</i> 										
	<ul style="list-style-type: none"> Address of Painting Manufacturer 										
	<ul style="list-style-type: none"> Material 										
	<ul style="list-style-type: none"> Frame Thickness (mm) 										
	<ul style="list-style-type: none"> Panel, Cover & Door Thickness (mm) 										
	<ul style="list-style-type: none"> Degree of Protection (IP) 										
Life span (years)											

23. Test Equipments

No.	Equipment Name	Brand	Type/Model	Calibration Certificate No.	Calibration Period (month)
1	Current Clampmeter				
2	Primary Current Injection Set				

No.	Equipment Name	Brand	Type/Model	Calibration Certificate No.	Calibration Period (month)
3	Multimeter				
4	AC Dielectric Test				
5	Secondary Injection Set				
6	HV Insulation Tester				
7	Withstand Voltage & Insulation				
8					
9					
10					
11					

24. Test Equipments and Machines (for fabrication of enclosure and painting)

No.	Equipment Name	Brand	Type/Model	Serial No.	Calibration Certificate No.	Calibration Date
1	Coating Thickness					
2						

No.	Equipment Name	Brand	Type/Model	Serial No.	Calibration Certificate No.	Calibration Date
3	Caliper					
4	Cutting Machine				N/A	N/A
5	Bending Machine				N/A	N/A
6	Punching Machine				N/A	N/A

Note: The calibration test reports must be submitted with this application.

25. Recommended Spare Parts and Tools

No.	Spare Parts	Price (RM)
1		
2		
3		
4		
5		

No.	Tools	Price (RM)
1		
2		
3		
4		
5		

26. Parts List

26.1 Circuit Breaker Component

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
1	Vacuum Interrupter			
2	Charging Motor			
3	Tripping Coil			
4	Closing Coil			
5	Aux Switch			
6	Closing Spring			

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
7	Finger Contact			
8	Bottom/Upper Busbar			
9	Truck Body/Cover			
10	Support Moulding			
11	Limit Switch			
12	Drive Rod Moulding			

26.2 Busbar Compartment

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
1	Main Busbar			
2	Busbar Monoblock			
3	Insulator Support			

26.3 Cable Compartment (use separate sheet if necessary)

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
1	Ring CT			
2	Wound CT			
3	VT/PT			
4	Cable Termination Busbar			
5	HRC Fuse 12kV			
6	Fuse Holder			

26.4 Earth Switch Assembly

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
1	Support Insulator			

No.	Material/Item	Manufacturer Name	Brand	Country of Origin
2	Earth Switch Frame			
3	Copper Contact			
4	Copper Pole Connection			
5	Earth Switch Closing Spring			

26.5 Others (use separate sheet if necessary)

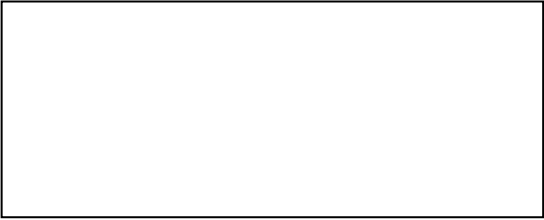
No.	Material/Item	Manufacturer Name	Brand	Country of Origin
1	Heater Element			
2	Overcurrent Relay			
3	Earth Fault Relay			
4				
5				

I, hereby declare that the
(Name of Person in Charge)
information given by me on behalf of the Company in this form and in any document
attached is correct, valid, complete and true.

Date:.....

Designation:.....

Signature:.....



Company's Stamp

FOR OFFICE USE

Comment:

.....
.....
.....
.....
.....

CHECK LIST FOR APPLICANT

Please enclose the following items in order to expedite the process and tick (✓) accordingly.

- | | |
|--|--|
| 1. <input type="checkbox"/> USPM/B/PP Borang 1A –PIN. 3
SEPT.2009 | 14. <input type="checkbox"/> <i>Surat Akuan Bersumpah</i> Form
(SAB-Februari 2006) |
| 2. <input type="checkbox"/> Test Report(s) | 15. <input type="checkbox"/> Supplier's Company Profile (<i>For new
registration only</i>) |
| 3. <input type="checkbox"/> Application Letter on the Company's
Letter Head | 16. <input type="checkbox"/> Manufacturer's Company Profile (<i>For new
registration only</i>) |
| 4. <input type="checkbox"/> UKBF Form | 17. <input type="checkbox"/> Authorization Letter as an authorized
dealer issued by the manufacturer |
| 5. <input type="checkbox"/> Form 49 | 18. <input type="checkbox"/> Test procedures |
| 6. <input type="checkbox"/> Technical Catalogue | 19. <input type="checkbox"/> Track Record (<i>For new registration only</i>) |
| 7. <input type="checkbox"/> Suggested retail price | 20. <input type="checkbox"/> O & M manual |
| 8. <input type="checkbox"/> Copies of documents forwarded must
be certified by the Company (<i>signed
and company's stamped</i>) | 21. <input type="checkbox"/> Calibration certificates (<i>All calibration
certificates must be in Bahasa Malaysia or
English Language</i>) |
| 9. <input type="checkbox"/> Manufacturing process Quality
Assurance (Q.A) system | 22. <input type="checkbox"/> Busbar sizing calculation |
| 10. <input type="checkbox"/> Sample of shop drawings showing all
details for item 7.3, 7.4, 7.6, 10, 13, 14,
15 & 18 | 23. <input type="checkbox"/> SOCSO/EPF for metal-enclosed
switchgear manufacturer, enclosure
manufacturer and painting manufacturer |
| 11. <input type="checkbox"/> Business License from local authority
for metal-enclosed switchgear
manufacturer, enclosure manufacturer
and painting manufacturer | 24. <input type="checkbox"/> Form 9 (<i>Suruhanjaya Syarikat Malaysia</i>)
for metal-enclosed switchgear
manufacturer, enclosure manufacturer and
painting manufacturer |
| 12. <input type="checkbox"/> ISO certificate (<i>if applicable</i>) for metal-
enclosed switchgear manufacturer,
enclosure manufacturer and painting
manufacturer | 25. <input type="checkbox"/> Flow chart and work process for metal-
enclosed switchgear manufacturer,
enclosure manufacturer and painting
manufacturer- |
| 13. <input type="checkbox"/> Suruhanjaya Tenaga certitfcate | |

Application forms can be downloaded from the website <http://www.ictjkr.gov.my/ema/>