

S.No	Description
	Circuit Breakers :
1)	Name of MANUFACTURER & COLLABORATOR IF ANY
a)	Office address of manufacturer
b)	Works address
2	CONSTRUCTION TYPE OF BREAKER (DRAWOUT OR FIXED TYPE)
3)	Number of poles
4)	Class
5)	Rated voltage
6)	Rated insulation level :
a	Lightning impulse withstand voltage
b	One minute power frequency withstand voltage
	KV rms.
c	One minute power frequency withstand voltage for auxiliary circuits.KV rms
7)	Rated frequency
8)	Rated normal current
9)	Rated short circuit breaking current/capacity
10)	Rated short time withstand current and its duration.
11)	Rated transient recovery voltage for terminal faults.
12)	Rated short circuit making current.
13)	Rated operating sequence (test duty cycle)
14)	First pole to clear factor
15)	a) Opening time
	b) Closing time
16)	Total break time measured from the instant of trip circuit energisation :
a)	At 10% breaking capacity (ms.)
b)	At 100% breaking capacity (ms.)
17)	Protection class of Kiosk
18)	Contact Travel
	a) Length of Travel
	b) Rate of Travel
19)	Make Time
20)	Spring Charging time
22)	Operating mechanism of circuit breaker and its associated equipment.
22.1	Type of closing mechanism

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22.2	Whether the circuit breaker is trip free or trip free and whether it is with lockout prevent closing
22.3	Rated supply voltage of closing mechanism
22.4	Current required at rated supply voltage to close the circuit breaker
22.5	Rated supply voltage of series /shunt opening release
22.6	Current required at rated voltage for series/shunt opening release
22.7	Number and type of spare auxiliary switches/contacts.
22.8	Current required at rated supply voltage by other auxiliaries.
23)	Other information
23.1	a) Type of breaker - Drawout/Fixed. b) Type of isolation - Vertical/Horizontal
23.2	Type of arc control device.
23.3	Contacts
(a)	MAIN
(I)	Type
(II)	Material
(III)	Silver facing provided.
(IV)	Design contact pressure.
(b)	ARCING
(I)	Type
(II)	Material
(III)	Silver facing provided
(IV)	Design contact pressure.
23.4	LIFE
	i) Mechanical operation
	ii) Electrical operation
	iii) Short circuit operation
23.5	Maxi. temperature rise over an ambient temp. of 50 Deg. C.
23.6	Transient behavior details :
	a) PF recovery voltage between phases
	b) Peak transient recovery voltage
	c) Rate of rise of recovery voltage
23.7	Whether breaker is restrike free
23.8	Details of interlocks provided
23.9	Derating factor for specified 50 Deg. ambient temp. & site condition, if any.
23.1	Max. chopping current

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23.11	Vacuum Interrupter Details
a	Make & Code No. of vacuum bottle
b	Pressure inside interrupter
c	Manufacturer code No. / Reference Standard.
23.12	Contact wear indication
23.13	Maximum over voltage on switching transformers on No load
24	Thickness of sheet steel
25	Whether Cold rolled or Hot rolled.
33KV Voltage Transformers :	
1)	Manufacturer's name
2)	Type designation
3)	Highest equipment voltage
4)	Number of phases
5)	System earthing
6)	Insulation Level
a)	One minute power frequency withstand voltage for :
(I)	Primary winding
(II)	Secondary winding
b)	Impulse withstand voltage
7)	Frequency
8)	Transformation ratio
9)	Rated output
10)	Accuracy class
11)	Winding connection
12)	Rated voltage factor
13)	Type :
	i) Whether Resin cast / Oil Filled
	ii) Whether Three Phase
	iii) Type of fuses provided
a)	Primary
b)	Secondary
c)	Make
Current Transformers :	
1)	Manufacturer's name
2)	Type designation
3)	Rated voltage
4)	Type of Insulation whether oil filled or resin cast
5)	Insulation level :
	i) 1 Mt. PF withstand voltage for Primary winding

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	ii) Impulse withstand voltage
	iii) PF withstand voltage for secondary
6)	Frequency
7)	Transformation ratio
8)	Rated output (Core-I & Core-II)
9)	Class of accuracy (Core-I & Core-II)
10)	Instrument security factor
11)	Short time thermal current and its duration.
12)	Secondary winding rise at 75C (Max.)
13)	Knee point voltage
14)	Max. excitation current (in r.m.s.)
Relays (Numerical Relay)	
1)	Manufacturer's name
2)	Type designation
3)	Rated CT Secondary Current
4)	Tap range
5)	VA burden :
	i) Highest tap
	ii) Lowest tap
6)	Rated Voltage of coil for operation
7)	Whether relay is able to store a minimum five previous faults values including fault level and phase
8)	Whether relay is mounted in flush pattern on the panel board
9)	Whether test block provided as per specification
10)	Whether numerical relay is with communication facility and standard open protocol /SCADA compatibility along with IED for purpose of SCADA
11)	Whether communication on RS-485 port protocol provided
12)	Type of characteristics
13)	Descriptive leaflet attached or not
14)	Accuracy class of CT needed
15)	Range of setting for over current and earth fault protection
16)	Whether drawout type
MEMORY TYPE STATIC HT TVM ENERGY METI	
1)	Name of Manufacturer
2)	Type of meter
3)	Class of accuracy
4)	Reference Voltage
5)	Basic current

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6)	Maximum continuous current
7)	Whether sealing arrangement provided on front side of the meter for meter body /terminal cover/MD reset button /communication port
8)	Programmed into meter memory for identification through CMRI
9)	Burden and watt loss of voltage circuit per phase
10)	Push button mode as per specification provided or not
11)	Memory non-volatile or battery backed
12)	Whether Energy meter confirming to IS and having all the parameter required in the Appendix-A in specs
INDICATING AND INTEGRATING INSTRUMENTS	
I	
1)	Manufacturer's name
2)	Type designation/reference
3)	Accuracy class & governing standard
4)	The burden in VA at normal current and/or nominal voltage. a) Current coil b) Potential coil
5)	Transformation ratio (s) of instrument transformer(s) for which the instrument has been adjusted, if relevant.
6)	Size
7)	Whether suitable for sheet steel mounting
8)	Colour finish
9)	Short duration overload capacity
10)	Make & type of selector switch for Ammeter & Voltmeter
-ii) CONTROL SWITCHES	
1)	Manufacturer's name
2)	Type designation
3)	Type of handle provided
4)	No. of position.
5)	No. of contacts. i) Normally closed. ii) Normally opened
6)	Making capacity/breaking capacity
7)	Whether spring return to normal or stay out type.
8)	Type of lock provided.

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iii)	INDICATING LAMPS
1)	Manufacturer's name
2)	Type designation
3)	Operating voltage
4)	Size of lenses
5)	Wattage of lamps.
6)	Colour of lamp body
iv)	SWITCH BOARD WIRING
1	Insulation of wiring.
2	Size of wiring conductor for
a)	CT circuits.
b)	PT circuits.
c)	AC supply circuits.
d)	Other circuits.
3	Size of earthing bar for safety earthing.
4	Type of terminals provided on wiring.
5	Conductor material.
6	Colour used.
(a)	AC circuits.
(I)	First phase.
(II)	IInd phase.
(III)	IIIrd phase.
(IV)	Neutral.
(V)	Earth
(b)	DC Circuits.
7	Identification of suffix used for
(a)	Metering circuits.
(b)	O/C & E/F indication.
(c)	AC aux. circuits.
	MISCELLANEOUS INFORMATION
1)	Bushings :
(a)	Make
(b)	Type of bushing
(c)	Creepage distance :
(I)	Total
(II)	Protected
(d)	1 minute power frequency withstand test voltage for bushing :
	i) Dry
	ii) Wet
(e)	Impulse withstand voltage
(f)	Reference standard
(g)	Permissible safe cantilever loading on bushing

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(f)	Catalogue of bushing offered & its mechanical strength.
2	Motor
	a) Make
	b) Wattage
	c) Rated Voltage
	d) Protection equipments
	e) Closing contactor
3)	Terminal connectors : -
	a) Make
	b) Rated continuous current
	c) Rated short time current for 3 sec.
	d) Max. temp. rise of terminal connector over ambient temp. of 50 Deg.C and max. temp. attained.
4)	Paint shade of outdoor breaker
5)	Main busbar :
	a) Size
	b) Material (Copper only)
	c) Rated short time current for 3 seconds.
	d) Current density
6)	Interconnecting busbar :
	a) Size
	b) Material (Copper only)
	c) Rated continuous current for 3 Secs.
	d) Current density
7)	C.T. Windings :
	a) Primary :
	i) No. of turns
	ii) Cross sectional area
	iii) Material
	b) Secondary :
	i) No. of turns
	ii) Cross sectional area
	iii) Material
8	List of interlocks :
	i) Mechanical interlock
	ii) Electrical interlock
9	Overall dimension.
	a) For vacuum circuit breaker kiosks complete
	b) Circuit Breakers

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	c) Impact for foundation design to include dead load and impact value on opening at max. interrupting rating in dead load.
10	Constructional Features
	i) Mass of complete circuit breaker with mechanism & vacuum bottle
	ii) Mass of vacuum bottle
	iii) No. of breakers in series per pole
	iv) Min. Clearance in air
	a) Between poles
	b) To earth.
12	Arrangement provided for :
	a) Pole Discrepancy
	b) Trip free / fixed trip
	c) Anti pumping
13	Connection of CTs
	a) Size
	b) Material
14	Connections of PTs
	a) Size
	b) Material

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