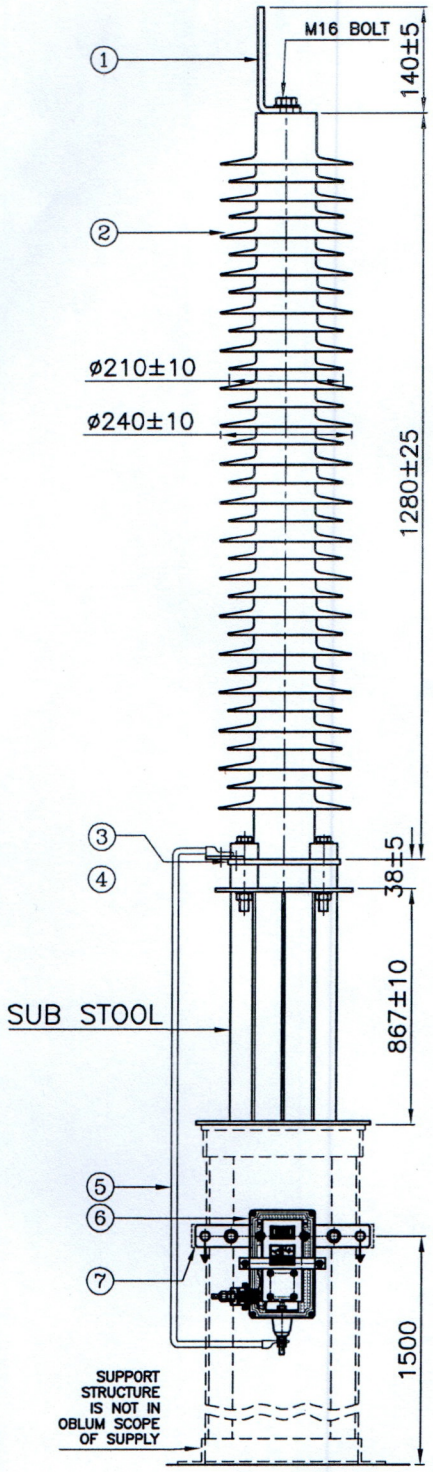
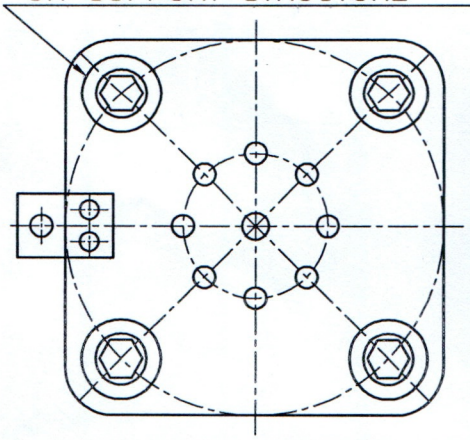
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

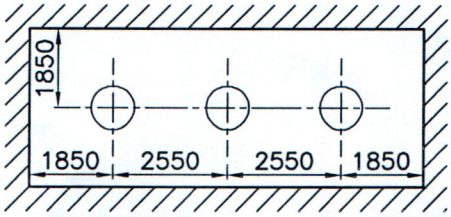
8506489/2024/EEMRT-ENE51



4–INSULATING BASES ON PCD 205mm AT 90°
4–HOLES ø17 ON PCD 205mm ON SUPPORT STRUCTURE

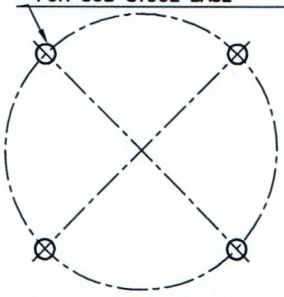


ARRESTER BASE MOUNTING DETAILS



MINIMUM CLEARANCE FROM EARTHED OBJECTS AND BETWEEN PHASES

4–HOLES ø17 ON PCD 296mm FOR SUB STOOL BASE



SUB STOOL BASE MOUNTING DETAILS

CANTILEVER STRENGTH : 150Kgf
DEFLECTION : 200mm
CREEPAGE DISTANCE : 3625mm (25mm/kV)
SHORT CIRCUIT CURRENT : 40 kA FOR 0.2 SEC
ALL METAL PARTS ARE HARD DIP GALVANIZED
WEIGHT OF THE ARRESTER : 45 KGS ± 10%

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:00:42 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

7. EARTHING FLAT (MS HDG)
6. SURGE MONITOR WITH MILLI AMMETER
5. CONNECTING LEAD (70Sq.mm INSULATED COPPER CABLE 3M LENGTH)
4. INSULATING BASE(POLYCARBONATE)
3. BASE PLATE (MS HDG 8mm THICK)
2. SILICONE POLYMER HOUSING
1. TERMINAL PAD(MS HDG)

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: 120kV–10kA SILICONE POLYMER METAL–OXIDE SURGE ARRESTER

MODEL : PBC

REV. No.: 0

DATE: 31/01/2024

DRG. NO.: PBC–SM–120SCCM DRN. BY: T KUMAR

SCALE: N.T.S. APPRD. BY:

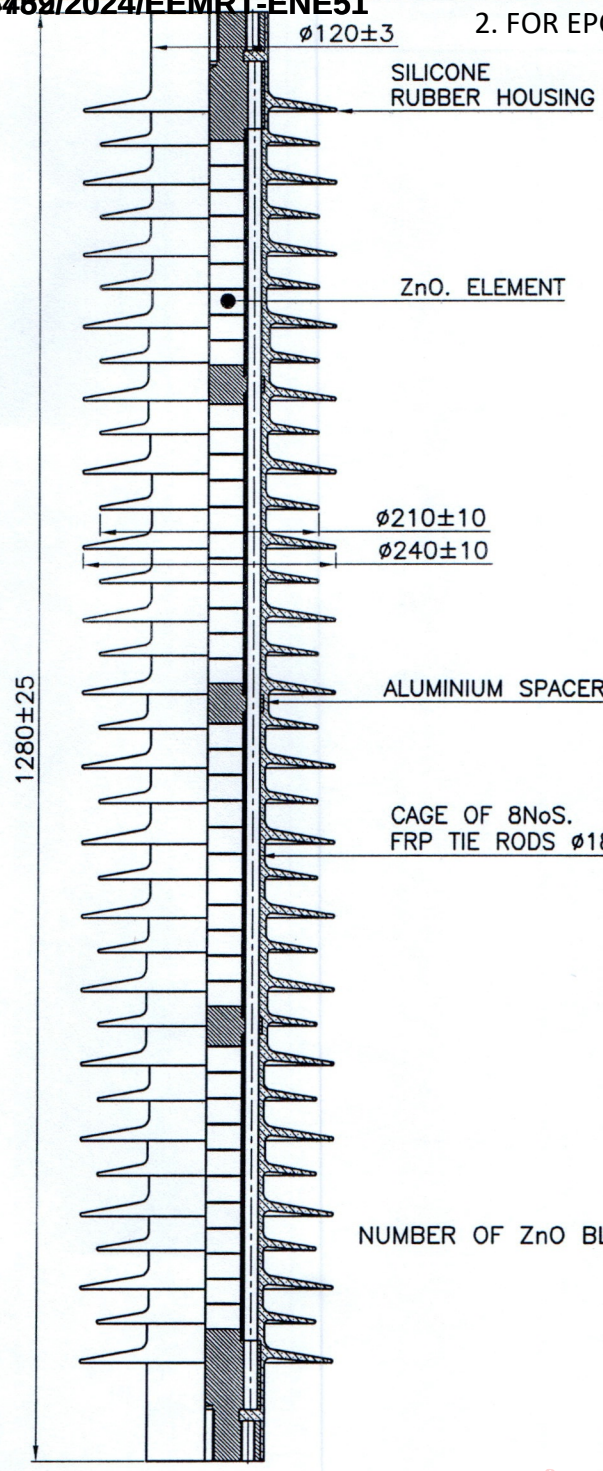
ALL DIMENSIONS ARE IN m.m.

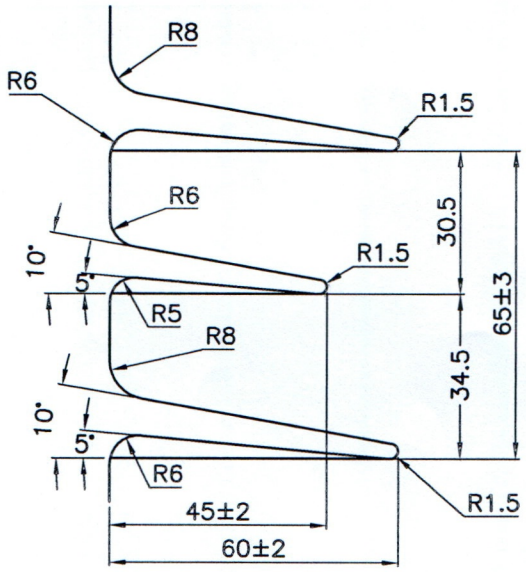
OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED,
A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE,
BALANAGAR, HYDERABAD–37,
TELANGANA, (INDIA).

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS

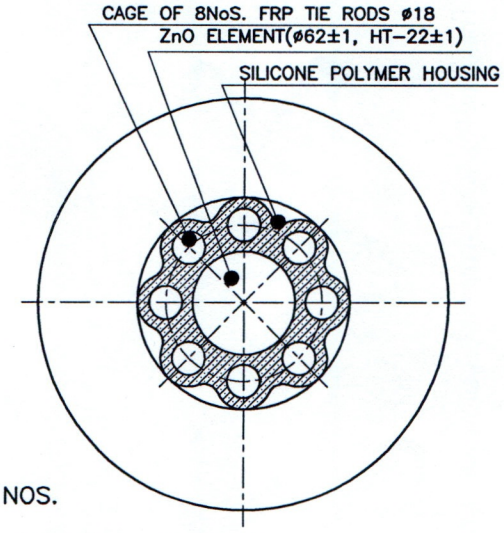
2. FOR EPC CONTRACTS ONLY

8506459/2024/EEMRT-ENE51





SHED PROFILE



NUMBER OF ZnO BLOCKS : 40 NOS.

CAGE CONSTRUCTION DESIGN-B

a. TIE RODS AS A CAGE AROUND THE ZnO. ELEMENTS TO HOLD THE ZnO. ELEMENTS

b. THE SILICONE RUBBER INJECTED AROUND THE ZnO. ELEMENTS AND FRP TIE RODS

c. THE SHORT CIRCUIT THROUGH THE ZnO. ELEMENTS COMMUTES OUTSIDE BY CRACKING AND TEARING OF THE SILICONE RUBBER

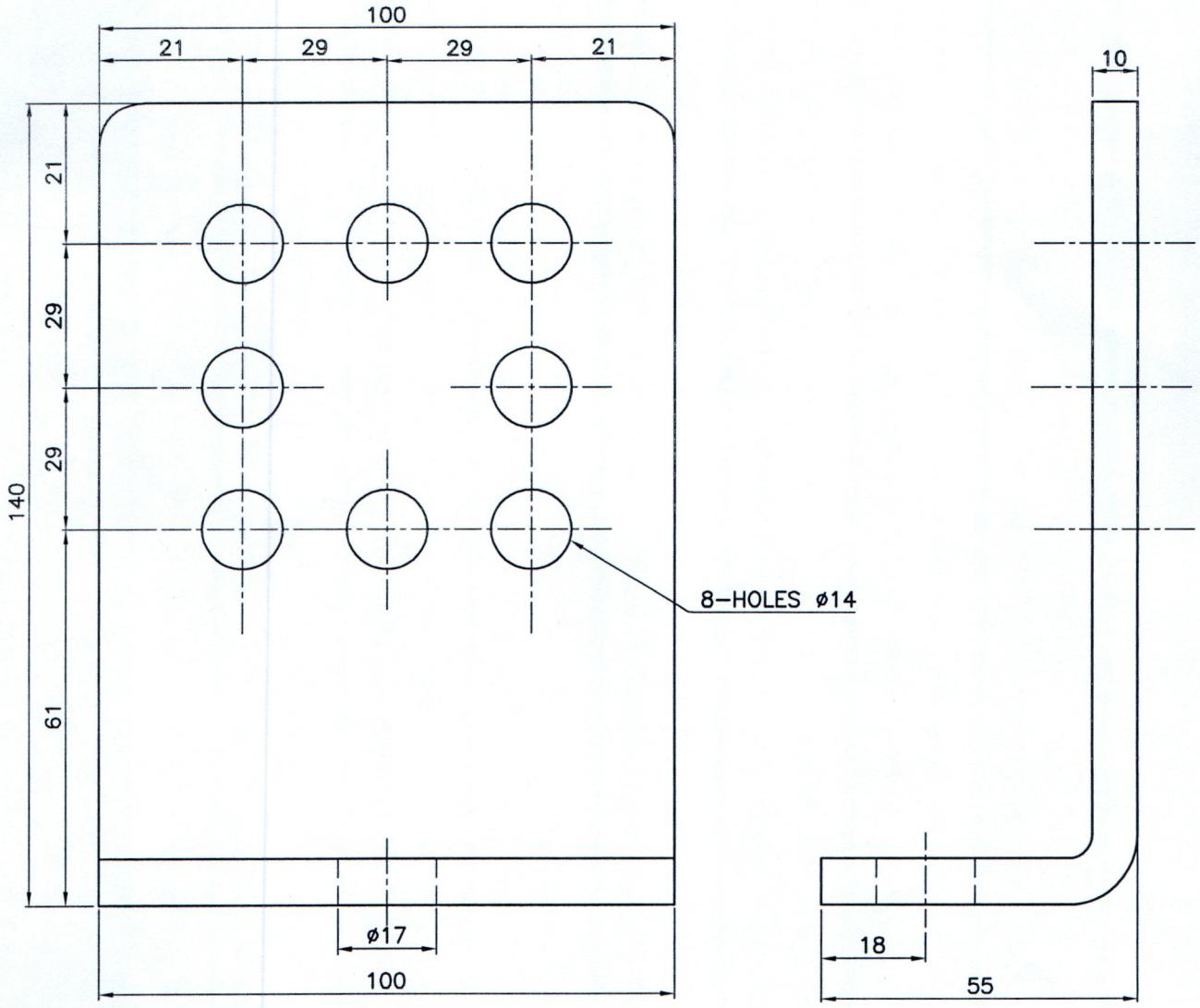
TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:00:59 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

PROJECT NAME : AS APPLICABLE END CUSTOMER: APTRANSCO		
TITLE: TYPICAL CROSS SECTTION OF 120kV METAL OXIDE SURGE ARRESTER	MODEL : PBC REV. No.: 0	DATE: 31/01/2024
DRG. NO.: PBC-SM-CS-120 DRN. BY: T KUMAR SCALE: N.T.S. APPRD. BY: ALL DIMENSIONS ARE IN m.m.	OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA, (INDIA).	

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST
REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY



ELEVATION **SIDE VIEW**

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:09 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

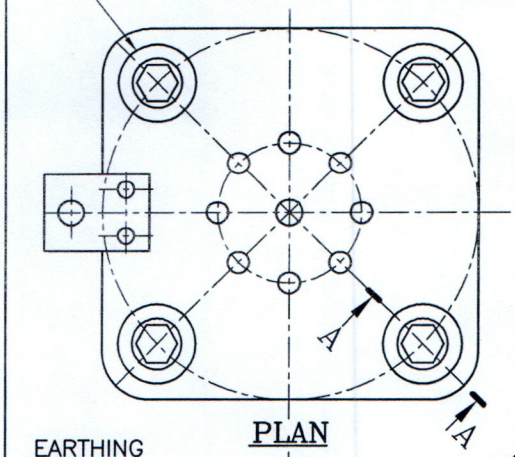
PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: TERMINAL PAD	MATL.: 100x10mm MS HDG FLAT
	REV. No.: 0 / DATE : 31/01/2024
DRG. No.:TP–100(58) DRN. BY: KUMAR	OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED
SCALE: N.T.S. APPRD. BY:	A-16&17 ASSISTED PRIVATE INDUSTRIAL ESTATE
ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±2%	BALANAGAR, HYDERABAD–37, TELANGANA. (INDIA)

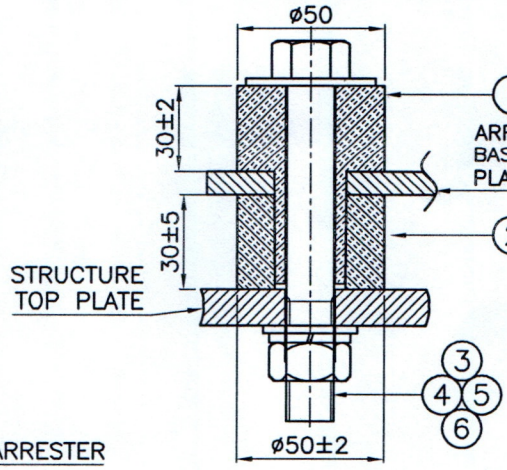
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS

8506789/2024/EEMRT-ENF51 2. FOR EPC CONTRACTS ONLY

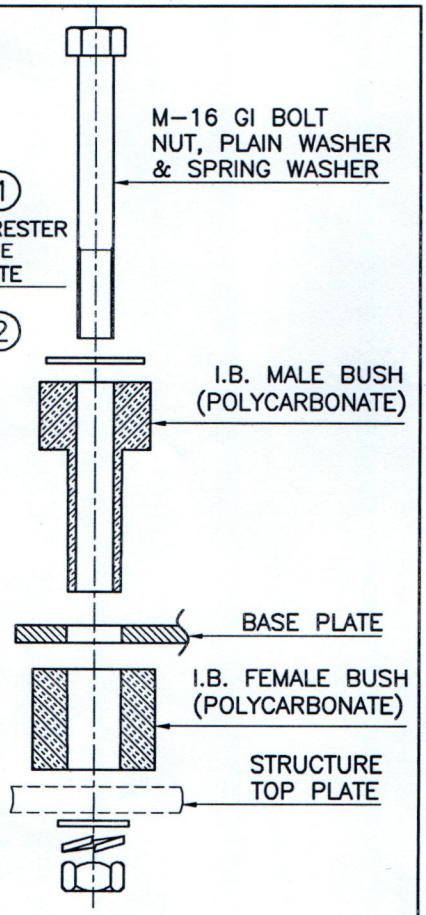
4–INSULATING BASES ON PCD 205mm AT 90°
4–HOLES ø17 ON PCD 205mm ON SUB STOOL TOP PLATE

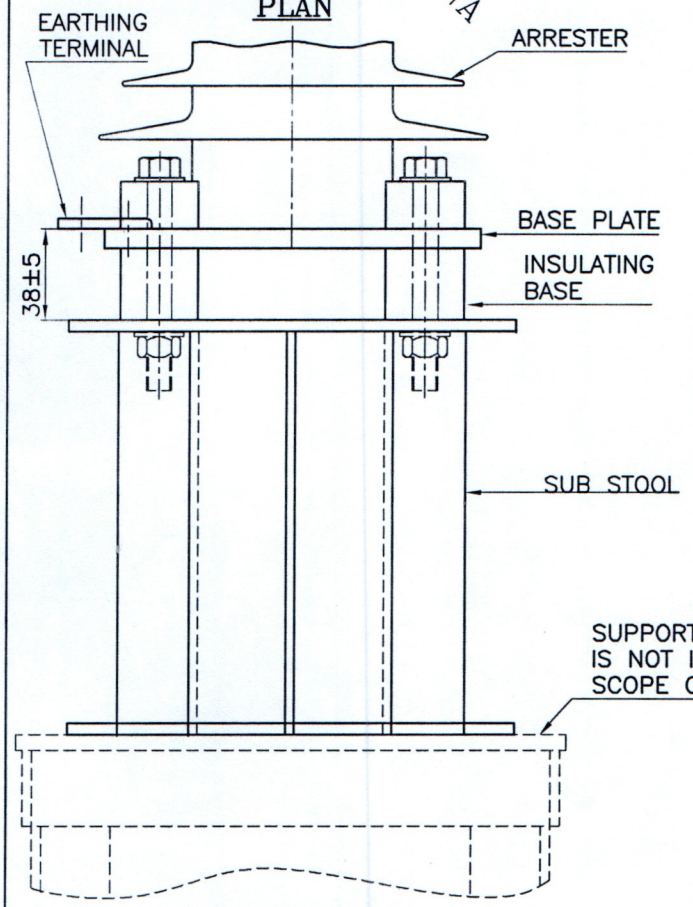


PLAN



INSULATING BASE SECTION AT A–A





ELEVATION

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:18 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

S.No.	DESCRIPTION	QUANTITY	MATERIAL
6.	M16 SPRING WASHER	4 Nos.	MS HDG
5.	M16 PLAIN WASHER	4 Nos.	MS HDG
4.	M16 NUT	4 Nos.	MS HDG
3.	M16 BOLT	4 Nos.	MS HDG
2.	FEMALE BUSH	4 Nos.	POLYCARBONATE
1.	MALE BUSH	4 Nos.	POLYCARBONATE

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: INSULATING BASE

MATL. : POLYCARBONATE

REV. No.: 0

DATE: 31/01/2024

DRG. NO.: IB–60216

DRN. BY: K.KUMAR

SCALE: N.T.S.

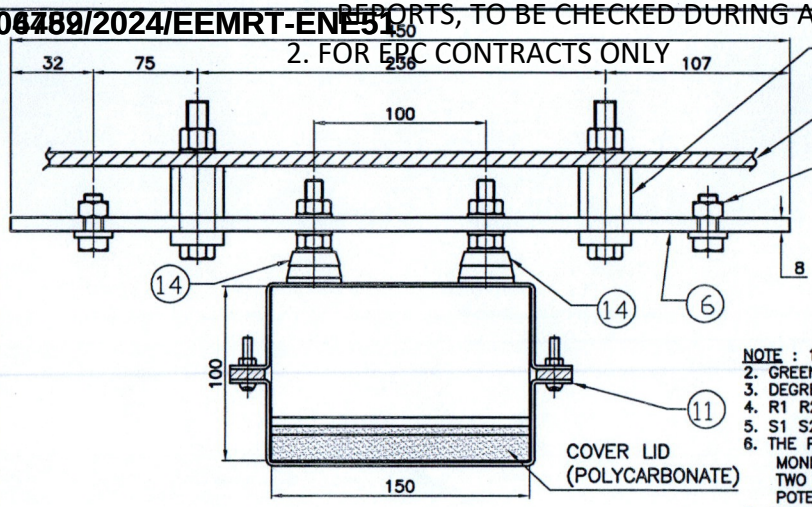
APPRD. BY:

ALL DIMENSIONS ARE IN m.m.

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED,
A–16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE,
BALANAGAR, HYDERABAD–37,
TELANGANA. (INDIA)

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY

8506489/2024/EEMRT-ENE51



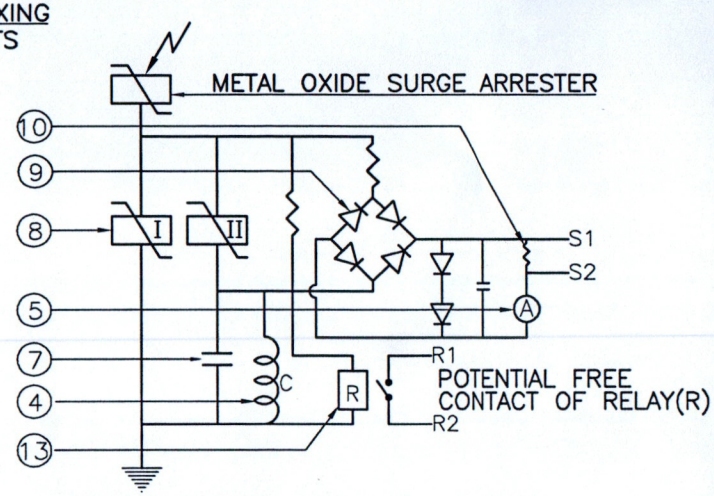
PLAN

INSULATOR FOR SURGE COUNTER AND FIXING TO SUPPORT STRUCTURE WITH M12 BOLTS

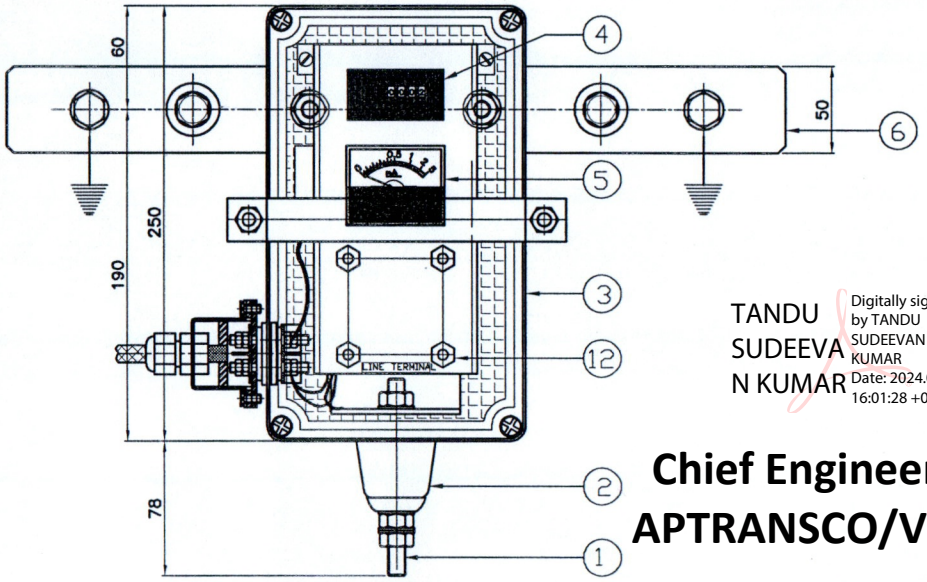
SUPPORT STRUCTURE ANGLE OR FLAT

TWO EARTHING CONNECTIONS

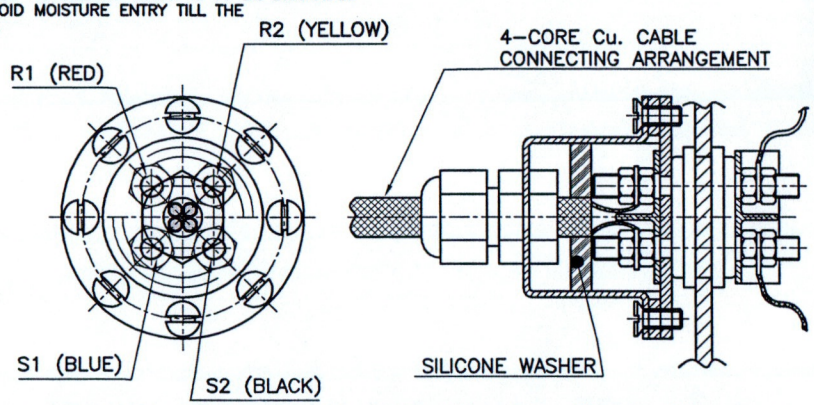
NOTE : 1. DO NOT OPEN THE SEALED UNIT
2. GREEN BAND : 0 O 2mA – RED BAND : 2 TO 5mA
3. DEGREE OF PROTECTION : IP–67
4. R1 R2 POTENTIAL FREE CONTRACT FOR COUNTER
5. S1 S2 CONTACTS FOR MILLI AMMETER (0–3mA ANLOGE OUTPUT)
6. THE POTENTIAL FREE CONTACT IS TERMINATED IN THE SURGE MONITOR HOUSING WITH 4–TERMINALS (TWO FOR COUNTER TWO FOR AMMETER. THE DRAWING IS SHOWN WITH THE POTENTIAL FREE CONTACT TERMINATION
7. THE WIRE COMING OUT IS FROM THE TWO SETS OF TERINALS FROM INSIDE OF SURGE MONITOR TO OUTSIDE THE ENCLOSURE BY A SEALED ARRANGEMENT TO SHOW THE CONNECTION EXTERNALLY.
8. THE WIRE COMING OUT IS ONLY TO INFORM THE SITE ENGINEER THE CABLE TO BE USED AFTER REMOVING THE SHORT LENGTH OF THE WIRE TO BE THROWN. REMOVE THE COVER OF THE POTENTIAL FREE CONTACT FOR CONNECTING R1, R2 AND S1. S2 AS PER THE SAMPLE TEMPORARILY CONNECTED WHICH IS TO BE DISCARDED
9. THE SHORT WIRE IS KEPT TO AVOID MOISTURE ENTRY TILL THE SURGE MONITOR IS CONNECTED.



INTERNAL CIRCUIT DIAGRAM OF SCCM.



ELEVATION



COLOUR INDICATION FOR R1, R2, S1 & S2

TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:28 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

6. EARTHING FLAT
5. MILLI AMMETER 0 – 5mA
4. ELECTROMAGNATIC COUNTER
3. ENCLOSURE(ACRYLONITRILE BUTADIENE STYRENE)
2. ABS INSULATOR MOULDED WITH SILICONE RUBBER
1. LINE TERMINAL
12. TIE RODS
11. CLAMPING BRACKET FOR ENCLOSURE
10. RESISTER
9. BRIDGE RECTIFIER
8. ZnO. ELEMENTS
7. CAPACITOR
14. EARTH TERMINAL
13. RELAY

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: SURGE COUNTER MILLI AMMETER WITH RELAY FOR POTENTIAL FREE CONTACT FOR COUNTER

MATL. : --------

REV. No. : 0

DATE : 31/01/2024

DRG. No.: SCCM–13

DRN. BY: K

SCALE: N.T.S

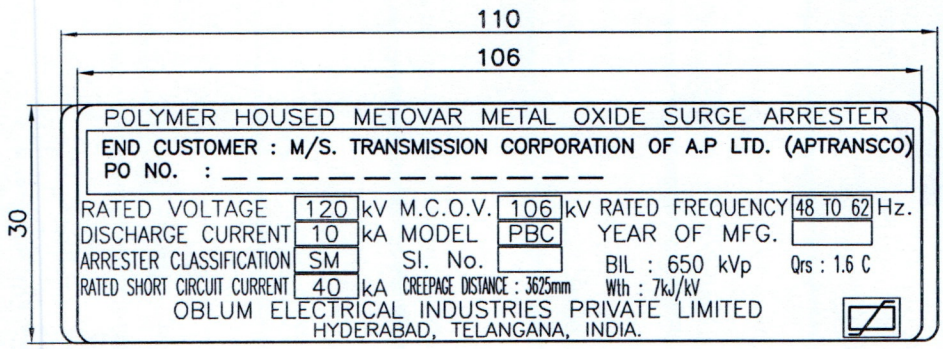
APPRD. BY:

ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±5%

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED,
A–16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE,
BALANAGAR, HYDERABAD–37,
TELANGANA. (INDIA)

8506489/2024/EEMRT-ENE51

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST
REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS
2. FOR EPC CONTRACTS ONLY



ENGRAVED WHITE LETTERS ARE IN BLACK BACKGROUND

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:36 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: NAME PLATES

MATL: 0.5mm ALUMINIUM SHEET

REV. No.: 0 DATE: 31/01/2024

DRG. No.: PBC-SM-NP-120 DRN. BY: K KUMAR

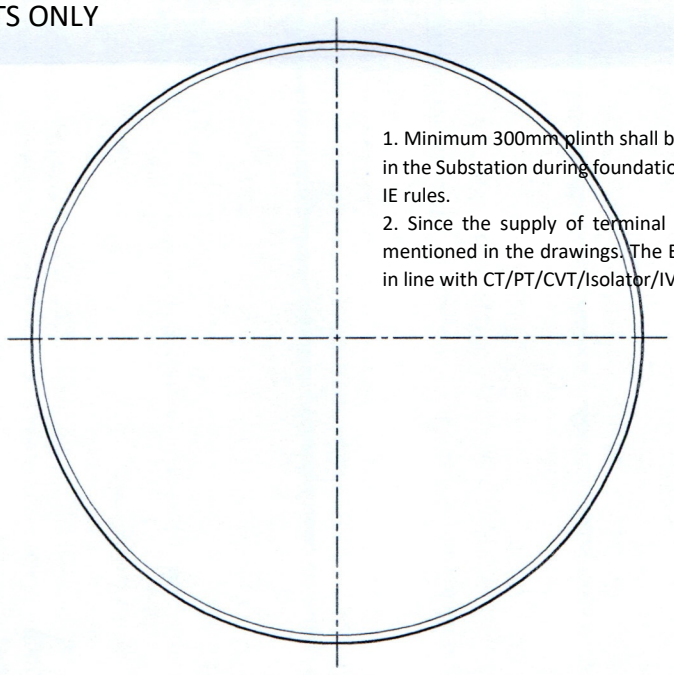
SCALE: N.T.S. APPRD. BY:

ALL DIMENSIONS ARE IN m.m. WITH A TOLERANCE OF ±2%

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED
A-16&17 ASSISTED PRIVATE INDUSTRIAL ESTATE
BALANAGAR, HYDERABAD-37,
TELANGANA, (INDIA).

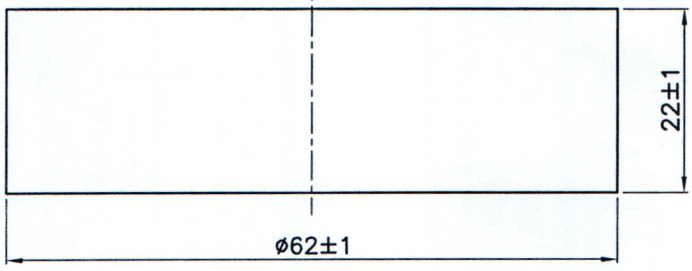
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS

2. FOR EPC CONTRACTS ONLY



1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breaker in the Substation during foundation works to ensure safe live to ground clearance as pe IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer a mentioned in the drawings. The EPC contractor shall be instructed to supply the sam in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.

PLAN



ELEVATION

NOTES :

1. RATED VOLTAGE (Ur) :3kV RMS
2. NOMINAL DISCHARGE CURRENT (In) : 10 kA PEAK
3. MAXIMUM CONTINUOUS OPERATING VOLTAGE (Uc) : 2.55kV RMS
4. REF. STANDARD : IEC:60099-4-2014
5. STATION MEDIUM DUTY (SM)
6. RATED THERMAL ENERGY Wth : 7kJ/kV
7. REPETITIVE CHARGE TRANSFER RATING Qrs : 1.6 C

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:46 +05'30'

Chief Engineer/Projects

APTRANSCO/VS/Vijayawada.

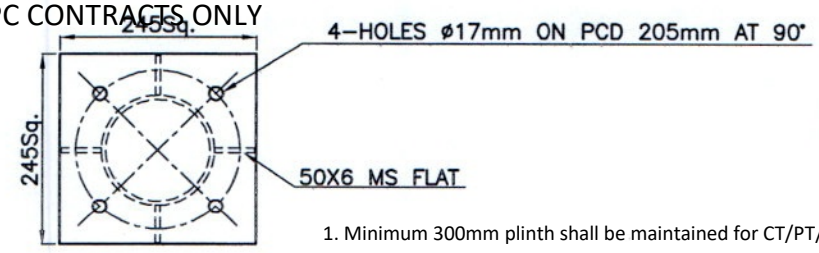
PROJECT NAME : AS APPLICABLE
END CUSTOMER: APTRANSCO

TITLE: METAL OXIDE VARISTOR	MATL.: METAL OXIDE
	REV. No.: 0 — DATE: 31/01/2024
DRG. NO.: MOV-062SM — DRN. BY: KUMAR	OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED, A-16 & 17 ASSISTED PRIVATE INDUSTRIAL ESTATE, BALANAGAR, HYDERABAD-37, TELANGANA. (INDIA)
SCALE: N.T.S. — APPRD. BY:	
ALL DIMENSIONS ARE IN m.m.	

8506789/2024/EEMRT-ENE51

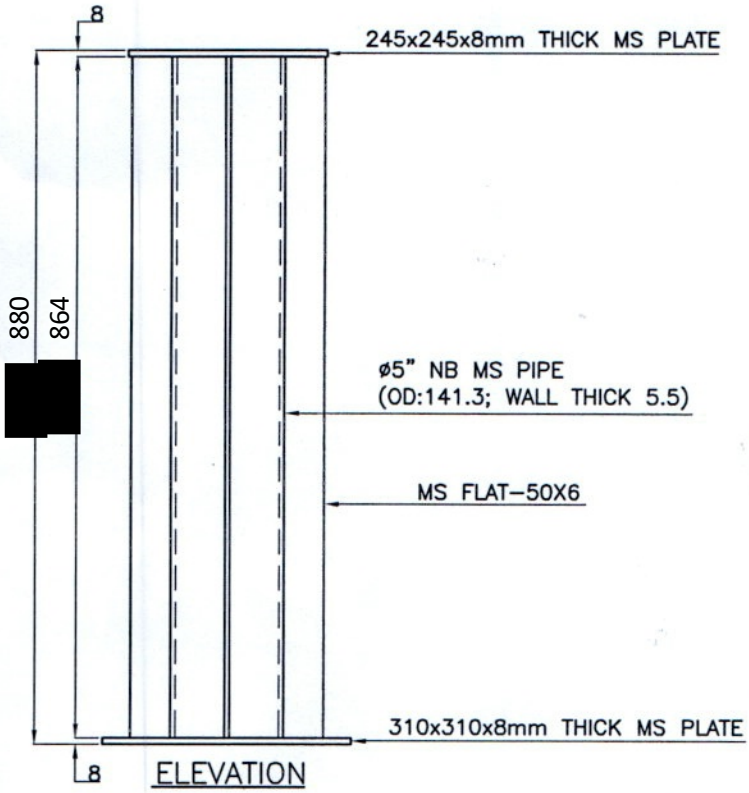
NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS, TO BE CHECKED DURING ACCEPTEANCE TESTS

2. FOR EPC CONTRACTS ONLY



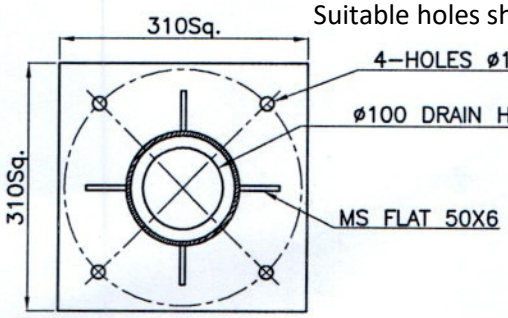
TOP PLATE PLAN

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.



ELEVATION

Suitable holes shall be made on support structure at field



BOTTOM PLATE PLAN

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:01:57 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

TITLE: SUB–STOOL(AP TRANSCO)	MATL: M.S: HDG
DRG. No.: SST–APTRANSCO–120 DRN. BY: KUMAR	REV. No.: 0 DATE: 01/02/2024
SCALE: N.T.S. APPRD. BY:	OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED A-16&17 ASSISTED PRIVATE INDUSTRIAL ESTATE BALANAGAR, HYDERABAD–37, TELANGANA. (INDIA)
ALL DIMENSIONS ARE IN m.m.	

NOTE: 1. DRAWING APPROVAL SUBJECT TO VALID TYPE TEST REPORTS TO BE CHECKED DURING ACCEPTEANCE TESTS

8506489/2024/EEMRT-ENE51

2. FOR EPC CONTRACTS ONLY

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED
A-16 & 17, Assisted Private Industrial Estate, Balanagar, Hyderabad - 500 037. Telangana (INDIA)
Phone : 23771880, 23774184, 23772708, Fax : 0091 (040) 23771106
E-MAIL : sales@oblum.co.in, exports@oblum.co.in, technical@oblum.co.in Website : www.oblum.co.in
Surge Arresters
DNV·GL ISO 9001 : 2015

PROJECT NAME	**:**	**AS APPLICABLE**
END CUSTOMER	**:**	**APTRANSCO**

GUARANTEED TECHNICAL PARTICULARS FOR 120 KV 10 KA CLASS-III(SM)
METAL OXIDE GAPLESS SURGE ARRESTER

Sl.no	Description	120 KV 10 KA –CLASS-III(SM)
1.	Name of Manufacturer	M/s. OBLUM electrical industries private Limited
2.	Arrester Class and Type	Station Class & Gapless Type
3.	Applicable Standard	IEC 60099-4(2014) & IS-15086(Part-IV) of 2017
4.	Rated Arrestor Voltage (kV)	120 kV
5.	Maximum Continuous Operating Voltage (MCOV)(kV)	106 kV rms
6.	Nominal Discharge Current (kA) with 8/20 µsec wave	10 kA
7.	Arrester Classification	Station Medium duty(SM)
8.	a)Thermal Energy rating Wth in KJ/KV of Ur b) Repetitive Charge transfer rating (Qrs) in coulomb	7 kJ/kV (OD TEST) 1.6C
9.	Maximum switching current impulse residual voltage at i) 1000 Amps. ii) 250 Amps	 294kVp NA
10.	Maximum residual voltage with 1 µ second current wave at 10kA(kV_{Peak})	386 kV_{Peak}
11.	Maximum residual voltage with 8/20 (kV_{Peak}) µsecwave i) 5kA ii) 10kA iii) 20kA	 333 kV_{Peak} 355 kV_{Peak} 390 kV_{Peak}
12.	Safe Fault Current (kA)	40 kA
13.	Lightning Impulse withstand voltage of Arrester housing with 1.2/50 µsecond wave (kV_{Peak})	650 kV_{Peak}
14.	One minute power frequency withstand voltage of housing (dry/wet)-kv(rms)	275 kVrms
15.	High Current short duration impulse withstand level with 4/10 µsecond wave (kA_{Peak})	100 kA_{Peak}
16.	Pressure Relief Class	40KA @ 0.2sec
17.	Over-voltage withstand Capability (kV_{Peak}) with prior duty a) 10 seconds b) 1 seconds c) 0.1 seconds	 203 kV_{Peak} 212 kV_{Peak} 220 kV_{Peak}
18.	a) Reference Voltage(kV) b) Reference current	Greater than the rated voltage of arrester 3 mA
19.	Number of Units per phase & rating of each unit	Single unit of 120kv
20.	Minimum Creepage distance mm(min)	3625mm
21.	Leakage Current (mA)	Ir=Less than 500 µAmps Ic=About 1500 µAmps
22.	Total weight of Arrester (kGS)	45kgs±10%
23.	Maximum Cantilever strength of Surge Arrester (including wind load)	150kgf deflection 200mm
24.	Overall height of Surge Arresters(mm)	1280±25 mm(without substool)
25.	Maximum distance recommended from equipment to be protected by Surge Arrester(mm)	3 mtrs
26.	Minimum distance between grounded object (mm)	1850mm
27.	Minimum distance between Arrester phase legs (mm)	2550 mm
28.	Any other particulars	Will be provided , if required

TANDU SUDEEVAN KUMAR
Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:02:07 +05'30'
Chief Engineer/Projects
APTRANSCO/VS/Vijayawa

	Additional Data	
1	Maximum partial discharge level at 1.05 COV	Less than 10pC
2	Seismic acceleration	0.3g horizontal
3	Terminal connector is suitable for ACSR conductor size	Terminal pad drawing is attached Note : terminal connector is removed from Oblum scope
4	Silicone content	Min 30%
5	Glass content in FRP rods and tubes	Min 70% of boron free ECR glass
6	Maximum RIV at 1.1 times phase voltage (micro volts)	500micro volts @ 92kVrms

OBLUM ELECTRICAL INDUSTRIES PRIVATE LIMITED
A-16 & 17, Assisted Private Industrial Estate, Balanagar, Hyderabad - 500 037. Telangana (INDIA)
Phone : 23771880, 23774184, 23772708, Fax : 0091 (040) 23771106
E-MAIL : sales@oblum.co.in, exports@oblum.co.in, technical@oblum.co.in Website : www.oblum.co.in
Surge Arresters
DNV·GL
ISO 9001 : 2015

SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS
FOR SURGE MONITOR

Sl. No.	Description	Technical Particulars
Counter Operation:		
1	Make	Oblum Electrical Industries Private Limited.
2	Model	SCCM-13
3	Type	Non-Reset, cyclometric counter
4	Sensitivity of Surge Counter (min. current at which the Counter operates)	100A (8/20 μsec wave)
5	Nominal Discharge Current	10kA.
6	Max. Current to be withstood by the Surge Monitor	100kA.
7	Counter operation	One count per Surge.
Operation of Current Meter:		
8	Safe Leakage Current Indication	0 to 2 mA (Green Band).
9	Indication of deterioration of Surge Arrester	2 to 5 mA (Red Band).
10	Net. Weight	3.5 kGS. (approx.).
11	Protection of surge counter enclosure	IP-67

For OBLUM ELECTRICAL INDUSTRIES PVT.LTD.

AUTHORISED SIGNATORY

TANDU SUDEEVAN KUMAR

Digitally signed by TANDU SUDEEVAN KUMAR
Date: 2024.04.15 16:02:19 +05'30'

Chief Engineer/Projects
APTRANSCO/VS/Vijayawada.

1. Minimum 300mm plinth shall be maintained for CT/PT/CVT/Isolators/IV/LA/Breakers in the Substation during foundation works to ensure safe live to ground clearance as per IE rules.
2. Since the supply of terminal connectors is not in the scope of manufacturer as mentioned in the drawings. The EPC contractor shall be instructed to supply the same in line with CT/PT/CVT/Isolator/IVT/LA/Breakers requirement and compatibility.